

Energy levels and branching ratios [00De11].

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| E^* | J^π | σ (p,t) | L | $T_{1/2}$ or | Ref. | Branching ratios in percentage | | | | | |
|------------------------|---------------------------|------------------|---------------------|----------------------|--------|--|-----------------------|------------------------|-----------------------------|------------------------|------------------------|
| [keV] | | $\mu\text{b/sr}$ | (p,t) | Γ_{cm} | | $\begin{smallmatrix} E_{\text{f}}^*: \\ J_{\text{f}}^\pi: \end{smallmatrix}$ | 0.0 0 ⁺ | 1212 2 ⁺ | 2121 $\langle 2 \rangle$ | 2197 4 ⁺ | 2455 4 ⁺ |
| 0.0 ^e | 0 ⁺ | 1800 | 0 | 4.11(10) h | 79BlZZ | | | | | | |
| 1211.9(2) ^e | 2 ⁺ | 110 | 2 | | 79BlZZ | | 100 | | | | |
| 2058 ^g | | | | | 05Wo03 | | | | | | |
| 2120.9(3) | $\langle 2 \rangle$ | | | | | | 48(3) | 52(4) | | | |
| 2196.9(2) ^e | 4 ⁺ | | 4 | | 79BlZZ | | | 100 | | | |
| 2302 | 0 ⁺ | | 0 | | 79BlZZ | | | | | | |
| 2455.5(3) ^g | 4 ⁺ | | 4 | | 79BlZZ | | | 100 | | | |
| 2459 ^a | $\langle 3^- \rangle$ | | 3 | | 79BlZZ | | | | | | |
| 2477.7(6) ^e | 6 ⁺ | | 6 | 5.6(4) ns | 79BlZZ | | | | | 100 | |
| 2545.5(5) | 2 ⁺ | | 2 | | 79BlZZ | | 26(9) | 74(9) | | | |
| 2579 | 0 ⁺ | | 0 | | 79BlZZ | | | | | | |
| 2694.4(5) | 4 ⁺ | | 4 | | 79BlZZ | | | 100 | | | |
| 2742 ^g | [1-3] | | | | 05Wo03 | | | | | | |
| 2745 | 0 ⁺ | | 0 | | 79BlZZ | | | | | | |
| 2753.8(6) ^d | $\langle 6 \rangle^+$ | | | | | | | | | | |
| 2802.3(6) ^f | [6 ⁺] | | | | | | | | | | |
| 2821.3(4) ^g | $\langle 2-5 \rangle$ | | | | | | | 69(6) | | 31(3) | |
| 2833.4(4) | 2 ⁺ | | 2 | | 79BlZZ | | 5(3) | 26(4) | | 68(6) | |
| 2914.7(10) | 2 ⁺ | | 2 | | 79BlZZ | | 46(19) | 54(19) | | | |
| 2948.1(3) | $\langle 2^+-5^+ \rangle$ | | | | | | | 34(2) | 46(3) | 20(2) | |
| 2964.8(6) ⁱ | $5\langle - \rangle$ | | | | 05Wo03 | | | | | | |
| 2977.0(5) | | | | | | | | 100 | | | |
| 2983 | 4 ⁺ | | 4 | | 79BlZZ | | | | | | |
| 2997 | $\langle 2^+ \rangle$ | | $\langle 2 \rangle$ | | 79BlZZ | | | | | | |
| 3060 | 0 ⁺ | | 0 | | 79BlZZ | | | | | | |
| 3153 | 2 ⁺ | | 2 | | 79BlZZ | | | | | | |
| 3182.8(7) | $\langle 2^+-5^+ \rangle$ | | | | | | | 100 | | | |
| 3210 ^g | [3,5] | | | | 05Wo03 | | | | | | |
| 3222.5(4) | $\langle 2^+-5^+ \rangle$ | | | | | | | 10(3) | 18(4) | 53(6) | 19(6) |
| 3249 ⁱ | $6\langle - \rangle$ | | | | 05Wo03 | | | | | | |
| 3252 | 4 ⁺ | | 4 | | 79BlZZ | | | | | | |
| 3320 | 2 ⁺ | | 2 | | 79BlZZ | | | | | | |
| 3320 ^h | [6 ⁺] | | | | | | | | | | |
| 3334 ^e | [6 ⁺] | | | | | | | | | | |
| 3357 ^a | 5 ⁻ | | 5 | | 79BlZZ | | | | | | |
| 3416 ⁱ | $6\langle - \rangle$ | | | | 05Wo03 | | | | | | |
| 3446.6(6) | $\langle 2^+-5^+ \rangle$ | | | | | | | 82(10) | 18(3) | | |
| 3540.4(7) | $\langle 2,3,4 \rangle$ | | | | | | | 78(13) | 22(6) | | |
| 3629.7(4) | $\langle 2^+-5^+ \rangle$ | | | | | | | 30(7) | | 53(7) | |
| 3687.0(6) ^a | $\langle 7 \rangle^-$ | | | | 05Wo03 | | | | | | |
| 3765.2(9) ^a | $\langle 8 \rangle^-$ | | | 1.15(9) ns | | | | | | | |
| 3807 | | | | | | | | | | | |
| 3812.5(6) ^e | $\langle 8 \rangle^+$ | | | | | | | | | | |
| 3884.9(7) | $\langle 2^+-5^+ \rangle$ | | | | | | | 81(14) | | | |
| 3933.1(9) ^a | $\langle 9 \rangle^-$ | | | 121(19) ps | | | | | | | |

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| E^* | J^π | σ (p,t) | L | $T_{1/2}$ or | Ref. | Branching ratios in percentage | | | | | |
|-------------------------|-----------------------------------|------------------|--------|----------------------|------|--------------------------------|-----------------------|------------------------|-------------|------------------------|------------------------|
| [keV] | | $\mu\text{b/sr}$ | (p,t) | Γ_{cm} | | E^*_f : J^π_f : | 0.0 0 ⁺ | 1212 2 ⁺ | 2121 ⟨2⟩ | 2197 4 ⁺ | 2455 4 ⁺ |
| 3971 | | | | | | | | | | | |
| 3991 ^f | [8 ⁺] | | | | | | | | | | |
| 4002 ^d | [7 ⁺] | | | | | | | | | | |
| 4137 ^h | [8 ⁺] | | | | | | | | | | |
| 4158 | | | | | | | | | | | |
| 4279 ^e | [8 ⁺] | | | | | | | | | | |
| 4314 ^d | [8 ⁺] | | | | | | | | | | |
| 4316.8(7) | ⟨10⟩ | | | | | | | | | | |
| 4465 | | | | | | | | | | | |
| 4501 | | | | | | | | | | | |
| 4600 | | | | | | | | | | | |
| 4644 | | | | | | | | | | | |
| 4779.2(9) ^a | ⟨9 [−] ⟩ | | | | | | | | | | |
| 4880 ^h | [10 ⁺] | | | | | | | | | | |
| 4894.9(7) ^a | ⟨10⟩ | | | 8(6) ps | | | | | | | |
| 4900 | [0 ⁺] | | | | | | | | | | |
| 5005.9(6) | ⟨2 ⁺ –5 ⁺ ⟩ | | | | | | | | | | |
| 5016 ^e | [10 ⁺] | | | | | | | | | | |
| 5108.7(7) ^a | ⟨11⟩ [−] | | | | | | | | | | |
| 5218 ^f | [10 ⁺] | | | | | | | | | | |
| 5227.3(7) ^c | ⟨10 ⁺ ⟩ | | | | | | | | | | |
| 5330.1(8) ^a | ⟨11⟩ [−] | | | | | | | | | | |
| 5730 ^h | [12 ⁺] | | | | | | | | | | |
| 5936 ^b | [9] | | | | | | | | | | |
| 6036.3(10) ^c | ⟨12 ⁺ ⟩ | | | | | | | | | | |
| 6064 ^b | [10] | | | | | | | | | | |
| 6205 ^b | [11] | | | | | | | | | | |
| 6353 ^b | [12] | | | | | | | | | | |
| 6370 ^a | | | | | | | | | | | |
| 6544 ^a | | | | | | | | | | | |
| 6597 ^h | [14 ⁺] | | | | | | | | | | |
| 6613 ^b | [13] | | | | | | | | | | |
| 6777.7(11) ^c | ⟨14 ⁺ ⟩ | | | | | | | | | | |
| 6974 ^b | [14] | | | | | | | | | | |
| 7540 ^h | [16 ⁺] | | | | | | | | | | |
| 7586.5(11) ^c | ⟨16 ⁺ ⟩ | | | | | | | | | | |
| 8490.9(13) ^c | ⟨18 ⁺ ⟩ | | | | | | | | | | |
| 9495.3(13) ^c | ⟨20 ⁺ ⟩ | | | | | | | | | | |
| 10501 ^c | [22 ⁺] | | | | | | | | | | |
| 11515 ^c | [24 ⁺] | | | | | | | | | | |
| | | 70F108 | xxxxxx | | Ref. | | | | | | |

Additional data on this isotope can be found in [05Gy03, 03Wo15, 88Ha20, 87Vi06, 81Cr01, 79BIZZ, 70F108].

The level scheme consisting of 8 bands (No 1-8 marked here a-h) is given in [05Wo03].

Energy levels and branching ratios [00De11]. Part 2

¹¹⁰Sn₅₀

| E^* | J^π | Branching ratios in percentage | | | | | | | | | | |
|------------------------|-----------------------------------|--------------------------------------|------------------------|--------------------------|----------------------------|--------------------------|--------|---|----------------------------|----------------------------|----------------------------|----------------------------|
| [keV] | | $E_{\rm f}^*$: $J_{\rm f}^\pi$: | 2478 6 ⁺ | 2545.5 2 ⁺ | 2753.8 (6) ⁺ | 2833.4 2 ⁺ | 2977.0 | 3629.7 ⟨2 ⁺ –5 ⁺ ⟩ | 3687.0 ⟨7⟩ [–] | 3765.2 ⟨8⟩ [–] | 3812.5 ⟨8⟩ ⁺ | 3933.1 ⟨9⟩ [–] |
| 2753.8(6) ^d | ⟨6⟩ ⁺ | | 100 | | | | | | | | | |
| 2802.3(6) ^f | [6 ⁺] | | 100 | | | | | | | | | |
| 2964.8(6) ⁱ | 5 ^{⟨–⟩} | | 100 | | | | | | | | | |
| 3629.7(4) | ⟨2 ⁺ –5 ⁺ ⟩ | | | | | 17(4) | | | | | | |
| 3687.0(6) ^a | ⟨7⟩ [–] | | 68(1) | | 32(3) | | | | | | | |
| 3765.2(9) ^a | ⟨8⟩ [–] | | x | | 24.0(15) | | | | 76(6) | | | |
| 3812.5(6) ^e | ⟨8⟩ ⁺ | | 100 | | | | | | | | | |
| 3884.9(7) | ⟨2 ⁺ –5 ⁺ ⟩ | | | 19(3) | | | | | | | | |
| 3933.1(9) ^a | ⟨9⟩ [–] | | | | | | | | | 100 | | |
| 4316.8(7) | ⟨10⟩ | | | | | | | | | | | 100 |
| 4779.2(9) ^a | ⟨9 [–] ⟩ | | | | | | | | 74(8) | | 26(3) | x |
| 4894.9(7) ^a | ⟨10⟩ | | | | | | | | | 100 | | |
| 5005.9(6) | ⟨2 ⁺ –5 ⁺ ⟩ | | | | | 2.8(11) | 92(6) | 5.5(23) | | | | |
| 5108.7(7) ^a | ⟨11⟩ [–] | | | | | | | | | | | 100 |
| 5227.3(7) ^c | ⟨10 ⁺ ⟩ | | | | | | | | | | | 45(5) |
| 5330.1(8) ^a | ⟨11⟩ [–] | | | | | | | | | | | 100 |

Energy levels and branching ratios [00De11]. Part 3

¹¹⁰Sn₅₀

| E^* | J^π | Branching ratios in percentage | | | | | | | |
|-------------------------|------------------------|--------------------------------|-----------------------|----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| | | E_f^* : | 4779.2 | 4894.9 | 5227.3 | 6036.3 | 6777.7 | 7586.5 | 8490.9 |
| [keV] | | J_f^π : | $\langle 9^- \rangle$ | $\langle 10 \rangle$ | $\langle 10^+ \rangle$ | $\langle 12^+ \rangle$ | $\langle 14^+ \rangle$ | $\langle 16^+ \rangle$ | $\langle 18^+ \rangle$ |
| 5227.3(7) ^c | $\langle 10^+ \rangle$ | | 55(3) | x | | | | | |
| 6036.3(10) ^c | $\langle 12^+ \rangle$ | | | | 100 | | | | |
| 6777.7(11) ^c | $\langle 14^+ \rangle$ | | | | | 100 | | | |
| 7586.5(11) ^c | $\langle 16^+ \rangle$ | | | | | | 100 | | |
| 8490.9(13) ^c | $\langle 18^+ \rangle$ | | | | | | | x | |
| 9495.3(13) ^c | $\langle 20^+ \rangle$ | | | | | | | | 100 |

Energy levels and branching ratios [03Bl10].

¹¹¹Sn₅₀

| E^* | $2J^\pi$ | σ (p,d) | S_N | σ (p,d) | L | C^2S | E_{anal}^* | L | C^2S | L | C^2S | $T_{1/2}$ or | Ref. |
|------------------|----------------|------------------|----------|------------------|-----|--------|---------------------|-----|--------|--------------------|--------------------|------------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | (p,d) | $\mu\text{b/sr}$ | | (p,d) | [keV] | | (d,t) | (τ, α) | (τ, α) | Γ_{cm} | |
| 0.0 ^d | 7 ⁺ | 660(70) | 5.0(10) | 1700 | 4 | 4.5 | | 4 | 5.8 | 4 | 6.0 | 35.3(6) m | 80Ge01 |
| 154.48(5) | 5 ⁺ | 5400(450) | 5.6(7) | 13600 | 2 | 4.0 | | 2 | 3.8 | 2 | 4.2 | | 82Ga17 |
| 254.72(8) | 1 ⁺ | 1000(50) | 0.48(7) | 4840 | 0 | 0.29 | | 0 | 0.35 | 0 | 0.48 | 12.5(10) μs | 81Bl05 |
| 643.55(15) | 3 ⁺ | 650(60) | 0.72(10) | 1860 | 2 | 0.54 | | 2 | 0.67 | 2 | 0.65 | | 82Fl02 |
| 755.36(15) | 5 ⁺ | | | 300 | 2 | 0.087 | | 2 | 0.10 | | | | 81Bl05 |

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| E^* | $2J^\pi$ | σ (p,d) | S_N | σ (p,d) | L | C^2S | E_{anal}^* | L | C^2S | L | C^2S | $T_{1/2}$ or | Ref. |
|-------------------------|----------------------------------|------------------|-------|------------------|---------------------|--------|---------------------|-----|--------|------------------|------------------|----------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | (p,d) | $\mu\text{b/sr}$ | | (p,d) | [keV] | | (d,t) | (τ, α) | (τ, α) | Γ_{cm} | |
| 979.6(5) ^b | 11 ⁻ | | | 250 | 5 | 0.82 | | 5 | 0.84 | 5 | 0.85 | 10.0(5) ns | 81Bl05 |
| 1032.6(2) | 3 ⁺ | | | | | | | | | | | | |
| 1107(2) | 1 ⁺ | | | 1370 | 0 | 0.10 | | 0 | 0.12 | | | | 81Bl05 |
| 1151.7(9) | 3 ⁺ , 5 ⁺ | | | 220 | 2 | 0.045 | | | | | | | 81Bl05 |
| 1235.6(5) | $\langle 9 \rangle^+$ | | | | | | | | | | | | |
| 1276.6(2) | 7 ⁺ | | | | 4 | 0.13 | | | | | | 0.3(2) ns | 81Bl05 |
| 1302.0(11) | 5 ⁺ | | | 530 | 2 | 0.17 | | 2 | 0.21 | | | | 81Bl05 |
| 1347.8(5) ^d | 11 ⁺ | | | | | | | | | | | | |
| 1417(3) | | | | | | | | | | | | | |
| 1432(3) | 3 ⁺ , 5 ⁺ | | | | 2 | 0.01 | | | | | | | 81Bl05 |
| 1478.2(12) | 9 ⁺ | | | 150 | [4] | | | 4 | 0.5 | | | | 82Ga17 |
| 1578(1) | 5 ⁺ | | | 390 | 2 | 0.1 | | 2 | 0.12 | | | | 81Bl05 |
| 1693.0(15) | $\langle 3^+, 5^+ \rangle$ | | | | | | | | | | | | |
| 1732(3) | 1 ⁺ | | | 210 | 0 | 0.009 | | 0 | 0.03 | | | | 81Bl05 |
| 1805(3) | | | | | | | | | | | | | |
| 1823.0(12) | 7 ⁺ | | | | 4 | 0.058 | | 4 | 0.30 | | | | 81Bl05 |
| 1866(3) | $\langle 3^+, 5^+ \rangle$ | | | | $\langle 2 \rangle$ | 0.007 | | | | | | | 81Bl05 |
| 1890(2) | 7 ⁺ , 9 ⁺ | | | 110 | 4 | 0.13 | | | | | | | 81Bl05 |
| 1928(3) | 9 ⁻ , 11 ⁻ | | | | 5 | 0.049 | | | | | | | 81Bl05 |
| 1956(3) | $\langle 3^+, 5^+ \rangle$ | | | | $\langle 2 \rangle$ | | | | | | | | 81Bl05 |
| 1988(1) | | | | | | | | | | | | | |
| 1995.8(15) | $\langle 3^+, 5^+ \rangle$ | | | | $\langle 2 \rangle$ | | | | | | | | 81Bl05 |
| 2031(1) | 3 ⁺ | | | 210 | 2 | 0.02 | | 2 | 0.16 | | | | 81Bl05 |
| 2062.3(10) ^b | 15 ⁻ | | | | | | | | | | | | |
| 2065.2(10) ^d | 15 ⁺ | | | | | | | | | | | 0.52(9) ns | |
| 2090(1) | $\langle 9^+ \rangle$ | | | | | | | | | | | | |
| 2092(10) | $\langle 1^-, 3^- \rangle$ | | | | $\langle 1 \rangle$ | 0.05 | | | | | | | 81Bl05 |
| 2100.3(10) | $\langle 13 \rangle^+$ | | | | | | | | | | | | |
| 2140(10) | 1 ⁻ | | | 490 | 1 | | | 1 | 0.21 | | | | 81Bl05 |
| 2188.2(10) | $\langle 11, 13 \rangle$ | | | | | | | | | | | | |
| 2192(1) | | | | | | | | | | | | | |
| 2216.8(10) | | | | | | | | | | | | | |
| 2257.5(10) ^d | $\langle 17 \rangle^+$ | | | | | | | | | | | | |
| 2275(5) | | | | | | | | | | | | | |
| 2284(2) | $\langle 5 \rangle^+$ | | | | 2 | 0.04 | | [2] | 0.05 | | | | 81Bl05 |
| 2313(2) | $\langle 7^+ \rangle$ | | | | | | | [4] | 0.17 | | | | 82Ga17 |
| 2363.0(10) | 9 ⁺ -13 ⁺ | | | | | | | | | | | | |
| 2374(5) | | | | | | | | | | | | | |
| 2386.0(10) | $\langle 13 \rangle$ | | | | | | | | | | | | |
| 2395(5) | | | | | | | | | | | | | |
| 2433(5) | | | | | | | | | | | | | |
| 2466(5) | 5 ⁺ | | | | 2 | 0.04 | | [2] | 0.08 | | | | 81Bl05 |
| 2505(5) | 7 ⁺ | | | | 4 | 0.04 | | [4] | 0.24 | | | | 81Bl05 |
| 2523.6(10) | $\langle 15 \rangle^+$ | | | | | | | | | | | | |
| 2533(5) | $\langle 7^+, 9^+ \rangle$ | | | | $\langle 4 \rangle$ | 0.05 | | | | | | | 81Bl05 |

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| E^* | $2J^\pi$ | σ (p,d) | S_N | σ (p,d) | L | C^2S | E_{anal}^* | L | C^2S | L | C^2S | $T_{1/2}$ or | Ref. |
|-------------------------|------------------------------|------------------|-------|------------------|---------------------|-----------|---------------------|-----|--------|---------------------|------------------|----------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | (p,d) | $\mu\text{b/sr}$ | | (p,d) | [keV] | | (d,t) | (τ, α) | (τ, α) | Γ_{cm} | |
| 2544(5) | | | | | | | | | | | | | |
| 2600(5) | $\langle 1^-, 3^- \rangle$ | | | | $\langle 1 \rangle$ | 0.004 | | | | | | | 81Bl05 |
| 2639(5) | | | | | | | | | | | | | |
| 2666(5) | | | | | | | | | | | | | |
| 2690(5) | | | | | | | | | | | | | |
| 2715(5) | 1^+ | | | | 0 | 0.006 | | | | | | | 81Bl05 |
| 2738(5) | | | | | | | | | | | | | |
| 2786(5) | $3^+, 5^+$ | | | | 2 | 0.013 | | | | | | | 81Bl05 |
| 2804(5) | | | | | | | | | | | | | |
| 2824(5) | $3^+, 5^+$ | | | | 2 | | | | | | | | 81Bl05 |
| 2867(5) | | | | | | | | | | | | | |
| 2910(5) | | | | | | | | | | | | | |
| 2984(1) ^b | 19^- | | | | | | | | | | | 0.15(10) ns | |
| 3014(10) | $7^+, 9^+$ | | | | 4 | 0.065 | | | | | | | 81Bl05 |
| 3124.0(5) ^c | $\langle 19 \rangle^-$ | | | | | | | | | | | | |
| 3228(1)** | 19^- | | | | | | | | | | | | 05Wo03 |
| 3238(10) | | | | | $\langle 1 \rangle$ | 0.010 | | | | | | | 81Bl05 |
| 3263(10) | $1^-, 3^-$ | | | | 1 | 0.03 | | [1] | 0.03 | | | | 81Bl05 |
| 3270(20) | 9^+ | | | | | | | [4] | 0.14 | | | | 82Ga17 |
| 3307(1) ^a | $\langle 19^- \rangle$ | | | | | | | | | | | | |
| 3323(1) ^c | $\langle 21 \rangle^-$ | | | | | | | | | | | | |
| 3443(10) | $7^+, 9^+$ | | | | 4 | 0.091 | | | | $\langle 4 \rangle$ | 0.05 | | 80Ge01 |
| 3459(1)** | 23^- | | | | | | | | | | | | 05Wo03 |
| 3496(10) | $1^-, 3^-$ | | | | 1 | 0.03 | | | | | | | 81Bl05 |
| 3513(10) | | | | | | | | | | | | | |
| 3559(10) | | | | | 1+4 | 0.02+0.08 | | | | | | | 81Bl05 |
| 3582(10) | | | | | | | | | | | | | |
| 3621.1(10) ^c | $\langle 21^-, 23^- \rangle$ | | | | | | | | | | | | |
| 3622(10) | $7^+, 9^+$ | | | | 4 | 0.102 | | | | 4 | 0.20 | | 80Ge01 |
| 3661(10) | $1^-, 3^-$ | | | | 1 | 0.05 | | | | | | | 81Bl05 |
| 3694(10) | $1^-, 3^-$ | | | | 1 | 0.02 | | | | | | | 81Bl05 |
| 3712(10) | $7^+, 9^+$ | | | | 4 | 0.104 | | | | 4 | 0.33 | | 80Ge01 |
| 3758(10) | $7^+, 9^+$ | | | | 4 | 0.064 | | | | | incl | | 81Bl05 |
| 3789.4(10) ^c | $\langle 23 \rangle^-$ | | | | | | | | | | | | |
| 3815(10) | $7^+, 9^+$ | | | | 4 | 0.152 | | | | 4 | 0.63 | | 80Ge01 |
| 3830(10) | $7^+, 9^+$ | | | | 4 | 0.092 | | | | | incl | | 81Bl05 |
| 3865(10) | $7^+, 9^+$ | | | | 4 | 0.074 | | | | | inck | | 81Bl05 |
| 3952(10) | $\langle 1^-, 3^- \rangle$ | | | | $\langle 1 \rangle$ | 0.01 | | | | | | | 81Bl05 |
| 3955 ^b | [23] | | | | | | | | | | | | |
| 4011(10) | | | | | | | | | | | | | |
| 4029(10) | $\langle 1^-, 3^- \rangle$ | | | | $\langle 1 \rangle$ | 0.03 | | | | | | | 81Bl05 |
| 4074 ^a | 23^- | | | | | | | | | | | | |
| 4079(10) | $7^+, 9^+$ | | | | 4 | 0.073 | | | | 4 | 0.48 | | 80Ge01 |
| 4130(10) | $7^+, 9^+$ | | | | 4 | 0.154 | | | | | incl | | 81Bl05 |
| 4155 ^c | 25^- | | | | | | | | | | | | |

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| E^* | $2J^\pi$ | σ (p,d) | S_N | σ (p,d) | L | C^2S | E_{anal}^* | L | C^2S | L | C^2S | $T_{1/2}$ or | Ref. |
|--------------------|----------------------------|------------------|-------|------------------|---------------------|-----------|---------------------|-----|--------|---------------------|------------------------|----------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | (p,d) | $\mu\text{b/sr}$ | | (p,d) | [keV] | | (d,t) | (τ, α) | (τ, α) | Γ_{cm} | |
| 4176(10) | $7^+, 9^+$ | | | | 4 | 0.325 | | | | 4 | 0.97 | | 80Ge01 |
| 4192(10) | $7^+, 9^+$ | | | | 4 | 0.195 | | | | | incl | | 81Bl05 |
| 4232(10) | $7^+, 9^+$ | | | | 4 | 0.160 | | | | 4 | 0.58 | | 80Ge01 |
| 4259(10) | | | | | 1+4 | 0.04+0.08 | | | | | | | 81Bl05 |
| 4286(10) | | | | | | | | | | | | | |
| 4311(10) | $1^-, 3^-$ | | | | 1 | 0.03 | | | | | | | 81Bl05 |
| 4332(10) | $1^-, 3^-$ | | | | 1 | 0.03 | | | | | 0.21 | | 81Bl05 |
| 4369(10) | $\langle 1^-, 3^- \rangle$ | | | | $\langle 1 \rangle$ | 0.01 | | | | | incl | | 81Bl05 |
| 4393(10) | | | | | | | | | | | | | |
| 4416(10) | | | | | | | | | | | | | |
| 4445 ^c | $\langle 25^- \rangle$ | | | | | | | | | | | | |
| 4448(10) | | | | | | | | | | 4 | 0.40 | | 80Ge01 |
| 4483(10) | | | | | | | | | | | | | |
| 4511(10) | | | | | | | | | | | 0.30 | | 80Ge01 |
| 4556(10) | $1^-, 3^-$ | | | | 1 | 0.06 | | | | | | | 81Bl05 |
| 4580(10)* | $1^-, 3^-$ | | | | 1 | 0.07 | | | | | | | 81Bl05 |
| 4617(10) | | | | | | | | | | 4 | 0.35 | | 80Ge01 |
| 4680 | | | | | | | | | | 4 | 0.35 | | |
| 4770* | | | | | | | | | | 4 | 0.25 | | 86Ma37 |
| 4838 ^c | $\langle 27^- \rangle$ | | | | | | | | | | | | |
| 4850* | | | | | | | | | | | | | 86Ma37 |
| 4876 ^a | 27^- | | | | | | | | | | | | |
| 4900* | | | | | | | | | | 1 | | | 86Ma37 |
| 4988 ^b | [27] | | | | | | | | | 4 | 0.15 | | 80Ge01 |
| 5010 | | | | | | | | | | 4 | 0.2 | | 80Ge01 |
| 5050 | | | | | | | | | | 4 | 0.15 | | 80Ge01 |
| 5140 | | | | | | | | | | | $\langle 0.15 \rangle$ | | 80Ge01 |
| 5190* | | | | | | | | | | $\langle 4 \rangle$ | | | 86Ma37 |
| 5270 | | | | | | | | | | $\langle 4 \rangle$ | $\langle 0.5 \rangle$ | | 80Ge01 |
| 5380* | | | | | | | | | | | | | 86Ma37 |
| 5590* | | | | | | | | | | | | | 86Ma37 |
| 5720* | | | | | | | | | | | | | 86Ma37 |
| 5746 ^a | 31^- | | | | | | | | | | | | |
| 5767 ^c | [29,31] | | | | | | | | | | | | |
| 6131 ^b | [31] | | | | | | | | | | | | |
| 6689 ^a | 35^- | | | | | | | | | | | | |
| 6843 ^c | [31,33] | | | | | | | | | | | | |
| 7685 ^a | 39^- | | | | | | | | | | | | |
| 8739 ^a | 43^- | | | | | | | | | | | | |
| 9865 ^a | 47^- | | | | | | | | | | | | |
| 10507 | 9^+ | | | | | | 0.0 | | | | | 17(3) keV | 80Ta04 |
| 11076 | 1^- | | | | | | 590 | | | | | 19(4) keV | 80Ta04 |
| 11085 ^a | $\langle 51^- \rangle$ | | | | | | | | | | | | |
| 11339 | 3^- | | | | | | 870 | | | | | 23(3) keV | 80Ta04 |
| 12452 | $\langle 55^- \rangle$ | | | | | | | | | | | | |

(continued)

¹¹¹Sn
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| E^* | $2J^\pi$ | σ (p,d) | S_N | σ (p,d) | L | C^2S | E_{anal}^* | L | C^2S | L | C^2S | $T_{1/2}$ or | Ref. |
|-------|------------------------|------------------|--------|------------------|-----|------------------|---------------------|-----|--------|------------------|------------------|----------------------|--------------|
| [keV] | | $\mu\text{b/sr}$ | (p,d) | $\mu\text{b/sr}$ | | (p,d) | [keV] | | (d,t) | (τ, α) | (τ, α) | Γ_{cm} | |
| 13987 | $\langle 59^- \rangle$ | | | | | | | | | | | | |
| 15746 | $\langle 63^- \rangle$ | | | | | | | | | | | | |
| 17816 | $\langle 67^- \rangle$ | | | | | | | | | | | | |
| | | 82F102 | 82F102 | 70Ca01 | | 81B105 03B110 | 80Ge01 | | 82Ga17 | | 80Ge01 | 80Ta04 | Ref. Ref. |

Additional data on this isotope can be found in [03Wo15, 01Bb07, 95Ga02, 86Ma37, 82F102, 80Ta04, 79BlZZ, 76Wi10].

* These levels correspond to maxima in the deuteron yield (counts/MeV/ μC) in (p,d) reaction shown in [86Ma37]; comparison of results of different neutron pickup reaction see in [80Ge01].

** Level introduced in [95Ga02].

The level scheme consisting of 4 bands (No 1-4 marked here a-d) is given in [05Wo03].

Energy levels and branching ratios [03B110]. Part 2

¹¹¹Sn
50

| E^* | $2J^\pi$ | Branching ratios in percentage | | | | | | | | | |
|-------------------------|------------------------------------|--------------------------------|----------------|----------------|----------------|----------------|----------------|-----------------|------------------|-----------------|-----------------|
| | | E_f^* : | 0.0 | 154 | 255 | 643 | 755 | 979.6 | 1235.6 | 1347.8 | 2062.3 |
| [keV] | | $2J_f^\pi$: | 7 ⁺ | 5 ⁺ | 1 ⁺ | 3 ⁺ | 5 ⁺ | 11 ⁻ | (9) ⁺ | 11 ⁺ | 15 ⁻ |
| 154.48(5) | 5 ⁺ | | 100 | | | | | | | | |
| 254.72(8) | 1 ⁺ | | | 100 | | | | | | | |
| 643.55(15) | 3 ⁺ | | 4.0 | 88(16) | 7.5(12) | | | | | | |
| 755.36(15) | 5 ⁺ | | 87 | 13 | | | | | | | |
| 979.6(5) ^b | 11 ⁻ | | 100 | | | | | | | | |
| 1032.6(2) | 3 ⁺ | | 75 | 4 | 21 | | | | | | |
| 1151.7(9) | 3 ⁺ , 5 ⁺ | x | 43 | 53 | | | 4.0 | | | | |
| 1235.6(5) | (9) ⁺ | | 100 | | | | | | | | |
| 1276.6(2) | 7 ⁺ | | 36(5) | 64 | | | | | | | |
| 1302.0(11) | 5 ⁺ | | | 97 | | | 3 | | | | |
| 1347.8(5) ^d | 11 ⁺ | | 100 | | | | | | | | |
| 1478.2(12) | 9 ⁺ | | 26(7) | 74 | | | | | | | |
| 1578(1) | 5 ⁺ | | | 100 | | | | | | | |
| 1693.0(15) | (3 ⁺ , 5 ⁺) | | | 100 | | | | | | | |
| 1823.0(12) | 7 ⁺ | | | | | 100 | | | | | |
| 1890(2) | 7 ⁺ , 9 ⁺ | x | x | | | | | | | | |
| 1988(1) | | 100 | | | | | | | | | |
| 1995.8(15) | (3 ⁺ , 5 ⁺) | | | 100 | | | | | | | |
| 2031(1) | 3 ⁺ | | | x | | | | | | | |
| 2062.3(10) ^b | 15 ⁻ | | | | | | | 100 | | | |
| 2065.2(10) ^d | 15 ⁺ | | | | | | | | | 100 | |
| 2090(1) | (9 ⁺) | | | | | | 6(3) | 35(7) | 46(7) | 13(5) | |
| 2100.3(10) | (13) ⁺ | | | | | | | | x | x | |
| 2188.2(10) | (11, 13) | | | | | | | 100 | | | |
| 2192(1) | | | | | | 100 | | | | | |

(continued)

¹¹¹Sn
50

| E^* [keV] | $2J^\pi$ | Branching ratios in percentage | | | | | | | | | |
|------------------------|---------------------------------|--------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------------------------|----------------------------|---------------------------|---------------------------|
| | | E_f^* : $2J_f^\pi$: | 0.0 7 ⁺ | 154 5 ⁺ | 255 1 ⁺ | 643 3 ⁺ | 755 5 ⁺ | 979.6 11 ⁻ | 1235.6 ⟨9⟩ ⁺ | 1347.8 11 ⁺ | 2062.3 15 ⁻ |
| 2216.8(10) | | | | | | | | | 52(22) | 48(24) | |
| 2284(2) | ⟨5⟩ ⁺ | | | 100 | | | | | | | |
| 2313(2) | ⟨7 ⁺ ⟩ | | | | | | | | 100 | | |
| 2363.0(10) | 9 ⁺ -13 ⁺ | | | | | | | | | 100 | |
| 2386.0(10) | ⟨13⟩ | | | | | | | | | 100 | |
| 2984(1) ^b | 19 ⁻ | | | | | | | | | | 100 |
| 3124.0(5) ^c | ⟨19⟩ ⁻ | | | | | | | | | | 74(5) |
| 3228(1)** | 19 ⁻ | | | | | | | | | | 100 |
| 3307(1) ^a | ⟨19 ⁻ ⟩ | | | | | | | | | | 100 |

Energy levels and branching ratios [03B110]. Part 3

¹¹¹Sn
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| E^* [keV] | $2J^\pi$ | Branching ratios in percentage | | | | | | | | | |
|-------------------------|--------------------------------------|--------------------------------|---------------------------|-----------------------------|---------------------------|-----------------------------|---------------------------|------------------------------|-----------------------------|---------------------------|--------|
| | | E_f^* : $2J_f^\pi$: | 2065.2 15 ⁺ | 2257.5 ⟨17⟩ ⁺ | 2983.8 19 ⁻ | 3124.0 ⟨19⟩ ⁻ | 3228.2 19 ⁻ | 3306.8 ⟨19 ⁻ ⟩ | 3323.1 ⟨21⟩ ⁻ | 3459.4 23 ⁻ | 3621.1 |
| 2257.5(10) ^d | ⟨17⟩ ⁺ | | 100 | | | | | | | | |
| 2523.6(10) | ⟨15⟩ ⁺ | | 19.2(7) | 81(2) | | | | | | | |
| 2984(1) ^b | 19 ⁻ | | | x | | | | | | | |
| 3124.0(5) ^c | ⟨19⟩ ⁻ | | 17(3) | 9.0(18) | | | | | | | |
| 3323(1) ^c | ⟨21⟩ ⁻ | | | | 50 | 50(2) | | | | | |
| 3459(1)** | 23 ⁻ | | | | 100 | | | | | | |
| 3621.1(10) ^c | ⟨21 ⁻ , 23 ⁻ ⟩ | | | | | | | | 75 | 25(3) | |
| 3789.4(10) ^c | ⟨23⟩ ⁻ | | | | | | | | 100 | | |
| 4074 ^a | 23 ⁻ | | | | x | x | x | x | | | |
| 4445 ^c | ⟨25 ⁻ ⟩ | | | | | | | | x | | |
| 4838 ^c | ⟨27 ⁻ ⟩ | | | | | | | | | | x |

Energy levels and branching ratios [03B110]. Part 4

¹¹¹Sn
50

| E^* [keV] | $2J^\pi$ | Branching ratios in percentage | | | | | | | | | | | |
|--------------------|--------------------|--------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| | | E_f^* : $2J_f^\pi$: | 4074 23 ⁻ | 4876 27 ⁻ | 5746 31 ⁻ | 6689 35 ⁻ | 7685 39 ⁻ | 8739 43 ⁻ | 9865 47 ⁻ | 11085 ⟨51 ⁻ ⟩ | 12452 ⟨55 ⁻ ⟩ | 13987 ⟨59 ⁻ ⟩ | 15746 ⟨63 ⁻ ⟩ |
| 4876 ^a | 27 ⁻ | x | | | | | | | | | | | |
| 5746 ^a | 31 ⁻ | | | x | | | | | | | | | |
| 6689 ^a | 35 ⁻ | | | | x | | | | | | | | |
| 7685 ^a | 39 ⁻ | | | | | x | | | | | | | |
| 8739 ^a | 43 ⁻ | | | | | | x | | | | | | |
| 9865 ^a | 47 ⁻ | | | | | | | x | | | | | |
| 11085 ^a | ⟨51 ⁻ ⟩ | | | | | | | | x | | | | |

(continued)

¹¹¹Sn
50

| E^* | $2J^\pi$ | Branching ratios in percentage | | | | | | | | | | | |
|-------|--------------------|--------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|--------------------|--------------------|--------------------|--------------------|
| | | $E_f^*:$ | 4074 | 4876 | 5746 | 6689 | 7685 | 8739 | 9865 | 11085 | 12452 | 13987 | 15746 |
| [keV] | | $2J_f^\pi:$ | 23 ⁻ | 27 ⁻ | 31 ⁻ | 35 ⁻ | 39 ⁻ | 43 ⁻ | 47 ⁻ | ⟨51 ⁻ ⟩ | ⟨55 ⁻ ⟩ | ⟨59 ⁻ ⟩ | ⟨63 ⁻ ⟩ |
| 12452 | ⟨55 ⁻ ⟩ | | | | | | | | | x | | | |
| 13987 | ⟨59 ⁻ ⟩ | | | | | | | | | | x | | |
| 15746 | ⟨63 ⁻ ⟩ | | | | | | | | | | | x | |
| 17816 | ⟨67 ⁻ ⟩ | | | | | | | | | | | | x |

Energy levels and branching ratios [96De55].

¹¹²Sn
50

| E^* | J^π | L | σ (τ, n) | σ (d, d') | σ (p, t) | $\Gamma_{\gamma o}$ | $B(E1)$ | $T_{1/2}$ or | Ref. |
|-------------|--------------------------------|---------------|------------------------|------------------|------------------|---------------------|-------------|----------------------|--------|
| [keV] | | (τ, n) | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | [meV] | $10^{-3}ef$ | Γ_{cm} | |
| 0.0 | 0 ⁺ | 0 | 268 | | 3300 | | | Stable | 77Fi04 |
| 1256.69(4) | 2 ⁺ | | | 700 | 340 | | | 0.37(2) ps | 05Ku28 |
| 2150.87(4) | 2 ⁺ | | | | | | | 1.4(5) ps | 05Ku28 |
| 2190.80(4) | 0 ⁺ | 0 | 145 | | | | | | 77Fi04 |
| 2247.37(4) | 4 ⁺ | | | 250 | | | | 3.3(6) ps | 05Ku28 |
| 2354.07(7) | 3 ⁻ | | | 510 | 130 | | | | 05Ku28 |
| 2475.85(20) | ⟨2 ⁺ ⟩ | | | | | | | | 05Ku28 |
| 2520.77(7) | 4 ⁺ | | | 14 | | | | | 05Ku28 |
| 2549.22(13) | 6 ⁺ | | | | | | | 13.7(1) ns | 05Ku28 |
| 2556.6(3) | ≤2 | | | | | | | | |
| 2617.6(2) | 0 ⁺ | | | | | | | | |
| 2720.9(2) | 2 ⁺ | | | | | | | | |
| 2755.8(2) | 2 ⁺ -4 ⁺ | | | | | | | | |
| 2766.5(3) | | | | | | | | | 05Ku28 |
| 2783.9(2) | 4 ⁺ | | | | | | | | |
| 2860(5) | | | | | | | | | |
| 2913.0(3) | 4 ⁺ | | | | | | | | 05Ku28 |
| 2917.8(1) | 2 ⁺ -4 ⁺ | | | | | | | | |
| 2926.8(2) | 6 ⁺ | | | | | | | | |
| 2945.4(1) | 4 ⁺ | | | | | | | | |
| 2966.6(1) | 2 ⁺ | | | | | | | | |
| 2969.29(7) | ⟨1,3⟩ | | | | | | | | 05Ku28 |
| 2986.4(4) | 0 ⁺ | | | | | | | | 05Ku28 |
| 3078.6(2) | 3 ⁺ | | | | | | | | 05Ku28 |
| 3092.7(3) | 2 ⁺ | | | | | | | | |
| 3113.54(14) | | | | | | | | | 05Ku28 |
| 3133.3(1) | 5 ⁻ | | | | | | | | 05Ku28 |
| 3141.0(7) | | | | | | | | | 05Ku28 |
| 3148.9(5) | 4 ⁺ | | | | | | | | |
| 3248.8(2) | 2 ⁺ | | | | | | | | |
| 3272.8(1) | 4 ⁺ | | | | | | | | 05Ku28 |
| 3283.6(7) | | | | | | | | | 05Ku28 |

(continued)

¹¹²Sn
50

| E^* | J^π | L | $\sigma(\tau, n)$ | $\sigma(d, d')$ | $\sigma(p, t)$ | Γ_{γ_0} | $B(E1)$ | $T_{1/2}$ or | Ref. |
|-----------|--------------------------------|---------------|-------------------|------------------|------------------|---------------------|-------------|----------------------|--------|
| [keV] | | (τ, n) | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | [meV] | $10^{-3}ef$ | Γ_{cm} | |
| 3286.1(2) | 2 ⁺ | | | | | | | | |
| 3288.0(4) | | | | | | | | | 05Ku28 |
| 3338.2(4) | 2 ⁺ | | | | | | | | 05Ku28 |
| 3353.0(5) | 2 ⁺ | | | | | | | | 05Ku28 |
| 3354.4(2) | 7 ⁻ | | | | | | | | |
| 3379.0(7) | | | | | | | | | 05Ku28 |
| 3384.0(3) | 3 ⁻ | | | | | | | | 05Ku37 |
| 3397.2(2) | 2 ⁽⁻⁾ | | | | | | | | 05Ku28 |
| 3412.9(1) | 6 ⁺ | | | | | | | | |
| 3417.4(1) | 4 ⁺ | | | | | | | | |
| 3430.7(2) | 8 ⁻ | | | | | | | | |
| 3433.4(5) | 1 ⁻ | | | | | 151(17) | 10.7(12) | 0.62(4) ns | 06Py01 |
| 3456.1(2) | | | | | | | | | |
| 3472.4(3) | | | | | | | | | 05Ku28 |
| 3493.9(2) | | | | | | | | | 05Ku28 |
| 3500.1(2) | ⟨4,5⟩ | | | | | | | | 05Ku28 |
| 3519.3(5) | | | | | | | | | 05Ku28 |
| 3524.3(3) | 2 ⁺ | | | | | | | | |
| 3529.7(2) | ⟨3 ⁻ ⟩ | | | | | | | | |
| 3553.7(3) | ⟨3⟩ | | | | | | | | |
| 3557.1(1) | 4 ⁺ | | | | | | | | 05Ku28 |
| 3570 | 0 ⁺ | 0 | 157 | | | | | | 77Fi04 |
| 3580(5) | 4 ⁺ | | | | | | | | |
| 3604.9(1) | | | | | | | | | 05Ku28 |
| 3610.9(1) | ⟨2 ⁺ ,3⟩ | | | | | | | | |
| 3631.3(2) | | | | | | | | | 05Ku28 |
| 3654.3(2) | 2 ⁺ | | | | | | | | |
| 3693.7(2) | 9 ⁻ | | | | | | | 47(6) ps | |
| 3726.2(2) | | | | | | | | | 05Ku28 |
| 3737(7) | | | | | | | | | |
| 3754.0(5) | | | | | | | | | 05Ku28 |
| 3783.0(5) | | | | | | | | | 05Ku28 |
| 3814.1(1) | 2 ⁺ -4 ⁺ | | | | | | | | |
| 3832(7) | | | | | | | | | |
| 3857(7) | | | | | | | | | |
| 3877(7) | | | | | | | | | |
| 3914(7) | | | | | | | | | |
| 3930 | | | | | | | | | |
| 3988(7) | | | | | | | | | |
| 4031(7) | | | | | | | | | |
| 4048 | | | | | | | | | |
| 4077.9(2) | 8 ⁺ | | | | | | | | |
| 4105(7) | | | | | | | | | |
| 4138(7) | | | | | | | | | |
| 4151(7) | | | | | | | | | |

(continued)

 $^{112}_{50}\text{Sn}$

| E^* | J^π | L | $\sigma(\tau, n)$ | $\sigma(d, d')$ | $\sigma(p, t)$ | $\Gamma_{\gamma o}$ | $B(E1)$ | $T_{1/2}$ or Ref. |
|-----------|------------------------|-------------|-------------------|------------------|------------------|---------------------|-------------|----------------------|
| [keV] | | (τ, n) | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | [meV] | $10^{-3}ef$ | Γ_{cm} |
| 4171(7) | | | | | | | | |
| 4193(7) | | | | | | | | |
| 4222(7) | | | | | | | | |
| 4239(7) | | | | | | | | |
| 4279(7) | | | | | | | | |
| 4325(7) | | | | | | | | |
| 4364(7) | | | | | | | | |
| 4402(7) | | | | | | | | |
| 4437(7) | | | | | | | | |
| 4461(7) | | | | | | | | |
| 4502(7) | | | | | | | | |
| 4544(7) | | | | | | | | |
| 4571(7) | | | | | | | | |
| 4582.6(2) | 10^- | | | | | | | <21 ps |
| 4610(7) | | | | | | | | |
| 4629 | | | | | | | | |
| 4680 | 10^+ | | | | | | | |
| 4685(7) | | | | | | | | |
| 4738(7) | | | | | | | | |
| 4757(7) | | | | | | | | |
| 4794(7) | | | | | | | | |
| 4819.7(3) | 10^+ | | | | | | | |
| 4825(7) | | | | | | | | |
| 4850(7) | | | | | | | | |
| 4887(7) | | | | | | | | |
| 4928(7) | | | | | | | | |
| 4929.0(4) | 11^- | | | | | | | <21 ps |
| 5059(7) | | | | | | | | |
| 5089(7) | | | | | | | | |
| 5116(7) | | | | | | | | |
| 5144(7) | | | | | | | | |
| 5181(7) | | | | | | | | |
| 5270(7) | | | | | | | | |
| 5355(7) | | | | | | | | |
| 5564.7(4) | $\langle 12^+ \rangle$ | | | | | | | |
| 5684.9(3) | 12^+ | | | | | | | |
| 6362 | 14^+ | | | | | | | |
| 6399 | 13^- | | | | | | | |
| 7208 | 15^- | | | | | | | |
| 7213 | 16^+ | | | | | | | |
| 8084 | 17^- | | | | | | | |
| 8145 | 18^+ | | | | | | | |
| 9046 | 19^- | | | | | | | |
| 9184 | $\langle 20 \rangle^+$ | | | | | | | |
| 10077 | $\langle 21^- \rangle$ | | | | | | | |

(continued)

¹¹²Sn
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| E^* | J^π | L | σ (τ, n) | σ (d, d') | σ (p, t) | $\Gamma_{\gamma o}$ | $B(E1)$ | $T_{1/2}$ or | Ref. |
|-------|------------------------|---------------|------------------------|----------------------|---------------------|---------------------|-------------|----------------------|------|
| [keV] | | (τ, n) | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | [meV] | $10^{-3}ef$ | Γ_{cm} | |
| 10332 | $\langle 22^+ \rangle$ | | 77Fi04 | | 70Fl08 | 06Py01 | 06Py01 | | Ref. |

Additional data on this isotope can be found in [05Ku37, 05En04, 03Wo15, 88Ha20, 81Cr01, 79BlZZ, 70Fl08].

Abundance: 0.97(1) %.

Data for this isotope are considered in vol. LB I/18B.

Energy levels and branching ratios [96De55]. Part 2

¹¹²Sn
50

| E^* | J^π | Branching ratios in percentage | | | | | | | | | | |
|-------------|-----------------------|--------------------------------|---------|-------|--------|--------|-----------------------|--------|-------|---------------|---------|--|
| | | E_f^* : 0.0 | 1257 | 2151 | 2248 | 2355 | 2476 | 2521 | 2549 | 2756.19 | 2783.92 | |
| [keV] | | J_f^π : 0^+ | 2^+ | 2^+ | 4^+ | 3^- | $\langle 2^+ \rangle$ | 4^+ | 6^+ | $2^+, 3, 4^+$ | 4^+ | |
| 1256.69(4) | 2^+ | 100 | | | | | | | | | | |
| 2150.87(4) | 2^+ | 14(1) | 86(7) | | | | | | | | | |
| 2190.80(4) | 0^+ | x | x | | | | | | | | | |
| 2247.37(4) | 4^+ | | 100 | | | | | | | | | |
| 2354.07(7) | 3^- | | 100 | | | | | | | | | |
| 2475.85(20) | $\langle 2^+ \rangle$ | 78(5) | 22(2) | | | | | | | | | |
| 2520.77(7) | 4^+ | | 100 | | | | | | | | | |
| 2549.22(13) | 6^+ | | | | 100 | | | | | | | |
| 2556.6(3) | ≤ 2 | 100 | | | | | | | | | | |
| 2720.9(2) | 2^+ | 14(1) | 86(3) | | | | | | | | | |
| 2755.8(2) | $2^+ - 4^+$ | | 75(2) | 16(1) | | 1.9(4) | 3.0(2) | 4.4(4) | | | | |
| 2783.9(2) | 4^+ | | 100 | | | | | | | | | |
| 2913.0(3) | 4^+ | | 89(4) | | | | | 11(1) | | | | |
| 2917.8(1) | $2^+ - 4^+$ | | | 11(1) | 89(13) | | | | | | | |
| 2926.8(2) | 6^+ | | | | | | | | 100 | | | |
| 2945.4(1) | 4^+ | | 100 | | | | | | | | | |
| 2966.6(1) | 2^+ | 29(2) | 55(2) | | | 16(1) | | | | | | |
| 3078.6(2) | 3^+ | | 49(2) | 47(1) | 4.3(9) | | | | | | | |
| 3092.7(3) | 2^+ | 20.8(15) | 79(2) | | | | | | | | | |
| 3148.9(5) | 4^+ | | 81(2) | | 19(6) | | | | | | | |
| 3248.8(2) | 2^+ | 65(4) | | | | 18(12) | 17(1) | | | | | |
| 3286.1(2) | 2^+ | 54(4) | 46(3) | | | | | | | | | |
| 3354.4(2) | 7^- | | | | | | | | 95(6) | | | |
| 3384.0(3) | 3^- | | 86(5) | | | | | | | | | |
| 3412.9(1) | 6^+ | | | | 44 | | | 17(5) | | | 25(1) | |
| 3417.4(1) | 4^+ | | 100 | | | | | | | | | |
| 3456.1(2) | | | 82.0(5) | | | | | | | 18(4) | | |
| 3524.3(3) | 2^+ | | 76(6) | | 17(6) | | | | | | | |
| 3529.7(2) | $\langle 3^- \rangle$ | | | 40(2) | 26(5) | | | 34(8) | | | | |

(continued)

 $^{112}_{50}\text{Sn}$

| E^* [keV] | J^π | Branching ratios in percentage | | | | | | | | | | |
|----------------|--------------------------------|--------------------------------|-----------------------|------------------------|------------------------|------------------------|------------------------|---------------------------|------------------------|------------------------|---|---------------------------|
| | | $E_f^*:$ $J_f^\pi:$ | 0.0 0 ⁺ | 1257 2 ⁺ | 2151 2 ⁺ | 2248 4 ⁺ | 2355 3 ⁻ | 2476 ⟨2 ⁺ ⟩ | 2521 4 ⁺ | 2549 6 ⁺ | 2756.19 2 ⁺ ,3,4 ⁺ | 2783.92 4 ⁺ |
| 3553.7(3) | ⟨3⟩ | | | 100 | | | | | | | | |
| 3814.1(1) | 2 ⁺ -4 ⁺ | | | | | 51(1) | 14(1) | | 3(2) | | | 22(2) |

Energy levels and branching ratios [96De55]. Part 3

 $^{112}_{50}\text{Sn}$

| E^* [keV] | J^π | Branching ratios in percentage | | | | | | | | | | |
|----------------|--------------------------------|--------------------------------|--------|----------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|---------------------------|
| | | $E_f^*:$ $J_f^\pi:$ | 2913.4 | 2917.71 | 2926.78 6 ⁺ | 2945.96 4 ⁺ | 3093.07 2 ⁺ | 3354.43 7 ⁻ | 3414.19 6 ⁺ | 3430.70 8 ⁻ | 3530.44 2 ⁺ ,3,4 ⁺ | 3693.73 9 ⁻ |
| 3354.4(2) | 7 ⁻ | | | | 5.5(3) | | | | | | | |
| 3384.0(3) | 3 ⁻ | | | 13.9(13) | | | | | | | | |
| 3412.9(1) | 6 ⁺ | | | | 14(1) | | | | | | | |
| 3430.7(2) | 8 ⁻ | | | | | | | 100 | | | | |
| 3524.3(3) | 2 ⁺ | | | | | 7.0(11) | | | | | | |
| 3693.7(2) | 9 ⁻ | | | | | | | | | 100 | | |
| 3814.1(1) | 2 ⁺ -4 ⁺ | 9(2) | | | | | | | | | 1.32(12) | |
| 4077.9(2) | 8 ⁺ | | | | | | | | 100 | | | |
| 4582.6(2) | 10 ⁻ | | | | | | | | | 100 | | |
| 4680 | 10 ⁺ | | | | | | | | | | | x |
| 4929.0(4) | 11 ⁻ | | | | | | | | | | | 100 |

Energy levels and branching ratios [96De55]. Part 4

 $^{112}_{50}\text{Sn}$

| E^* [keV] | J^π | Branching ratios in percentage | | | | | | | | | |
|----------------|--------------------|--------------------------------|---------------------------|-------------------------|---------------------------|------|------------------------------|---------------------------|-------------------------|-------------------------|-------------------------|
| | | $E_f^*:$ $J_f^\pi:$ | 4077.85 8 ⁺ | 4680 10 ⁺ | 4819.7 10 ⁺ | 4928 | 5564.7 ⟨12 ⁺ ⟩ | 5684.9 12 ⁺ | 6362 14 ⁺ | 6399 13 ⁻ | 7208 15 ⁻ |
| 4819.7(3) | 10 ⁺ | | 100 | | | | | | | | |
| 5564.7(4) | ⟨12 ⁺ ⟩ | | | x | 100 | | | | | | |
| 5684.9(3) | 12 ⁺ | | | x | 100 | | | | | | |
| 6362 | 14 ⁺ | | | | | | x | x | | | |
| 6399 | 13 ⁻ | | | | | x | | | | | |
| 7208 | 15 ⁻ | | | | | | | | | 100 | |
| 7213 | 16 ⁺ | | | | | | | | x | | |
| 8084 | 17 ⁻ | | | | | | | | | | x |

Energy levels and branching ratios [96De55]. Part 5

 $^{112}_{50}\text{Sn}$

| E^* | J^π | Branching ratios in percentage | | | | | |
|-------|--------------------|--------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|---------------------------|
| [keV] | | $E_f^*:$ $J_f^\pi:$ | 7213 16 ⁺ | 8084 17 ⁻ | 8145 18 ⁺ | 9046 19 ⁻ | 9184 (20) ⁺ |
| 8145 | 18 ⁺ | | x | | | | |
| 9046 | 19 ⁻ | | | x | | | |
| 9184 | (20) ⁺ | | | | x | | |
| 10077 | (21 ⁻) | | | | | x | |
| 10332 | (22 ⁺) | | | | | | x |

Energy levels and branching ratios [98Bl04, 05Bl05].

 $^{113}_{50}\text{Sn}$

| E^* | $2J^\pi$ | σ (d,p) | S_{dp} | L | C^2S | $d\sigma/d\Omega$ | L | σ (p,d) | σ (p,d) | S_N | σ (d,t) | σ (p,t) | Ref. |
|-------------|---------------------------------|------------------|----------|-------|--------|-------------------|-------|------------------|------------------|----------|------------------|------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | | (d,p) | (d,p) | $\mu\text{b/sr}$ | (p,d) | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | (p,d) | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | |
| 0.0 | 1 ⁺ | 4230 | 1.16 | 0 | 0.57 | | 0 | 7850 | 1800(150) | 0.68(6) | 699 | 1550(150) | 72Bo76 |
| 77.386(19) | 7 ⁺ | 263 | 0.31 | 4 | 0.23 | | 4 | 2070 | 700(100) | 5.5(12) | 371 | 150(50) | 72Bo76 |
| 409.82(4) | 5 ⁺ | 1760 | 0.15 | 2 | 0.16 | | 2 | 15500 | 6000(750) | 5.5(6) | 1304 | 600(100) | 72Bo76 |
| 498.06(5) | 3 ⁺ | 4750 | 0.75 | 2 | 0.60 | | 2 | 2540 | 1400(150) | 1.50(15) | 314 | 50(25) | 72Bo76 |
| 738.4(3) | 11 ⁻ | 1200 | 1.30 | 5 | 1.00 | | 5 | 370 | 200(40) | 3.0(8) | | | 72Bo76 |
| 1013.9(1)* | 3 ⁺ | 216 | 0.02 | 2 | 0.02 | | | | | | | | 72Bo76 |
| 1018.1(1)* | 5 ⁺ | incl | incl | 2 | 0.01 | | | | | | | | 72Bo76 |
| 1042(25) | 3 ⁺ , 5 ⁺ | 730 | 0.05 | | | | 2 | 610 | 400(60) | 0.30(4) | | | 70Ca01 |
| 1140(25) | | | | | | | | 460 | | | | | |
| 1248.7(3) | | | | | | | | | | | | | |
| 1284.05(11) | 5 ⁺ | | | | | | | | | | | | |
| 1303(25) | 1 ⁺ | | | | | | 0 | 1410 | | | | | 70Ca01 |
| 1314.03(15) | 3 ⁺ | | | 2 | 0.01 | | | | | | | | 72Bo76 |
| 1355.90(20) | 3 ⁺ | | | | | | | 210 | | | | | |
| 1472.54(15) | 5 ⁺ | | | | | | | | | | | | |
| 1537(5) | 7 ⁺ , 9 ⁺ | | | (4) | 0.27 | | | | | | | | 72Bo76 |
| 1539.0(7) | 5 ⁺ | | | | | | | | | | | | |
| 1539.9(4) | (11 ⁻) | | | | | | | | | | | | |
| 1556.34(10) | 3 ⁺ | | | | | | | 120 | | | | | |
| 1646.06(14) | 3 ⁺ , 5 ⁺ | | | 2 | 0.04 | | | | | | | | 72Bo76 |
| 1647.1(3) | | | | | | | | | | | | | |
| 1651.61(17) | 5 ⁺ | | | | | | 2 | 660 | | | | | |
| 1732.22(17) | 3 ⁺ , 5 ⁺ | | | | | | | | | | | | |
| 1744.80(14) | 3 ⁺ , 5 ⁺ | | | 2 | 0.01 | | | 150 | | | | | 72Bo76 |
| 1781.1(3) | 9 ⁻ | | | | | | | | | | | | |
| 1821.0(3) | 1 ⁺ | | | 0 | 0.03 | | | 470 | | | | | 72Bo76 |
| 1831.0(5) | 1 ⁺ | 423 | 0.09 | | | | 0 | | | | | | 70Ca01 |
| 1867.27(20) | 5 ⁺ | | | | | | | | | | | | |
| 1906.7(4) | 15 ⁻ | | | | | | | | | | | | |
| 1909.63(18) | 5 ⁺ , 7 ⁺ | | | | | | | 110 | | | | | |
| 1935.4(4) | (11 ⁻) | 222 | 0.01 | | | | | | | | | | 67Sc12 |

(continued)

 $^{113}_{50}\text{Sn}$

| E^* | $2J^\pi$ | σ (d,p) | S_{dp} | L | C^2S | $d\sigma/d\Omega$ | L | σ (p,d) | σ (p,d) | S_N | σ (d,t) | σ (p,t) | Ref. |
|----------------|------------------------|------------------|-----------------|---------------------|--------|-------------------|---------------------|------------------|------------------|-------|------------------|------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | | (d,p) | (d,p) | $\mu\text{b/sr}$ | (p,d) | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | (p,d) | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | |
| 1945.3(4) | $\langle 9^- \rangle$ | incl | | $\langle 3 \rangle$ | 0.01 | | | | | | | | 72Bo76 |
| 1952.1(4) | 13^- | incl | | | | | | | | | | | |
| 1957.05(16) | $3^+, 5^+$ | incl | | | | | | | | | | | |
| 2031.4(3) | | | | | | | | | | | | | |
| 2039.88(19) | 7^+ | | | | | | | | | | | | |
| 2045.46(20) | $3^+, 5^+$ | | | | | | | | | | | | |
| 2050(5) | $1^-, 3^-$ | | | 1 | 0.07 | | $\langle 1 \rangle$ | 290 | | | | | 72Bo76 |
| 2105(5) | $\langle 3^- \rangle$ | | | 1 | 0.005 | | | 560 | | | | | 72Bo76 |
| 2128.13(21) | $3^+, 5^+$ | | | 2 | 0.03 | | 1 | | | | | | 72Bo76 |
| 2135.0(3) | | 437 | 0.06 | | | | | | | | | | 67Sc12 |
| 2176.26(18) | 7^+ | | | | | | | | | | | | |
| 2200.7(3) | 5^+ | | | | | | | | | | | | |
| 2258.6(3) | 5^+ | | | | | | | | | | | | |
| 2275.8(3) | $1^-, 3^-$ | 332 | 0.04 | 1 | 0.007 | | | | | | | | 72Bo76 |
| 2336.7(4) | 11^- | | | | | | | | | | | | |
| 2385.76(25) | 7^+ | | | | | | | | | | | | |
| 2410.8(5) | | | | | | | | | | | | | |
| 2448.37(23) | 7^+ | | | | | | | | | | | | |
| 2457.11(22) | | | | | | | | | | | | | |
| 2467.9(3) | | | | | | | | | | | | | |
| 2506.0(3) | | | | | | | | | | | | | |
| 2512.0(3) | $\langle 3, 5 \rangle$ | | | | | | | | | | | | |
| 2538.26(22) | $3^+, 5^+$ | | | | | | | | | | | | |
| 2540(5) | $5^-, 7^-$ | | | 3 | 0.028 | | | | | | | | 72Bo76 |
| 2540.1(4) | $\langle 15^- \rangle$ | | | | | | | | | | | | |
| 2552.4(3) | $\langle 3-7 \rangle$ | | | | | | | | | | | | |
| ≈ 2579 | | | | | | | | | | | | | |
| 2582.3(4) | $\langle 15^- \rangle$ | | | | | | | | | | | | |
| 2590.76(22) | | | | 1,2 | 0.01 | | | | | | | | 72Bo76 |
| 2616.7(5) | | | | 0 | 0.027 | | | | | | | | 72Bo76 |
| 2619.4(4) | | | | | | | | | | | | | |
| 2620(5) | 1^+ | | | | | | | | | | | | |
| 2624.03(21) | | | | | | | | | | | | | |
| 2649.1(4) | $\langle 9^- \rangle$ | | | | | | | | | | | | |
| 2662.8(3) | $3^+, 5^+$ | | | | | | | | | | | | |
| 2671.2(4) | | | | | | | | | | | | | |
| 2675.3(4) | | | | | | | | | | | | | |
| 2700.5(4) | | | | | | | | | | | | | |
| 2717.8(4) | $\langle 11^- \rangle$ | | | | | | | | | | | | |
| 2749.8(4) | 17^- | | | | | | | | | | | | |
| 2764(5) | $\langle 7^- \rangle$ | | | 3 | 0.008 | | | | | | | | 72Bo76 |
| 2778.0(4) | | | | | | | | | | | | | |
| 2780(5) | | | | | | | | | | | | | |
| 2807.1(4) | 19^- | | | | | | | | | | | | |
| 2851.6(4) | $\langle 17^- \rangle$ | | | | | | | | | | | | |

(continued)

¹¹³Sn
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| E^* | $2J^\pi$ | σ (d,p) | S_{dp} | L | C^2S | $d\sigma/d\Omega$ | L | σ (p,d) | σ (p,d) | S_N | σ (d,t) | σ (p,t) | Ref. |
|-----------|------------------------|------------------|----------|-------|--------|-------------------|-------|------------------|------------------|-------|------------------|------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | | (d,p) | (d,p) | $\mu\text{b/sr}$ | (p,d) | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | (p,d) | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | |
| 2862(5) | $\langle 7^- \rangle$ | | | 3 | 0.040 | | | | | | | | 72Bo76 |
| 2889.0(4) | | | | | | | | | | | | | |
| 2915.9(4) | | | | | | | | | | | | | |
| 2932.2(5) | | | | | | | | | | | | | |
| 2956.5(4) | | | | | | | | | | | | | |
| 2975.1(4) | $\langle 19^- \rangle$ | | | | | | | | | | | | |
| 3004(5) | $1^-, 3^-$ | | | 1 | 0.009 | | | | | | | | 72Bo76 |
| 3080(5) | $\langle 7^- \rangle$ | | | 3 | 0.008 | | | | | | | | 72Bo76 |
| 3091.3(5) | 19^- | | | | | | | | | | | | |
| 3129.4(5) | 21^- | | | | | | | | | | | | |
| 3129.8(4) | | | | | | | | | | | | | |
| 3138.9(6) | | | | | | | | | | | | | |
| 3204(5) | $1^-, 3^-$ | | | 1 | 0.012 | | | | | | | | 72Bo76 |
| 3223.3(5) | $\langle 19^- \rangle$ | | | | | | | | | | | | |
| 3307(5) | $\langle 7^- \rangle$ | | | 3 | 0.043 | | | | | | | | |
| 3409.5(6) | 17 | | | | | | | | | | | | |
| 3412.4(4) | | | | | | | | | | | | | |
| 3418(5) | $\langle 7^- \rangle$ | | | 3 | 0.018 | | | | | | | | |
| 3421.3(4) | 21^- | | | | | | | | | | | | |
| 3456.4(5) | | | | | | | | | | | | | |
| 3459.0(5) | 23^- | | | | | | | | | | | | |
| 3494(5) | $\langle 7^- \rangle$ | | | 3 | 0.015 | | | | | | | | |
| 3499(5) | | | | | | | | | | | | | |
| 3539(5) | $\langle 7^- \rangle$ | | | 3 | 0.020 | | | | | | | | |
| 3584(5) | $\langle 7^- \rangle$ | | | 3 | 0.012 | | | | | | | | |
| 3680.8(6) | $\langle 23^- \rangle$ | | | | | | | | | | | | |
| 3696(5) | $\langle 7^- \rangle$ | | | 3 | 0.007 | | | | | | | | |
| 3743(5) | $\langle 7^- \rangle$ | | | 3 | 0.012 | | | | | | | | |
| 3796(5) | $\langle 7^- \rangle$ | | | 3 | 0.005 | | | | | | | | |
| 3808(5) | $\langle 7^- \rangle$ | | | 3 | 0.007 | | | | | | | | |
| 3822(5) | $\langle 7^- \rangle$ | | | 3 | 0.006 | | | | | | | | |
| 3838.3(5) | X^- | | | | | | | | | | | | |
| 3846(5) | | | | 1,2 | 0.01 | | | | | | | | |
| 3873(5) | $\langle 7^- \rangle$ | | | 3 | 0.009 | | | | | | | | |
| 3902.1(5) | $\langle 23^- \rangle$ | | | | | | | | | | | | |
| 3906(5) | $\langle 7^- \rangle$ | | | 3 | 0.016 | | | | | | | | |
| 3914.3(5) | $\langle 21^- \rangle$ | | | | | | | | | | | | |
| 3960(5) | | | | | | | | | | | | | |
| 3972.9(5) | $\langle 23^- \rangle$ | | | | | | | | | | | | |
| 4022(5) | | | | 1,2 | 0.01 | | | | | | | | |
| 4044(5) | $\langle 7^- \rangle$ | | | 3 | 0.009 | | | | | | | | |
| 4051.8(5) | 21 | | | | | | | | | | | | |
| 4058.7(5) | 25^+ | | | | | | | | | | | | |
| 4233(5) | $\langle 7^- \rangle$ | | | 3 | 0.011 | | | | | | | | |
| 4265(5) | $\langle 7^- \rangle$ | | | 3 | 0.029 | | | | | | | | |

(continued)

¹¹³Sn
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| E^* | $2J^\pi$ | σ (d,p) | S_{dp} | L | C^2S | $d\sigma/d\Omega$ | L | σ (p,d) | σ (p,d) | S_N | σ (d,t) | σ (p,t) | Ref. |
|-----------|------------------------|------------------|----------|-------|--------|-------------------|-------|------------------|------------------|-------|------------------|------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | | (d,p) | (d,p) | $\mu\text{b/sr}$ | (p,d) | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | (p,d) | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | |
| 4315(5) | $\langle 7^- \rangle$ | | | 3 | 0.007 | | | | | | | | |
| 4335(5) | | | | | | | | | | | | | |
| 4343(5) | $\langle 7^- \rangle$ | | | 3 | 0.007 | | | | | | | | |
| 4364(5) | | | | | | | | | | | | | |
| 4397(5) | $\langle 7^- \rangle$ | | | 3 | 0.006 | | | | | | | | |
| 4430(5) | $\langle 7^- \rangle$ | | | 3 | 0.021 | | | | | | | | |
| 4438(5) | | | | | | | | | | | | | |
| 4475.8(6) | $\langle 27^+ \rangle$ | | | | | | | | | | | | |
| 4504(5) | | | | | | | | | | | | | |
| 4589(5) | $\langle 7^- \rangle$ | | | 3 | 0.016 | | | | | | | | |
| 4609(5) | $\langle 7^- \rangle$ | | | 3 | 0.018 | | | | | | | | |
| 4649(5) | | | | | | | | | | | | | |
| 4714.5(6) | $\langle 27^- \rangle$ | | | | | | | | | | | | |
| 4752.2(6) | 25 | | | | | | | | | | | | |
| 4992(5) | $\langle 7^- \rangle$ | | | 3 | 0.009 | | | | | | | | |
| 5012(5) | $\langle 7^- \rangle$ | | | 3 | 0.017 | | | | | | | | |
| 5067(5) | $\langle 7^- \rangle$ | | | 3 | 0.015 | | | | | | | | |
| 5239(5) | $\langle 7^- \rangle$ | | | 3 | 0.018 | | | | | | | | |
| 5291(5) | $\langle 7^- \rangle$ | | | 3 | 0.009 | | | | | | | | |
| 5318(5) | X ⁻ | | | | 0.01 | | | | | | | | |
| 5450(5) | $\langle 7^- \rangle$ | | | 3 | 0.013 | | | | | | | | |
| 5534.4(6) | 29 | | | | | | | | | | | | |
| 5605.7(8) | 31 ⁺ | | | | | | | | | | | | |
| 5645.6(7) | 31 ⁻ | | | | | | | | | | | | |
| 5647(5) | $\langle 7^- \rangle$ | | | 3 | 0.008 | | | | | | | | |
| 11826(50) | 9 ⁺ | | | | | | | | | | | | 80Ta04 |
| 12254(50) | 1 ⁻ | | | | | | | | | | | | 80Ta04 |
| 12513(50) | 3 ⁻ | | | | | | | | | | | | 80Ta04 |
| | | 67Sc12 | 67Sc12 | | 72Bo76 | | | 70Ca01 | 82Fl02 | | 67Sc12 | 71Fl05 | Ref. |

Additional data on this isotope can be found in [91Vi09, 80Ta04, 79Ch08, 74De10].

* Doublet unresolved in the (d,p) reaction measurements [72Bo76].

Parameters of 26 highly excited states with spin up to $2J=69$ can be found in [05Bl05].

Data for this isotope are considered in vol. LB I/18B.

Energy levels and branching ratios [98Bl04, 05Bl05]. Part 2

¹¹³Sn
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| E^* | $2J^\pi$ | $T_{1/2}$ or | Ref. | Branching ratios in percentage | | | | | | |
|------------|----------------|---------------|--------|--------------------------------|-----------------------|------------------------|-----------------------|-----------------------|------------------------|------------------------|
| [keV] | | Γ_{cm} | | E_f^* : $2J_f^\pi$: | 0.0 1 ⁺ | 77.4 7 ⁺ | 410 5 ⁺ | 498 3 ⁺ | 738 11 ⁻ | 1014 3 ⁺ |
| 0.0 | 1 ⁺ | 115.09(3) d | 72Bo76 | | | | | | | |
| 77.386(19) | 7 ⁺ | 21.4(4) m | 72Bo76 | | 100 | | | | | |
| 409.82(4) | 5 ⁺ | | 72Bo76 | | 0.9(1) | 99(4) | | | | |

(continued)

¹¹³Sn
50

| E^* [keV] | $2J^\pi$ | $T_{1/2}$ or Γ_{cm} | Ref. | $E_f^*:$ $2J_f^\pi:$ | 0.0 1 ⁺ | Branching ratios in percentage 77.4 7 ⁺ | 410 5 ⁺ | 498 3 ⁺ | 738 11 ⁻ | 1014 3 ⁺ |
|----------------|---------------------------------|--------------------------------------|--------|-------------------------|-----------------------|--|-----------------------|-----------------------|------------------------|------------------------|
| 498.06(5) | 3 ⁺ | >0.35 ps | 72Bo76 | | 96(5) | 0.3(2) | 3.3(4) | | | |
| 738.4(3) | 11 ⁻ | 86(2) ns | 72Bo76 | | | 100 | | | | |
| 1013.9(1)* | 3 ⁺ | 0.2(1) ps | 72Bo76 | | 49(3) | 51(3) | 0.3(1) | | | |
| 1018.1(1)* | 5 ⁺ | 1.0(5) ps | 72Bo76 | | 9(2) | 34(2) | 57(4) | | | |
| 1042(25) | 3 ⁺ , 5 ⁺ | | 70Ca01 | | | | | | | |
| 1140(25) | | | | | | | | | | |
| 1248.7(3) | | | | | | | 100 | | | |
| 1284.05(11) | 5 ⁺ | 0.5(2) ps | | | 79(4) | 7(4) | 5.0(2) | 9(1) | | |
| 1303(25) | 1 ⁺ | | 70Ca01 | | | | | | | |
| 1314.03(15) | 3 ⁺ | | 72Bo76 | | 85(9) | | | 15(2) | | |
| 1355.90(20) | 3 ⁺ | 0.7(3) ps | | | 100 | | | | | |
| 1472.54(15) | 5 ⁺ | 0.8(5) ps | | | 100 | | | | | |
| 1537(5) | 7 ⁺ , 9 ⁺ | | 72Bo76 | | | | | | | |
| 1539.0(7) | 5 ⁺ | 0.6(1) ps | | | | | 100 | | | |
| 1539.9(4) | $\langle 11^- \rangle$ | 0.2(1) ps | | | | | | | 100 | |
| 1556.34(10) | 3 ⁺ | | | | 58(5) | 7(1) | 25(2) | 3.0(3) | | |
| 1646.06(14) | 3 ⁺ , 5 ⁺ | | 72Bo76 | | 45(7) | 15(2) | | 40(10) | | |
| 1647.1(3) | | | | | | | 23(12) | 77(23) | | |
| 1651.61(17) | 5 ⁺ | | | | | 33(3) | 67(13) | | | |
| 1732.22(17) | 3 ⁺ , 5 ⁺ | | | | | 10(1) | | 80(10) | | 6(3) |
| 1744.80(14) | 3 ⁺ , 5 ⁺ | 0.3(1) ps | 72Bo76 | | | 25(2) | 62(3) | 9(1) | | |
| 1781.1(3) | 9 ⁻ | 0.19(7) ps | | | | 5(2) | | | 95(5) | |
| 1821.0(3) | 1 ⁺ | | 72Bo76 | | 100 | | | | | |
| 1831.0(5) | 1 ⁺ | | 70Ca01 | | 100 | | | | | |
| 1867.27(20) | 5 ⁺ | 0.33(10) ps | | | | | | | | |
| 1906.7(4) | 15 ⁻ | 0.8(2) ps | | | | | | | 100 | |
| 1909.63(18) | 5 ⁺ , 7 ⁺ | | | | | | 31(6) | 69(10) | | |
| 1935.4(4) | $\langle 11^- \rangle$ | 1.9(8) ps | 67Sc12 | | | | | | 100 | |
| 1945.3(4) | $\langle 9^- \rangle$ | 0.40(20) ps | 72Bo76 | | | | | | 100 | |
| 1952.1(4) | 13 ⁻ | 1.0(4) ps | | | | | | | 100 | |
| 1957.05(16) | 3 ⁺ , 5 ⁺ | | | | 31(3) | 10(1) | ≈ 31 | 27(3) | | |
| 2031.4(3) | | | | | | | 100 | | | |
| 2039.88(19) | 7 ⁺ | 0.2(1) ps | | | | | | | | |
| 2045.46(20) | 3 ⁺ , 5 ⁺ | | | | | 14(2) | 25(3) | ≈ 40 | | |
| 2050(5) | 1 ⁻ , 3 ⁻ | | 72Bo76 | | | | | | | |
| 2105(5) | $\langle 3^- \rangle$ | | 72Bo76 | | | | | | | |
| 2128.13(21) | 3 ⁺ , 5 ⁺ | | 72Bo76 | | | | 100 | | | |
| 2135.0(3) | | | 67Sc12 | | | | 100 | | | |
| 2176.26(18) | 7 ⁺ | 0.3(2) ps | | | | 25(2) | 45(4) | | | |
| 2200.7(3) | 5 ⁺ | >0.24 ps | | | | | | 100 | | |
| 2258.6(3) | 5 ⁺ | 0.3(1) ps | | | | | | | | |
| 2275.8(3) | 1 ⁻ , 3 ⁻ | | 72Bo76 | | | | 100 | | | |
| 2336.7(4) | 11 ⁻ | 0.35(8) ps | | | | | | | 100 | |
| 2385.76(25) | 7 ⁺ | 1.0(6) ps | | | | | | | | |
| 2410.8(5) | | | | | | | | | | |

(continued)

 $^{113}_{50}\text{Sn}$

| E^* | $2J^\pi$ | $T_{1/2}$ or | Ref. | Branching ratios in percentage | | | | | | |
|----------------|---------------------------------|----------------------|--------|---|-----------------------|------------------------|-----------------------|-----------------------|------------------------|------------------------|
| [keV] | | Γ_{cm} | | E_{f}^* : $2J_{\text{f}}^\pi$: | 0.0 1 ⁺ | 77.4 7 ⁺ | 410 5 ⁺ | 498 3 ⁺ | 738 11 ⁻ | 1014 3 ⁺ |
| 2448.37(23) | 7 ⁺ | | | | | | | | | |
| 2457.11(22) | | | | | | | 12(1) | 88(4) | | |
| 2467.9(3) | | | | | | | | 100 | | |
| 2506.0(3) | | | | | | | | | | |
| 2512.0(3) | $\langle 3,5 \rangle$ | | | | | | | 100 | | |
| 2538.26(22) | 3 ⁺ , 5 ⁺ | | | | | | 38(6) | 62(11) | | |
| 2540(5) | 5 ⁻ , 7 ⁻ | | 72Bo76 | | | | | | | |
| 2540.1(4) | $\langle 15^- \rangle$ | 0.7(4) ps | | | | | | | 59(3) | |
| 2552.4(3) | $\langle 3-7 \rangle$ | | | | | | | | | |
| ≈ 2579 | | | | | | | | | | |
| 2582.3(4) | $\langle 15^- \rangle$ | 0.22(9) ps | | | | | | | 100 | |
| 2590.76(22) | | | 72Bo76 | | | | 89(9) | 11(3) | | |
| 2616.7(5) | | | 72Bo76 | | | | 100 | | | |
| 2619.4(4) | | | | | | | | | 31(4) | |
| 2620(5) | 1 ⁺ | | | | | | | | | |
| 2624.03(21) | | | | | | | 55(6) | | | |
| 2649.1(4) | $\langle 9^- \rangle$ | | | | | | | | 100 | |
| 2662.8(3) | 3 ⁺ , 5 ⁺ | | | | | | | 100 | | |
| 2671.2(4) | | | | | | | | | 100 | |
| 2675.3(4) | | | | | | | | | | |
| 2700.5(4) | | 0.4(1) ps | | | | | | | 28(8) | |
| 2717.8(4) | $\langle 11^- \rangle$ | | | | | | | | 38(12) | |
| 2749.8(4) | 17 ⁻ | 0.20(7) ps | | | | | | | | |
| 2764(5) | $\langle 7 \rangle^-$ | | 72Bo76 | | | | | | | |
| 2778.0(4) | | | | | | | | | 100 | |
| 2780(5) | | | | | | | | | | |
| 2807.1(4) | 19 ⁻ | 0.31(10) ps | | | | | | | | |
| 2851.6(4) | $\langle 17^- \rangle$ | 1.2(6) ps | | | | | | | | |
| 2862(5) | $\langle 7 \rangle^-$ | | 72Bo76 | | | | | | | |
| 2889.0(4) | | | | | | | | | 100 | |
| 2915.9(4) | | | | | | | | | | |
| 2932.2(5) | | | | | | 26(6) | | 54(10) | | 20(8) |
| 2956.5(4) | | | | | | | | | | |
| 2975.1(4) | $\langle 19^- \rangle$ | 0.28(14) ps | | | | | | | | |
| 3004(5) | 1 ⁻ , 3 ⁻ | | 72Bo76 | | | | | | | |
| 3080(5) | $\langle 7 \rangle^-$ | | 72Bo76 | | | | | | | |
| 3091.3(5) | 19 ⁻ | 0.45(18) ps | | | | | | | | |
| 3129.4(5) | 21 ⁻ | | | | | | | | | |
| 3129.8(4) | | | | | | | | | | |
| 3138.9(6) | | | | | | | | | | |
| 3204(5) | 1 ⁻ , 3 ⁻ | | 72Bo76 | | | | | | | |
| 3223.3(5) | $\langle 19 \rangle^-$ | >1.4 ps | | | | | | | | |
| 3307(5) | $\langle 7 \rangle^-$ | | | | | | | | | |
| 3409.5(6) | 17 | | | | | | | | | |
| 3412.4(4) | | | | | | | | | | |

(continued)

 $^{113}_{50}\text{Sn}$

| E^* | $2J^\pi$ | $T_{1/2}$ or | Ref. | Branching ratios in percentage | | | | | | |
|-----------|------------------------|----------------------|------|---|--------------|---------------|--------------|--------------|---------------|---------------|
| [keV] | | Γ_{cm} | | $E_{\text{f}}^*:$ $2J_{\text{f}}^\pi:$ | 0.0 1^+ | 77.4 7^+ | 410 5^+ | 498 3^+ | 738 11^- | 1014 3^+ |
| 3418(5) | $\langle 7 \rangle^-$ | | | | | | | | | |
| 3421.3(4) | 21^- | | | | | | | | | |
| 3456.4(5) | | | | | | | | | | |
| 3459.0(5) | 23^- | | | | | | | | | |
| 3494(5) | $\langle 7 \rangle^-$ | | | | | | | | | |
| 3499(5) | | | | | | | | | | |
| 3539(5) | $\langle 7 \rangle^-$ | | | | | | | | | |
| 3584(5) | $\langle 7 \rangle^-$ | | | | | | | | | |
| 3680.8(6) | $\langle 23^- \rangle$ | | | | | | | | | |
| 3696(5) | $\langle 7 \rangle^-$ | | | | | | | | | |
| 3743(5) | $\langle 7 \rangle^-$ | | | | | | | | | |
| 3796(5) | $\langle 7 \rangle^-$ | | | | | | | | | |
| 3808(5) | $\langle 7 \rangle^-$ | | | | | | | | | |
| 3822(5) | $\langle 7 \rangle^-$ | | | | | | | | | |
| 3838.3(5) | X^- | | | | | | | | | |
| 3846(5) | | | | | | | | | | |
| 3873(5) | $\langle 7 \rangle^-$ | | | | | | | | | |
| 3902.1(5) | $\langle 23^- \rangle$ | 0.6(2) ps | | | | | | | | |
| 3906(5) | $\langle 7 \rangle^-$ | | | | | | | | | |
| 3914.3(5) | $\langle 21^- \rangle$ | | | | | | | | | |
| 3960(5) | | | | | | | | | | |
| 3972.9(5) | $\langle 23^- \rangle$ | 0.5(2) ps | | | | | | | | |
| 4022(5) | | | | | | | | | | |
| 4044(5) | $\langle 7 \rangle^-$ | | | | | | | | | |
| 4051.8(5) | 21 | | | | | | | | | |
| 4058.7(5) | 25^+ | 0.69(28) ns | | | | | | | | |
| 4233(5) | $\langle 7 \rangle^-$ | | | | | | | | | |
| 4265(5) | $\langle 7 \rangle^-$ | | | | | | | | | |
| 4315(5) | $\langle 7 \rangle^-$ | | | | | | | | | |
| 4335(5) | | | | | | | | | | |
| 4343(5) | $\langle 7 \rangle^-$ | | | | | | | | | |
| 4364(5) | | | | | | | | | | |
| 4397(5) | $\langle 7 \rangle^-$ | | | | | | | | | |
| 4430(5) | $\langle 7 \rangle^-$ | | | | | | | | | |
| 4438(5) | | | | | | | | | | |
| 4475.8(6) | $\langle 27^+ \rangle$ | >1.1 ps | | | | | | | | |
| 4504(5) | | | | | | | | | | |
| 4589(5) | $\langle 7 \rangle^-$ | | | | | | | | | |
| 4609(5) | $\langle 7 \rangle^-$ | | | | | | | | | |
| 4649(5) | | | | | | | | | | |
| 4714.5(6) | $\langle 27^- \rangle$ | 0.31(10) ps | | | | | | | | |
| 4752.2(6) | 25 | | | | | | | | | |
| 4992(5) | $\langle 7 \rangle^-$ | | | | | | | | | |
| 5012(5) | $\langle 7 \rangle^-$ | | | | | | | | | |
| 5067(5) | $\langle 7 \rangle^-$ | | | | | | | | | |

(continued)

¹¹³Sn
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| E^* | $2J^\pi$ | $T_{1/2}$ or | Ref. | Branching ratios in percentage | | | | | | |
|-----------|-----------------------|----------------------|--------|--------------------------------|-----------------------|------------------------|-----------------------|-----------------------|------------------------|------------------------|
| [keV] | | Γ_{cm} | | $E_f^*:$ $2J_f^\pi:$ | 0.0 1 ⁺ | 77.4 7 ⁺ | 410 5 ⁺ | 498 3 ⁺ | 738 11 ⁻ | 1014 3 ⁺ |
| 5239(5) | $\langle 7 \rangle^-$ | | | | | | | | | |
| 5291(5) | $\langle 7 \rangle^-$ | | | | | | | | | |
| 5318(5) | X ⁻ | | | | | | | | | |
| 5450(5) | $\langle 7 \rangle^-$ | | | | | | | | | |
| 5534.4(6) | 29 | | | | | | | | | |
| 5605.7(8) | 31 ⁺ | | | | | | | | | |
| 5645.6(7) | 31 ⁻ | | | | | | | | | |
| 5647(5) | $\langle 7 \rangle^-$ | | | | | | | | | |
| 11826(50) | 9 ⁺ | 22(10) keV | 80Ta04 | | | | | | | |
| 12254(50) | 1 ⁻ | 20(8) keV | 80Ta04 | | | | | | | |
| 12513(50) | 3 ⁻ | 25(9) keV | 80Ta04 | | | | | | | |
| | | 80Ta04 | Ref. | | | | | | | |

Energy levels and branching ratios [98Bl04, 05Bl05]. Part 3

¹¹³Sn
50

| E^* | $2J^\pi$ | Branching ratios in percentage | | | | | | | | | | |
|-------------|---------------------------------|--------------------------------|------------------------|------------------------|---------------------------|---------------------------|---------------------------|--|--------------------------|---------------------------|---------------------------|---------------------------------------|
| [keV] | | $E_f^*:$ $2J_f^\pi:$ | 1018 5 ⁺ | 1284 5 ⁺ | 1314.03 3 ⁺ | 1355.90 3 ⁺ | 1472.54 5 ⁺ | 1744.80 3 ⁺ , 5 ⁺ | 1781.1 9 ⁻ | 1867.27 5 ⁺ | 1906.7 15 ⁻ | 1909.63 $\langle 5^+, 7^+ \rangle$ |
| 1556.34(10) | 3 ⁺ | | 3.3(2) | 2.1(2) | 1.3(3) | | | | | | | |
| 1732.22(17) | 3 ⁺ , 5 ⁺ | | | 3.8(16) | | | | | | | | |
| 1744.80(14) | 3 ⁺ , 5 ⁺ | | 4(2) | | | | | | | | | |
| 1867.27(20) | 5 ⁺ | | | 90(4) | | 10.2(22) | | | | | | |
| 2039.88(19) | 7 ⁺ | | | 15(2) | 33(2) | 26(2) | | | | 26(2) | | |
| 2045.46(20) | 3 ⁺ , 5 ⁺ | | | | | 21(2) | | | | | | |
| 2176.26(18) | 7 ⁺ | | | 29(2) | | | | | | | | |
| 2258.6(3) | 5 ⁺ | | | 60(5) | | 40(15) | | | | | | |
| 2385.76(25) | 7 ⁺ | | | 11(5) | | 76(23) | | | | 13(5) | | |
| 2410.8(5) | | | | | | | | | | 100 | | |
| 2448.37(23) | 7 ⁺ | | | 56 | 4(2) | 39.8 | | | | | | |
| 2506.0(3) | | | | 60(6) | | 40(13) | | | | | | |
| 2540.1(4) | $\langle 15^- \rangle$ | | | | | | | | | | 41(3) | |
| 2552.4(3) | $\langle 3-7 \rangle$ | | | 50(10) | | 50(33) | | | | | | |
| 2619.4(4) | | | | | | | | | 52(7) | | | |
| 2624.03(21) | | | | | | 14(7) | 31(2) | | | | | |
| 2675.3(4) | | | | | | 55(18) | | | | 45(18) | | |
| 2807.1(4) | 19 ⁻ | | | | | | | | | | 100 | |
| 2851.6(4) | $\langle 17^- \rangle$ | | | | | | | | | | 46(6) | |
| 2915.9(4) | | | | | | | | | | | 15(7) | |
| 2956.5(4) | | | | 100 | | | | | | | | |
| 2975.1(4) | $\langle 19^- \rangle$ | | | | | | | | | | 45(14) | |
| 3091.3(5) | 19 ⁻ | | | | | | | | | | 100 | |
| 3129.8(4) | | | | | | | | | | | 22(11) | |

(continued)

 $^{113}_{50}\text{Sn}$

| E^* | $2J^\pi$ | Branching ratios in percentage | | | | | | | | | | |
|-----------|-------------------|--------------------------------|------------------------|------------------------|---------------------------|---------------------------|---------------------------|---|--------------------------|---------------------------|---------------------------|--|
| [keV] | | E_f^* : $2J_f^\pi$: | 1018 5 ⁺ | 1284 5 ⁺ | 1314.03 3 ⁺ | 1355.90 3 ⁺ | 1472.54 5 ⁺ | 1744.80 3 ⁺ ,5 ⁺ | 1781.1 9 ⁻ | 1867.27 5 ⁺ | 1906.7 15 ⁻ | 1909.63 ⟨5 ⁺ ,7 ⁺ ⟩ |
| 3138.9(6) | ⟨19⟩ ⁻ | | | | | | | | | 100 | | |
| 3223.3(5) | | | | | | | | | | | 100 | |
| 3412.4(4) | | | | | | | | | | | | 100 |
| 3456.4(5) | | | | | | | | | | | | 100 |

Energy levels and branching ratios [98Bl04, 05Bl05]. Part 4

 $^{113}_{50}\text{Sn}$

| E^* [keV] | $2J^\pi$ | Branching ratios in percentage | | | | | | | | | |
|----------------|--------------------|--------------------------------|------------------------------|-----------------------------|---------------------------|---------------------------|------------------------------|--------|---------------------------|---------------------------|------------------------------|
| | | E_f^* : $2J_f^\pi$: | 1935.4 ⟨11 ⁻ ⟩ | 1945.3 ⟨9 ⁻ ⟩ | 1952.1 13 ⁻ | 2336.7 11 ⁻ | 2582.3 ⟨15 ⁻ ⟩ | 2619.4 | 2749.8 17 ⁻ | 2807.1 19 ⁻ | 2975.1 ⟨19 ⁻ ⟩ |
| 2619.4(4) | | | | | | 17(7) | | | | | |
| 2700.5(4) | | | 16(8) | | 36(8) | 20(8) | | | | | |
| 2717.8(4) | ⟨11 ⁻ ⟩ | | | 38(12) | | 25(12) | | | | | |
| 2749.8(4) | 17 ⁻ | | | | 100 | | | | | | |
| 2851.6(4) | ⟨17 ⁻ ⟩ | | | | 54(27) | | | | | | |
| 2915.9(4) | | | | | 85(15) | | | | | | |
| 2975.1(4) | ⟨19 ⁻ ⟩ | | | | | | 28(2) | | 27(14) | | |
| 3129.4(5) | 21 ⁻ | | | | | | | | | 97(13) | 3(1) |
| 3129.8(4) | | | | | | | | 78(44) | | | |
| 3421.3(4) | 21 ⁻ | | | | | | | | | 28(8) | |
| 3459.0(5) | 23 ⁻ | | | | | | | | | 3.3(16) | |
| 3914.3(5) | ⟨21 ⁻ ⟩ | | | | | | | | | 100 | |

Energy levels and branching ratios [98Bl04, 05Bl05]. Part 5

 $^{113}_{50}\text{Sn}$

| E^* [keV] | $2J^\pi$ | Branching ratios in percentage | | | | | | | | | |
|----------------|--------------------|--------------------------------|---------------------------|---------------------------|--------|------------------------------|---------------------------|---------------------------|------------------------------|------------------------------|---------------------------|
| | | E_f^* : $2J_f^\pi$: | 3091.3 19 ⁻ | 3129.4 21 ⁻ | 3129.8 | 3223.3 ⟨19 ⁻ ⟩ | 3421.3 21 ⁻ | 3459.0 23 ⁻ | 3902.1 ⟨23 ⁻ ⟩ | 3972.9 ⟨23 ⁻ ⟩ | 4058.7 25 ⁺ |
| 3421.3(4) | 21 ⁻ | | | 72(8) | | | | | | | |
| 3459.0(5) | 23 ⁻ | | | | 97 | | | | | | |
| 3680.8(6) | ⟨23 ⁻ ⟩ | | | 100 | | | | | | | |
| 3838.3(5) | X ⁻ | | | 75(6) | | | | 25(13) | | | |
| 3902.1(5) | ⟨23 ⁻ ⟩ | 69 | | | 31(8) | | | | | | |
| 3972.9(5) | ⟨23 ⁻ ⟩ | | | 88(16) | | 12(12) | | | | | |
| 4058.7(5) | 25 ⁺ | | | | | | | 71(14) | | 29(14) | |
| 4475.8(6) | ⟨27 ⁺ ⟩ | | | | | | | | | | 100 |
| 4714.5(6) | ⟨27 ⁻ ⟩ | | | | | | | | 100 | | |

Energy levels and branching ratios [04Gu01, 02Bl20].

¹¹⁴Sn
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| E^* | J^π | σ (τ, n) | L | I_p | σ (p,d) | S_N | σ (d,t) | L | σ_{pt} | σ (p,t) | β_L | $T_{1/2}$ or | Ref. |
|------------|--------------------------------|------------------------|---------------------|-------|----------------|---------|------------------|-------|---------------|------------------|-----------|---------------|---------|
| [keV] | | $\mu\text{b/sr}$ | (t,p) | (t,p) | mb | (p,d) | $\mu\text{b/sr}$ | (p,t) | μb | $\mu\text{b/sr}$ | (p,p') | Γ_{cm} | |
| 0 | 0 ⁺ | 139 | 0 | 100 | 57.0(60) | 0.80(5) | 1140 | 0 | 2492(32) | 4300 | | Stable | 04Gu01 |
| 1299.91(1) | 2 ⁺ | 140 | 2 | 19 | 18.0(20) | 0.67(6) | 331 | 2 | 520(10) | 550 | 0.14 | 0.30(6) ps | 04Gu01 |
| 1953.27(2) | 0 ⁺ | | 0 | 7 | | | 180 | 0 | 17(1) | | | 6.5(23) ps | 04Gu01 |
| 2156.28(3) | 0 ⁺ | | 0 | 10 | | | 260 | 0 | 1.7(3) | | | >7.6 ps | 04Gu01 |
| 2187.60(1) | 4 ⁺ | | | 5 | | | incl | 4 | 190(4) | 130 | | 5.3(4) ps | 04Gu01 |
| 2238.95(1) | 2 ⁺ | | | | | | incl | | 1.0(2) | | | | 04Gu01 |
| 2274.99(1) | 3 ⁻ | | | 10 | | | | 3 | 137(3) | 190 | 0.18 | 1.7(7) ps | 04Gu01 |
| 2421.7(2) | 0 ⁺ | | | | | | 79 | 0 | 8.7(8) | | | | 04Gu01 |
| 2454.07(2) | 2 ⁺ | | | | | | | 2 | 6.8(7) | | | | 04Gu01 |
| 2510 | 3 ⁻ | | | | | | | | 2.3(4) | | | | 04Gu01 |
| 2514.76(2) | 3 ⁺ | | | | | | 198 | | | | | | 02Bl20 |
| 2576(4) | 2 ⁺ | | | | | | incl | 2 | 1.2(2) | | | | 04Gu01 |
| 2614.46(2) | 4 ⁺ | | | | | | 59 | 4 | 4.9(5) | | 0.083 | 0.6(1) ps | 04Gu01 |
| 2738.4(5) | | | | | | | incl | | | | | | 02Bl20 |
| 2759.7(5) | | | | | | | | | | | | | 02Bl20 |
| 2765.36(4) | 4 ⁺ | | | | | | | | 3.3(5) | | 0.072 | 0.6(6) ps | 04Gu01 |
| 2815.15(2) | 5 ⁻ | | | 13 | | | ≈ 40 | 5 | 22(1) | | | >1.4 ps | 04Gu01 |
| 2859.81(3) | 4 ⁺ | | | 3 | 23.2(25) | 1.4(2) | incl | 4 | 51(2) | | | | 04Gu01 |
| 2905.12(5) | 4 ⁺ | | | | | | | | | | 0.049 | | 02Bl20 |
| 2906 | 3 ⁻ | | | | | | | | 5.7(5) | | | | 04Gu01 |
| 2915.7(2) | 2 ⁺ | | | 3 | | | | 2 | 85(3) | | | | 04Gu01 |
| 2943.43(6) | 2 ⁺ | | | 2 | 52.5(58) | 3.5(5) | | 2 | 125(3) | | | | 82Fl02 |
| 3025 | 2,3 ⁺ | | $\langle 2 \rangle$ | 15 | | | | | | | | | 69Bj01 |
| 3025.29(6) | 0 ⁺ | | 0 | | | | | 0 | 24(2) | | | | 69Bj01 |
| 3028.1(1) | 2,3 ⁺ | | | | | | | | | | [0.07] | | 02Bl20 |
| 3071.4(5) | | | | | | | | | | | | | 02Bl20 |
| 3087.37(7) | 7 ⁻ | | | 2 | | | | 7 | 10(1) | | | 733(14) ns | 04Gu01 |
| 3100.1(5) | | | | | | | | | | | | | |
| 3107.1(5) | | | | | | | | | | | | | |
| 3149.8(1) | 6 ⁺ | | | 4 | | | | 6 | 48(2) | | | 1.1(3) ps | 04Gu01 |
| 3186.13(8) | 2 ⁺ | | | | | | | 2 | 19(1) | | | | 04Gu01 |
| 3188.92(5) | 6 ⁺ | | | | | | | | 2.0(3) | | | 2.1(1) ps | 04Gu01 |
| 3190.4(1) | 8 ⁻ | | | | | | | | | | | 0.4(2) ns | |
| 3204(4) | 0 ⁺ | | | | | | | 0 | | | | | 79BlZZ |
| 3207.6(2) | 4 ⁺ | | | | | | | 4 | 14(1) | | | | 04Gu01 |
| 3211.8(2) | $\langle 1,2 \rangle$ | | | | | | | | | | | | |
| 3225 | 3 ⁻ | | | | | | | | 4.7(6) | | | | 04Gu01 |
| 3226.0(1) | 2 ⁺ ,3 ⁺ | | | | | | | | | | | | |
| 3242.1(1) | 5 ⁻ | | | | | | | | 4.6(6) | | | | 94Sc041 |
| 3244.4(1) | 6 ⁻ | | | | | | | | | | | >1.4 ps | 94Sc04 |
| 3297.3(5) | | | | | | | | | | | | | |
| 3308.4(6) | 0 ⁺ | | | | | | | 0 | 8.7(9) | | | | 04Gu01 |
| 3326.5(2) | 2 ⁺ | | | | 26.9(29) | 2.0(3) | | 2 | 17(1) | | | | 04Gu01 |
| 3357.4(2) | 4 ⁺ | | | 5 | incl | incl | | 4 | 114(3) | | | | 04Gu01 |
| 3363.0(1) | 5 ⁻ | | | | | | | | 1.4(2) | | | 1.1(3) ps | 04Gu01 |

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| E^* | J^π | $\sigma(\tau, n)$ | L | I_p | $\sigma(p, d)$ | S_N | $\sigma(d, t)$ | L | σ_{pt} | $\sigma(p, t)$ | β_L | $T_{1/2}$ or | Ref. |
|-------------|-------------------------|-------------------|--------|--------|----------------|--------|----------------|--------|---------------|----------------|-----------|---------------|--------|
| [keV] | | $\mu b/sr$ | (t, p) | (t, p) | mb | (p, d) | $\mu b/sr$ | (p, t) | μb | $\mu b/sr$ | (p, p') | Γ_{cm} | |
| 3364.8(5) | | | | | | | | | | | | | |
| 3380.1(5) | | | | | | | | | | | | | |
| 3392.1(5) | | | | | | | | | | | | | |
| 3393.0(7) | | | | | | | | | | | | | |
| 3396.1(6) | 6^+ | | | | | | | | 4.4(3) | | | | 04Gu01 |
| 3396.9(5) | $\langle 4^- \rangle$ | | | | | | | | | | | | 94Sc04 |
| 3422.7(9) | 0^+ | | | | | | | 0 | 51(2) | | | | 04Gu01 |
| 3448.4(1) | 4^+ | | | | | | | | 9.6(9) | | | | 04Gu01 |
| 3451.8(3) | 0^+ | | | | | | | | 1.4(2) | | | | 04Gu01 |
| 3471.4(3) | 6^+ | | | | | | | 6 | 52(2) | | | 0.5(+3-18) ps | 04Gu01 |
| 3478.8(1) | 2^+ | | | | | | | | 10(1) | | | | 04Gu01 |
| 3486 | 5^- | | | | | | | | 17(1) | | | | 04Gu01 |
| 3510.7(1)* | 9^- | | | | | | | 9 | 20(2) | | | 7.2(39) ps | 04Gu01 |
| 3514.2(1) | $2^+, 3^+$ | | | | | | | | | | | | |
| 3525.36(16) | 3^- | | | | | | | | 7.6(8) | | | | 04Gu01 |
| 3549(6) | 0^+ | 79 | | | | | | 0 | 40(2) | | | | 77Fi04 |
| 3561.1(3) | 2^+ | | | | | | | | | | | | |
| 3566.5(1)* | 7^- | | | 5 | | | | | 32(2) | | | | 04Gu01 |
| 3587 | 4^+ | | | | | | | | 4.3(7) | | | | 04Gu01 |
| 3610.71(20) | $5^{\langle - \rangle}$ | | | | | | | | | | | | |
| 3658.7(10) | 4^+ | | | 4 | 11.0(13) | 0.9(2) | | | 3.5(6) | | | 0.8(4) ps | 04Gu01 |
| 3680 | 4^+ | | | | | | | | 3.2(6) | | | | 04Gu01 |
| 3685.15(21) | 6^- | | | | | | | | | | | | |
| 3690(6) | 2^+ | | | | | | | | 8.9(8) | | | | 04Gu01 |
| 3717.83(12) | 7^- | | | | | | | | | | | 1.0(4) ps | |
| 3720.4(5) | | | | | | | | | | | | | |
| 3727(6) | 2^+ | | | | | | | 2 | 33(2) | | | | 04Gu01 |
| 3740.03(20) | 0^+ | | | | | | | | 14(1) | | | | |
| 3765(6) | 0^+ | | | | | | | 0 | 23(1) | | | | 04Gu01 |
| 3781.98(8) | 2^+ | | | | | | | | | | | | |
| 3786 | 4^+ | | | | | | | | 8.0(8) | | | | 04Gu01 |
| 3800 | 2^+ | | | | | | | 2 | 15(1) | | | | 04Gu01 |
| 3854.3(7) | | | | | | | | | | | | | |
| 3855.6(6) | | | | | | | | | | | | | |
| 3871 | 5^- | | | | | | | | 5.9(6) | | | | 04Gu01 |
| 3871.28(9) | 8^+ | | | | | | | | | | | 1.0(1) ps | 02Bl20 |
| 3871.3(8) | 2^+ | | | | | | | 2 | 1.6(2) | | | | 04Gu01 |
| 3889.3(6) | | | | | | | | | | | | | |
| 3928(6) | $[0^+]$ | 38 | | | | | | | | | | | 77Fi04 |
| 3939 | 3^- | | | | | | | | 9.7(9) | | | | 04Gu01 |
| 3956(6) | 2^+ | | | | | | | 2 | | | | | 79BlZZ |
| 3971 | 2^+ | | | | | | | | 34(2) | | | | |
| 3971.21(12) | 8^- | | | | | | | | | | | | 94Sc04 |
| 3976(6) | | | | | | | | | | | | | |
| 3987.6(5) | 3^- | | | | | | | | 7.3(8) | | | | 04Gu01 |

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| E^* | J^π | σ (τ, n) | L | I_p | σ (p,d) | S_N | σ (d,t) | L | σ_{pt} | σ (p,t) | β_L | $T_{1/2}$ or | Ref. |
|-------------|-------------|------------------------|-------|-------|----------------|-------|------------------|-------|---------------|------------------|-----------|---------------|--------|
| [keV] | | $\mu\text{b/sr}$ | (t,p) | (t,p) | mb | (p,d) | $\mu\text{b/sr}$ | (p,t) | μb | $\mu\text{b/sr}$ | (p,p') | Γ_{cm} | |
| 3991.39(12) | $2^+ - 4^+$ | | | | | | | | | | | | |
| 4000 | 4^+ | | | | | | | | 77(1) | | | | 04Gu01 |
| 4029.83(9) | $2^+ - 4^+$ | | | | | | | | | | | | |
| 4043.15(21) | 5^- | | | | | | | | | | | | |
| 4046.82(15) | 5^- | | | | | | | | 5.4(6) | | | | 04Gu01 |
| 4057 | 6^+ | | | | | | | | 11(1) | | | | 04Gu01 |
| 4088.74(16) | 8^+ | | | | | | | | | | | | 94Sc04 |
| 4095 | 2^+ | | | | | | | | 4.5(5) | | | | 04Gu01 |
| 4119(6) | 4^+ | | | | | | | 4 | 9.3(9) | | | | 79BIZZ |
| 4136(6) | 4^+ | | | | | | | | 38(2) | | | | 04Gu01 |
| 4139.69(13) | 10^+ | | | | | | | | | | | 218(24) ps | 94Sc04 |
| 4141.50(16) | 8^- | | | | | | | | | | | | |
| 4152.5(10) | | | | | | | | | | | | | |
| 4160(30) | | | | | | | | | | | | | |
| 4177(6) | | | | | | | | | | | | | |
| 4220.89(17) | 6^- | | | | | | | | | | | | |
| 4262.0(5) | | | | | | | | | | | | | |
| 4293.8(5) | | | | | | | | | | | | | |
| 4313.00(23) | 7^+ | | | | | | | | | | | | |
| 4322.0(5) | | | | | | | | | | | | | |
| 4338.3(5) | | | | | | | | | | | | | |
| 4353(6) | | | | | | | | | | | | | |
| 4394.1(5) | | | | | | | | | | | | | |
| 4403.0(5) | | | | | | | | | | | | | |
| 4406.4(5) | | | | | | | | | | | | | |
| 4413(6) | 0^+ | | | | | | | 0 | | | | | 79BIZZ |
| 4428.6(9) | | | | | | | | | | | | | |
| 4430.36(12) | 7^- | | | | | | | | | | | | |
| 4434.5(5) | | | | | | | | | | | | | |
| 4449.5(6) | | | | | | | | | | | | | |
| 4472(6) | | | | | | | | | | | | | |
| 4481.5(9) | | | | | | | | | | | | | |
| 4488.5(6) | | | | | | | | | | | | | |
| 4492.0(5) | | | | | | | | | | | | | |
| 4515.0(5) | | | | | | | | | | | | | |
| 4526.9(5) | | | | | | | | | | | | | |
| 4553.3(4) | 8^+ | | | | | | | | | | | | 94Sc04 |
| 4568.3(6) | | | | | | | | | | | | | |
| 4576(6) | | | | | | | | | | | | | |
| 4583.7(5) | | | | | | | | | | | | | |
| 4593.5(5) | | | | | | | | | | | | | |
| 4613.0(5) | | | | | | | | | | | | | |
| 4624.1(4) | 7^- | | | | | | | | | | | | |
| 4650.5(11) | | | | | | | | | | | | | |
| 4664.88(22) | 9^- | | | | | | | | | | | | |

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| E^* | J^π | $\sigma(\tau, n)$ | L | I_p | $\sigma(p, d)$ | S_N | $\sigma(d, t)$ | L | σ_{pt} | $\sigma(p, t)$ | β_L | $T_{1/2}$ or | Ref. |
|-------------|---------------------------|-------------------|--------|--------|----------------|--------|----------------|--------|---------------|----------------|-----------|---------------|--------|
| [keV] | | $\mu b/sr$ | (t, p) | (t, p) | mb | (p, d) | $\mu b/sr$ | (p, t) | μb | $\mu b/sr$ | (p, p') | Γ_{cm} | |
| 4669.44(13) | 8 ⁻ | | | | | | | | | | | | |
| 4671.2(3) | 10 ⁻ | | | | | | | | | | | | 94Sc04 |
| 4672.77(11) | 10 ⁺ | | | | | | | | | | | 0.7(1) ps | |
| 4678.7(7) | | | | | | | | | | | | | |
| 4682.1(11) | $\langle 6^+ \rangle$ | | | | | | | | | | | | |
| 4683.1(5) | | | | | | | | | | | | | |
| 4717.7(5) | | | | | | | | | | | | | |
| 4732.2(5) | | 28 | | | | | | | | | | | 77Fi04 |
| 4736.38(16) | 10 ⁻ | | | | | | | | | | | | |
| 4766.2(5) | | | | | | | | | | | | | |
| 4766.4(5) | | | | | | | | | | | | | |
| 4787.6(5) | | | | | | | | | | | | | |
| 4788.3(12) | | | | | | | | | | | | | |
| 4797(6) | | | | | | | | | | | | | |
| 4805.8(6) | | | | | | | | | | | | | |
| 4831(10) | | | | | | | | | | | | | |
| 4858.7(8) | | | | | | | | | | | | | |
| 4909(10) | | | | | | | | | | | | | |
| 4916.41(23) | 10 ⁻ | | | | | | | | | | | | |
| 4919.30(12) | 9 ⁻ | | | | | | | | | | | | |
| 4923.70(13) | 9 ⁻ | | | | | | | | | | | | |
| 4924.3(9) | | | | | | | | | | | | | |
| 4926.9(5) | | | | | | | | | | | | | |
| 4932.3(6) | | | | | | | | | | | | | |
| 4963.58(20) | 11 ⁻ | | | | | | | | | | | 0.3(1) ps | |
| 4964.1(5) | | | | | | | | | | | | | |
| 5014.2(6) | | | | | | | | | | | | | |
| 5039.2(5) | | | | | | | | | | | | | |
| 5054.9(8) | 9 ⁻ | | | | | | | | | | | | |
| 5065.4(6) | | | | | | | | | | | | | |
| 5094.82(22) | $\langle 10^- \rangle$ | | | | | | | | | | | | |
| 5102.9(11) | | | | | | | | | | | | | |
| 5119.6(5) | | | | | | | | | | | | | |
| 5124.2(5) | | | | | | | | | | | | | |
| 5181.72(19) | 12 ⁺ | | | | | | | | | | | 0.5(1) ps | 94Sc04 |
| 5182.15(23) | | | | | | | | | | | | | |
| 5191.4(6) | | | | | | | | | | | | | |
| 5213.5(4) | 10 ⁺ | | | | | | | | | | | | |
| 5214.3(4) | $\langle 10 \rangle^+$ | | | | | | | | | | | | 94Sc04 |
| 5221.6(3) | $\langle 11 \rangle^-$ | | | | | | | | | | | | |
| 5221.72(23) | | | | | | | | | | | | | |
| 5226.6(5) | | | | | | | | | | | | | |
| 5233.60(15) | 10 ⁻ | | | | | | | | | | | 2.2(6) ps | |
| 5254.9(4) | $\langle 8, 10 \rangle^+$ | | | | | | | | | | | | |
| 5280.4(9) | | | | | | | | | | | | | |

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¹¹⁴Sn
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| E^* | J^π | σ (τ, n) | L | I_p | σ (p,d) | S_N | σ (d,t) | L | σ_{pt} | σ (p,t) | β_L | $T_{1/2}$ or | Ref. |
|-------------|---------------------------|------------------------|-------|-------|----------------|-------|------------------|-------|---------------|------------------|-----------|----------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | (t,p) | (t,p) | mb | (p,d) | $\mu\text{b/sr}$ | (p,t) | μb | $\mu\text{b/sr}$ | (p,p') | Γ_{cm} | |
| 5299.32(21) | 11 ⁺ | | | | | | | | | | | 0.3(1) ps | 94Sc04 |
| 5310.72(23) | $\langle 8, 10^+ \rangle$ | | | | | | | | | | | | |
| 5348.9(6) | | | | | | | | | | | | | |
| 5357.22(23) | $\langle 8, 10 \rangle^+$ | | | | | | | | | | | | |
| 5372.3(6) | | | | | | | | | | | | | |
| 5419.5(8) | | | | | | | | | | | | | |
| 5445.3(8) | | | | | | | | | | | | | |
| 5468.23(21) | $\langle 12^- \rangle$ | | | | | | | | | | | | |
| 5488.12(23) | $\langle 9, 11^- \rangle$ | | | | | | | | | | | | |
| 5500.1(5) | | | | | | | | | | | | | |
| 5535.3(5) | | | | | | | | | | | | | |
| 5538.7(5) | 11 ⁺ | | | | | | | | | | | | 94Sc04 |
| 5548.24(14) | 12 ⁺ | | | | | | | | | | | 0.4(1) ps | |
| 5554.09(13) | 11 ⁻ | | | | | | | | | | | 1.2(4) ps | |
| 5586.6(7) | | | | | | | | | | | | | |
| 5596.9(11) | | | | | | | | | | | | | |
| 5599.4(6) | | | | | | | | | | | | | |
| 5627.92(23) | $\langle 8, 10^+ \rangle$ | | | | | | | | | | | | |
| 5699.87(23) | $\langle 9, 11^- \rangle$ | | | | | | | | | | | | |
| 5707.2(5) | | | | | | | | | | | | | |
| 5735.17(23) | $\langle 9, 11^- \rangle$ | | | | | | | | | | | | |
| 5776.26(17) | 12 ⁺ | | | | | | | | | | | | 94Sc04 |
| 5776.7(6) | | | | | | | | | | | | | |
| 5801.1(8) | | | | | | | | | | | | | |
| 5834.93(23) | $\langle 8, 10 \rangle^-$ | | | | | | | | | | | | |
| 5857.2(8) | | | | | | | | | | | | | |
| 5886.5(6) | | | | | | | | | | | | | |
| 5892.0(12) | | | | | | | | | | | | | |
| 5920.96(18) | 13 ⁺ | | | | | | | | | | | 1.4(1) ps | 94Sc04 |
| 5921.97(17) | 12 ⁻ | | | | | | | | | | | 1.1(2) ps | |
| 5956.2(6) | | | | | | | | | | | | | |
| 5974.21(24) | $\langle 12 \rangle^+$ | | | | | | | | | | | | |
| 5977.1(11) | | | | | | | | | | | | | |
| 6001.1(5) | | | | | | | | | | | | | |
| 6045.53(20) | 14 ⁺ | | | | | | | | | | | 13.8(1) ps | 94Sc04 |
| 6067.8(6) | | | | | | | | | | | | | |
| 6131.7(6) | | | | | | | | | | | | | |
| 6132.3(6) | | | | | | | | | | | | | |
| 6135.1(3) | | | | | | | | | | | | | |
| 6164.5(6) | | | | | | | | | | | | | |
| 6173.9(8) | | | | | | | | | | | | | |
| 6174.9(8) | | | | | | | | | | | | | |
| 6225.6(6) | | | | | | | | | | | | | |
| 6266.23(23) | 14 ⁺ | | | | | | | | | | | | 94Sc04 |
| 6279.01(18) | 13 ⁻ | | | | | | | | | | | 1.0(2) ps | |

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¹¹⁴Sn
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| E^* | J^π | $\sigma(\tau, n)$ | L | I_p | $\sigma(p, d)$ | S_N | $\sigma(d, t)$ | L | σ_{pt} | $\sigma(p, t)$ | β_L | $T_{1/2}$ or | Ref. |
|----------------|------------------------|-------------------|--------|--------|----------------|--------|----------------|--------|---------------|----------------|-----------|---------------|--------|
| [keV] | | $\mu b/sr$ | (t, p) | (t, p) | mb | (p, d) | $\mu b/sr$ | (p, t) | μb | $\mu b/sr$ | (p, p') | Γ_{cm} | |
| 6341.62(20) | 14 ⁺ | | | | | | | | | | | 0.3(1) ps | |
| 6460.44(24) | $\langle 13^- \rangle$ | | | | | | | | | | | | |
| 6496.4(6) | | | | | | | | | | | | | |
| 6497.3(3) | $\langle 14^+ \rangle$ | | | | | | | | | | | | |
| 6520.5(6) | | | | | | | | | | | | | |
| 6551.0(3) | | | | | | | | | | | | | |
| 6551.1(3) | 15 ⁺ | | | | | | | | | | | 3.6(4) ps | 94Sc04 |
| 6552.3(6) | | | | | | | | | | | | | |
| 6610.6(7) | | | | | | | | | | | | | |
| 6690.64(25) | $\langle 13^- \rangle$ | | | | | | | | | | | | |
| 6698.3(6) | | | | | | | | | | | | | |
| 6715.9(8) | 14 ⁻ | | | | | | | | | | | 0.6(3) ps | |
| 6725.6(12) | | | | | | | | | | | | | |
| 6925.7(4) | 16 ⁺ | | | | | | | | | | | | |
| 7115.1(6) | $\langle 15^- \rangle$ | | | | | | | | | | | 0.4(1) ps | |
| 7204.68(22) | 16 ⁺ | | | | | | | | | | | 0.35(4) ps | |
| 7205.18(23) | | | | | | | | | | | | | |
| ≈ 7300 | | | | | | | | 8 | | | | | 89Ge03 |
| 7369.7(6) | | | | | | | | | | | | | |
| 7377.1(8) | | | | | | | | | | | | | |
| 7607.9(9) | $\langle 16^- \rangle$ | | | | | | | | | | | 0.24(4) ps | |
| 7709.6(5) | | | | | | | | | | | | | |
| 7869.7(5) | | | | | | | | | | | | | |
| 8049.3(6) | $\langle 17^- \rangle$ | | | | | | | | | | | 0.21(6) ps | |
| 8131.4(5) | | | | | | | | | | | | | |
| 8142.7(3) | 18 ⁺ | | | | | | | | | | | 0.22(3) ps | |
| 8194.4(4) | | | | | | | | | | | | | |
| ≈ 8300 | | | | | | | | 6 | | | | | 89Ge03 |
| 8357.7(8) | | | | | | | | | | | | | |
| 8587.5(9) | $\langle 18^- \rangle$ | | | | | | | | | | | 0.10(4) ps | |
| 8644.6(5) | | | | | | | | | | | | | |
| 9060.7(6) | $\langle 19^- \rangle$ | | | | | | | | | | | 0.12(3) ps | |
| 9194.9(4) | 20 ⁺ | | | | | | | | | | | 0.15(2) ps | |
| 9647.5(10) | $\langle 20^- \rangle$ | | | | | | | | | | | 0.12(6) ps | |
| 10113.9(7) | $\langle 21^- \rangle$ | | | | | | | | | | | 0.12(6) ps | |
| 10359.0(5) | $\langle 22^+ \rangle$ | | | | | | | | | | | 0.08(2) ps | |
| 10778(1)** | $\langle 22^- \rangle$ | | | | | | | | | | | <0.43 ps | |
| 11174.7(7) | $\langle 23^- \rangle$ | | | | | | | | | | | 0.10(6) ps | |
| 11609.0(11) | $\langle 24^+ \rangle$ | | | | | | | | | | | 0.04(4) ps | |
| 12311.7(12) | $\langle 25^- \rangle$ | | | | | | | | | | | <0.35 ps | |
| 12943.0(15) | $\langle 26^+ \rangle$ | | | | | | | | | | | <0.18 ps | |
| 13516.7(16) | $\langle 27^- \rangle$ | | | | | | | | | | | | |
| 14406.0(18) | $\langle 28^+ \rangle$ | | | | | | | | | | | | |
| 14801.7(19) | $\langle 29^- \rangle$ | | | | | | | | | | | | |
| 15997(2)** | $\langle 30^+ \rangle$ | | | | | | | | | | | | |

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¹¹⁴Sn
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| E^* | J^π | σ (τ, n) | L | I_p | σ (p,d) | S_N | σ (d,t) | L | σ_{pt} | σ (p,t) | β_L | $T_{1/2}$ or | Ref. |
|-------------|------------------------|------------------------|--------|--------|----------------|--------|------------------|--------|---------------|------------------|-----------|----------------------|------|
| [keV] | | $\mu\text{b/sr}$ | (t,p) | (t,p) | mb | (p,d) | $\mu\text{b/sr}$ | (p,t) | μb | $\mu\text{b/sr}$ | (p,p') | Γ_{cm} | |
| 16236.7(21) | $\langle 31^- \rangle$ | | | | | | | | | | | | |
| 17871(2)** | $\langle 33^- \rangle$ | | | | | | | | | | | | |
| | | 77Fi04 | 69Bj01 | 69Bj01 | 82Fl02 | 82Fl02 | 67Sc12 | 79BlZZ | 04Gu01 | 70Fl08 | 68Ya01 | | Ref. |

Additional data on this isotope can be found in [02Ja04, 01Ga52, 95Ch27, 92Sc05, 91Go07, 91Sc03, 90Ar32, 81Cr01, 79Ra17, 77Cr04].

Abundance: 0.66(1) %.

* Doublets discussed in [04Gu01].

** Last levels of three intruder bands discussed in [01Ga52]; lifetimes and reduced transition probabilities (B(M1) etc.) of levels in many bands are given in [01Ga52].

σ (p,d) is a linear sum of $d\sigma/d\Omega$ from 10° to 50° .

Data for this isotope are considered in vol. LB I/18B.

Energy levels and branching ratios [04Gu01, 02Bl20]. Part 2

¹¹⁴Sn
50

| E^* | J^π | Branching ratios in percentage | | | | | | | | | |
|------------|------------------|--------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | | E_f^* : | 0 | 1300 | 1953 | 2156 | 2188 | 2239 | 2275 | 2422 | 2454.1 |
| [keV] | | J_f^π : | 0 ⁺ | 2 ⁺ | 0 ⁺ | 0 ⁺ | 4 ⁺ | 2 ⁺ | 3 ⁻ | 0 ⁺ | 2 ⁺ |
| 1299.91(1) | 2 ⁺ | | 100 | | | | | | | | |
| 1953.27(2) | 0 ⁺ | | x | 100 | | | | | | | |
| 2156.28(3) | 0 ⁺ | | | 100 | | | | | | | |
| 2187.60(1) | 4 ⁺ | | | 100 | | | | | | | |
| 2238.95(1) | 2 ⁺ | | 55(2) | 45(1) | 0.4(2) | | | | | | |
| 2274.99(1) | 3 ⁻ | | | 100 | | | | | | | |
| 2421.7(2) | 0 ⁺ | | | 100 | | | | | | | |
| 2454.07(2) | 2 ⁺ | | 21(3) | 77(2) | | | | 1.8(5) | | | |
| 2514.76(2) | 3 ⁺ | | | | | 100 | | | | | |
| 2614.46(2) | 4 ⁺ | | | 94(3) | | 2(1) | 3.0(5) | 0.28(8) | | | |
| 2738.4(5) | | | | | | 100 | | | | | |
| 2759.7(5) | | | | 100 | | | | | | | |
| 2765.36(4) | 4 ⁺ | | | 97(4) | | | | <5.4 | <3.5 | | |
| 2815.15(2) | 5 ⁻ | | | | | 89(3) | | 9.4(3) | | | |
| 2859.81(3) | 4 ⁺ | | | 100 | | | | | | | |
| 2905.12(5) | 4 ⁺ | | | 2.6(1) | | 77(5) | | | | | 0.25(10) |
| 2915.7(2) | 2 ⁺ | | 81(4) | 19(1) | | | | | | | |
| 2943.43(6) | 2 ⁺ | | 1.5(1) | 46(2) | 2(1) | | | 1.7(7) | 40(4) | 3(1) | 5(2) |
| 3025.29(6) | 0 ⁺ | | | 100 | | | | | | | |
| 3028.1(1) | 2,3 ⁺ | | | 100 | | | | | | | |
| 3071.4(5) | | | | 100 | | | | | | | |
| 3149.8(1) | 6 ⁺ | | | | | 47(2) | | | | | |
| 3186.13(8) | 2 ⁺ | | 34(4) | 66(5) | | | | | | | |
| 3188.92(5) | 6 ⁺ | | | | | 19(1) | | | | | |
| 3207.6(2) | 4 ⁺ | | | 56(3) | | 24(2) | | 11(2) | | | |

(continued)

¹¹⁴Sn₅₀

| E^* [keV] | J^π | Branching ratios in percentage | | | | | | | | | |
|----------------|---------------------------------|--------------------------------|---------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|--------------------------|
| | | $E_f^*:$ $J_f^\pi:$ | 0 0 ⁺ | 1300 2 ⁺ | 1953 0 ⁺ | 2156 0 ⁺ | 2188 4 ⁺ | 2239 2 ⁺ | 2275 3 ⁻ | 2422 0 ⁺ | 2454.1 2 ⁺ |
| 3211.8(2) | (1,2) | | 78(8) | 22(8) | | | | | | | |
| 3226.0(1) | 2 ⁺ ,3 ⁺ | | | 86(4) | | | | | | | 2.2(7) |
| 3242.1(1) | 5 ⁻ | | | | | | 100 | | | | |
| 3297.3(5) | | | | | | | 100 | | | | |
| 3308.4(6) | 0 ⁺ | | | 100 | | | | | | | |
| 3326.5(2) | 2 ⁺ | | 29(6) | 40(4) | 31(4) | | | | | | |
| 3357.4(2) | 4 ⁺ | | | 100 | | | | | | | |
| 3396.9(5) | (4 ⁻) | | | | | | | | 100 | | |
| 3422.7(9) | 0 ⁺ | | | 100 | | | | | | | |
| 3448.4(1) | 4 ⁺ | | | 21(10) | | | | 79(25) | | | |
| 3451.8(3) | 0 ⁺ | | 100 | | | | | | | | |
| 3471.4(3) | 6 ⁺ | | | | | | 100 | | | | |
| 3478.8(1) | 2 ⁺ | | 2.5(4) | 27(4) | 2(1) | | | 18(4) | 15(5) | | |
| 3514.2(1) | 2 ⁺ ,3 ⁺ | | | 100 | | | | | | | |
| 3525.36(16) | 3 ⁻ | | | | | | 9.2(4) | | 19(3) | | 64(3) |
| 3561.1(3) | 2 ⁺ | | 68(10) | | | 32(10) | | | | | |
| 3610.71(20) | 5 ⁻ (⁻) | | | | | | 100 | | | | |
| 3658.7(10) | 4 ⁺ | | | | | | 100 | | | | |
| 3720.4(5) | | | | | | | | | 100 | | |
| 3740.03(20) | 0 ⁺ | | | 100 | | | | | | | |
| 3781.98(8) | 2 ⁺ | | 0.1 | 15(1) | 2.7(5) | | 50(2) | | 17(1) | | 5.9(5) |
| 3991.39(12) | 2 ⁺ -4 ⁺ | | | | | | 30(3) | | 11.6(7) | | |
| 4029.83(9) | 2 ⁺ -4 ⁺ | | | 12(2) | | | 27(2) | | 8.2(5) | | 2.1(6) |
| 4046.82(15) | 5 ⁻ | | | | | | 100 | | | | |

Energy levels and branching ratios [04Gu01, 02Bl20]. Part 3

¹¹⁴Sn₅₀

| E^* [keV] | J^π | Branching ratios in percentage | | | | | | | | | |
|----------------|--------------------------------|--------------------------------|--------------------------|--------------------------|--------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | | $E_f^*:$ $J_f^\pi:$ | 2514.8 3 ⁺ | 2614.5 4 ⁺ | 2738.4 | 2765.4 4 ⁺ | 2815.1 5 ⁻ | 2859.8 4 ⁺ | 2905.1 4 ⁺ | 3087.4 7 ⁻ | 3149.8 6 ⁺ |
| 2765.36(4) | 4 ⁺ | | 2.6(11) | | | | | | | | |
| 2815.15(2) | 5 ⁻ | | | 1.2(3) | | | | | | | |
| 2905.12(5) | 4 ⁺ | | 19.3(13) | 0.82(10) | | | | | | | |
| 3087.37(7) | 7 ⁻ | | | | | | 100 | | | | |
| 3100.1(5) | | | | | | | 100 | | | | |
| 3107.1(5) | | | | | | | 100 | | | | |
| 3149.8(1) | 6 ⁺ | | | | | | 53(2) | | | | |
| 3188.92(5) | 6 ⁺ | | | 78.1(16) | | 3.2(6) | | | | | |
| 3190.4(1) | 8 ⁻ | | | | | | | | | 100 | |
| 3207.6(2) | 4 ⁺ | | | 6.2(10) | | 2.3(3) | | | | | |
| 3226.0(1) | 2 ⁺ ,3 ⁺ | | | | | | | | 11.6(10) | | |
| 3244.4(1) | 6 ⁻ | | | | | | 95.2(7) | | | 4.8(1) | |

(continued)

¹¹⁴Sn₅₀

| E^* | J^π | Branching ratios in percentage | | | | | | | | | |
|-------------|--------------------------------|--------------------------------|--------------------------|--------------------------|--------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| [keV] | | E_f^* : J_f^π : | 2514.8 3 ⁺ | 2614.5 4 ⁺ | 2738.4 | 2765.4 4 ⁺ | 2815.1 5 ⁻ | 2859.8 4 ⁺ | 2905.1 4 ⁺ | 3087.4 7 ⁻ | 3149.8 6 ⁺ |
| 3363.0(1) | 5 ⁻ | | | | | | 100 | | | | |
| 3364.8(5) | | | | | | | 100 | | | | |
| 3380.1(5) | | | | | | | | | | 100 | |
| 3393.0(7) | | | | | 100 | | | | | | |
| 3396.1(6) | 6 ⁺ | | | | | | | | | | 100 |
| 3478.8(1) | 2 ⁺ | | 17(2) | | | | | 8(1) | 11(1) | | |
| 3525.36(16) | 3 ⁻ | | 8(3) | | | | | | | | |
| 3566.5(1)* | 7 ⁻ | | | | | | 30.3(9) | | | | |
| 3685.15(21) | 6 ⁻ | | | | | | 100 | | | | |
| 3717.83(12) | 7 ⁻ | | | | | | 36.6(12) | | | x | |
| 3781.98(8) | 2 ⁺ | | | | | | | 9(2) | | | |
| 3889.3(6) | | | | | | | | | | | 100 |
| 3971.21(12) | 8 ⁻ | | | | | | | | | 63(2) | |
| 3991.39(12) | 2 ⁺ -4 ⁺ | | 3.8(4) | 19(1) | | | | 34(2) | | | |
| 4029.83(9) | 2 ⁺ -4 ⁺ | | 16(2) | 2.1(2) | | 12(2) | | 21(2) | | | |
| 4043.15(21) | 5 ⁻ | | | | | | 100 | | | | |
| 4088.74(16) | 8 ⁺ | | | | | | | | | x | x |
| 4141.50(16) | 8 ⁻ | | | | | | | | | x | |
| 4152.5(10) | | | | x | | | | | | | |
| 4220.89(17) | 6 ⁻ | | | | | | x | | | | |
| 4313.00(23) | 7 ⁺ | | | | | | | | | | 100 |
| 4430.36(12) | 7 ⁻ | | | | | | x | | | | |
| 4492.0(5) | | | | | | | 100 | | | | |
| 4553.3(4) | 8 ⁺ | | | | | | | | | | 100 |
| 4669.44(13) | 8 ⁻ | | | | | | | | | 71(6) | |
| 4678.7(7) | | | | | 100 | | | | | | |
| 4919.30(12) | 9 ⁻ | | | | | | | | | 74(7) | |
| 4923.70(13) | 9 ⁻ | | | | | | | | | x | |

Energy levels and branching ratios [04Gu01, 02Bl20]. Part 4

¹¹⁴Sn₅₀

| E^* | J^π | Branching ratios in percentage | | | | | | | | |
|-------------|------------------------|--------------------------------|--------------------------|--------------------------|--------------------------|--------|--------------------------|---------|--------|--------|
| [keV] | $E_f^*:$ $J_f^\pi:$ | 3188.9 6 ⁺ | 3190.4 8 [−] | 3242.0 5 [−] | 3244.4 6 [−] | 3297.3 | 3357.4 4 ⁺ | 3363.0 | 3364.8 | 3396.1 |
| 3392.1(5) | | 100 | | | | | | | | |
| 3510.7(1)* | 9 [−] | | 100 | | | | | | | |
| 3566.5(1)* | 7 [−] | | 65(2) | | x | | | 4.9(4) | | |
| 3717.83(12) | 7 [−] | | 50.3(12) | | x | | | 13.1(6) | | |
| 3854.3(7) | | | | | | 100 | | | | |
| 3871.28(9) | 8 ⁺ | 100 | | | | | | | | |
| 3971.21(12) | 8 [−] | | 18.7(8) | | | | | | | |
| 3987.6(5) | 3 [−] | | | | 100 | | | | | |

(continued)

¹¹⁴Sn
50

| E^* [keV] | J^π | Branching ratios in percentage | | | | | | | | | |
|----------------|--------------------------------|--------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------|--------------------------|--------|--------|--------|
| | | E_f^* : J_f^π : | 3188.9 6 ⁺ | 3190.4 8 ⁻ | 3242.0 5 ⁻ | 3244.4 6 ⁻ | 3297.3 | 3357.4 4 ⁺ | 3363.0 | 3364.8 | 3396.1 |
| 3991.39(12) | 2 ⁺ -4 ⁺ | | | | | | | 2.6(5) | | | |
| 4141.50(16) | 8 ⁻ | | | 70(4) | | | | | 30(4) | | |
| 4220.89(17) | 6 ⁻ | | | | | x | | | | | |
| 4262.0(5) | | | | | | | | | 100 | | |
| 4293.8(5) | | | | | | 100 | | | | | |
| 4322.0(5) | | | | | | x | | | x | | |
| 4338.3(5) | | | | | | 100 | | | | | |
| 4394.1(5) | | | | | | | | | 100 | | |
| 4403.0(5) | | 100 | | | | | | | | | |
| 4430.36(12) | 7 ⁻ | 45(4) | | | | | | | 26(4) | | |
| 4449.5(6) | | | | | 100 | | | | | | |
| 4515.0(5) | | | | | | 100 | | | | | |
| 4526.9(5) | | 100 | | | | | | | | | |
| 4583.7(5) | | | | | | 100 | | | | | |
| 4593.5(5) | | 100 | | | | | | | | | |
| 4613.0(5) | | 100 | | | | | | | | | |
| 4669.44(13) | 8 ⁻ | | | x | | x | | | | | |
| 4671.2(3) | 10 ⁻ | | | 100 | | | | | | | |
| 4683.1(5) | | 100 | | | | | | | | | |
| 4732.2(5) | | | | | | 100 | | | | | |
| 4736.38(16) | 10 ⁻ | | | 79.6(10) | | | | | | | |
| 4787.6(5) | | | | | | | | | 100 | | |
| 4919.30(12) | 9 ⁻ | | | x | | | | | | | |
| 4923.70(13) | 9 ⁻ | | | x | | | | | | | |
| 4926.9(5) | | 100 | | | | | | | | | |
| 4964.1(5) | | | | | | | | | 100 | | |
| 5039.2(5) | | | | | | | | | 100 | | |
| 5094.82(22) | ⟨10 ⁻ ⟩ | | | | | | | | | x | |
| 5419.5(8) | | | | | | | | | | | 100 |

Energy levels and branching ratios [04Gu01, 02Bl20]. Part 5

¹¹⁴Sn
50

| E^* [keV] | J^π | Branching ratios in percentage | | | | | | | | | |
|----------------|-----------------|--------------------------------|--------------------------|--------------------------|--------------------------|----------------------------|--------|--------------------------|--------------------------|--------------------------|--------------------------|
| | | E_f^* : J_f^π : | 3471.4 6 ⁺ | 3510.7 9 ⁻ | 3566.5 7 ⁻ | 3610.7 5 ^{⟨-⟩} | 3658.7 | 3717.8 7 ⁻ | 3871.3 8 ⁺ | 3871.3 2 ⁺ | 3971.2 8 ⁻ |
| 3855.6(6) | | | | | | 100 | | | | | |
| 3971.21(12) | 8 ⁻ | | | 9.2(4) | 9.2(4) | | | | | | |
| 4088.74(16) | 8 ⁺ | | | 90.7(21) | 9.3(11) | | | | | | |
| 4139.69(13) | 10 ⁺ | | | 100 | | | | | | | |
| 4220.89(17) | 6 ⁻ | | | | | x | | | | | |
| 4406.4(5) | | | | 100 | | | | | | | |
| 4428.6(9) | | | | | | | | | | 100 | |

(continued)

¹¹⁴Sn
50

| E^* | J^π | Branching ratios in percentage | | | | | | | | | |
|-------------|----------------------|--------------------------------|--------------------------|--------------------------|--------------------------|----------------------------|--------|--------------------------|--------------------------|--------------------------|--------------------------|
| [keV] | | $E_f^*:$ $J_f^\pi:$ | 3471.4 6 ⁺ | 3510.7 9 ⁻ | 3566.5 7 ⁻ | 3610.7 5 ⁽⁻⁾ | 3658.7 | 3717.8 7 ⁻ | 3871.3 8 ⁺ | 3871.3 2 ⁺ | 3971.2 8 ⁻ |
| 4434.5(5) | | | | 100 | | | | | | | |
| 4481.5(9) | | | | | | | | | | 100 | |
| 4568.3(6) | | | | | | | | | | | 100 |
| 4624.1(4) | 7 ⁻ | | 100 | | | | | | | | |
| 4664.88(22) | 9 ⁻ | | | | 100 | | | | | | |
| 4669.44(13) | 8 ⁻ | | | x | | | | | | | |
| 4671.2(3) | 10 ⁻ | | | x | | | | | | | |
| 4672.77(11) | 10 ⁺ | | | | | | | | 100 | | |
| 4682.1(11) | ⟨6 ⁺ ⟩ | | | | | | 100 | | | | |
| 4717.7(5) | | | | 100 | | | | | | | |
| 4736.38(16) | 10 ⁻ | | | 20.4(10) | | | | | | | |
| 4766.2(5) | | | | | 100 | | | | | | |
| 4766.4(5) | | | | 100 | | | | | | | |
| 4788.3(12) | | | | | | | 100 | | | | |
| 4858.7(8) | | x | | x | | | | | | | |
| 4916.41(23) | 10 ⁻ | | | 100 | | | | | | | |
| 4919.30(12) | 9 ⁻ | | | x | 26(3) | | | | | x | |
| 4923.70(13) | 9 ⁻ | | | 47(2) | | | | 41(2) | | x | x |
| 4924.3(9) | | | | | | | | | | 100 | |
| 4963.58(20) | 11 ⁻ | | | 100 | | | | | | | |
| 5014.2(6) | | | | | | | | 100 | | | |
| 5054.9(8) | 9 ⁻ | | | | | | | | | 100 | |
| 5094.82(22) | ⟨10 ⁻ ⟩ | | | 100 | | | | | | | |
| 5119.6(5) | | | | 100 | | | | | | | |
| 5124.2(5) | | | | 100 | | | | | | | |
| 5182.15(23) | | | | 100 | | | | | | | |
| 5213.5(4) | 10 ⁺ | | | 100 | | | | | | | |
| 5214.3(4) | ⟨10⟩ ⁺ | | | | | | | | x | | |
| 5221.6(3) | ⟨11⟩ ⁻ | | | 100 | | | | | | | |
| 5221.72(23) | | | | 100 | | | | | | | |
| 5233.60(15) | 10 ⁻ | | | 13(3) | | | | | | | 27(4) |
| 5254.9(4) | ⟨8,10⟩ ⁺ | | | 100 | | | | | | | |
| 5280.4(9) | | | | | | | | | | 50 | |
| 5310.72(23) | ⟨8,10 ⁺ ⟩ | | | 100 | | | | | | | |
| 5357.22(23) | ⟨8,10⟩ ⁺ | | | 100 | | | | | | | |
| 5372.3(6) | | | | | | | | | | | 100 |
| 5488.12(23) | ⟨9,11 ⁻ ⟩ | | | 100 | | | | | | | |
| 5500.1(5) | | | | 100 | | | | | | | |
| 5535.3(5) | | | | 100 | | | | | | | |
| 5627.92(23) | ⟨8,10 ⁺ ⟩ | | | 100 | | | | | | | |
| 5707.2(5) | | | | 100 | | | | | | | |
| 5834.93(23) | ⟨8,10⟩ ⁻ | | | 100 | | | | | | | |
| 6001.1(5) | | | | 100 | | | | | | | |

Energy levels and branching ratios [04Gu01, 02Bl20]. Part 6

 $^{114}_{50}\text{Sn}$

| E^* [keV] | J^π | Branching ratios in percentage | | | | | | | | | |
|----------------|------------------------|--------------------------------|--------------------------|--------------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------|--------------------------|--------------------------|
| | | $E_f^*:$ $J_f^\pi:$ | 4046.8 5 ⁻ | 4088.7 8 ⁺ | 4139.7 10 ⁺ | 4141.5 8 ⁻ | 4220.9 6 ⁻ | 4313.0 7 ⁺ | 4428.6 | 4430.4 7 ⁻ | 4553.3 8 ⁺ |
| 4220.89(17) | 6 ⁻ | | 100 | | | | | | | | |
| 4430.36(12) | 7 ⁻ | | 14(2) | | | | 16(2) | | | | |
| 4488.5(6) | | | | | | | | 100 | | | |
| 4669.44(13) | 8 ⁻ | | | | | | x | | | 29(6) | |
| 4805.8(6) | | | | | | | | 100 | | | |
| 4923.70(13) | 9 ⁻ | | | | | | | | | x | |
| 4932.3(6) | | | | | 100 | | | | | | |
| 5065.4(6) | | | | | | | | | | | 100 |
| 5102.9(11) | | | | | | | | | 100 | | |
| 5181.72(19) | 12 ⁺ | | | | 100 | | | | | | |
| 5191.4(6) | | | | | 100 | | | | | | |
| 5214.3(4) | $\langle 10 \rangle^+$ | | 100 | | | | | | | | |
| 5233.60(15) | 10 ⁻ | | | | | 14(1) | | | | | |
| 5299.32(21) | 11 ⁺ | | | | 100 | | | | | | |
| 5348.9(6) | | | | | | 100 | | | | | |
| 5445.3(8) | | | | | | | | x | | | x |
| 5596.9(11) | | | | | | | | | 100 | | |
| 5776.26(17) | 12 ⁺ | | | | 42(4) | | | | | | |
| 5886.5(6) | | | | | 100 | | | | | | |
| 5974.21(24) | $\langle 12 \rangle^+$ | | | | 100 | | | | | | |

Energy levels and branching ratios [04Gu01, 02Bl20]. Part 7

 $^{114}_{50}\text{Sn}$

| E^* [keV] | J^π | Branching ratios in percentage | | | | | | | | | |
|----------------|---------------------------|--------------------------------|--------|--------------------------|---------------------------|---------------------------|---------------------------|--------------------------|--------------------------|--------|---------------------------|
| | | $E_f^*:$ $J_f^\pi:$ | 4650.5 | 4669.4 8 ⁻ | 4671.2 10 ⁻ | 4672.8 10 ⁺ | 4736.4 10 ⁻ | 4919.3 9 ⁻ | 4923.7 9 ⁻ | 4926.9 | 4963.6 11 ⁻ |
| 4923.70(13) | 9 ⁻ | | | 11.8(12) | | | | | | | |
| 5226.6(5) | | | | | | | | | | | 100 |
| 5233.60(15) | 10 ⁻ | | | 31(2) | | | | 7(1) | 7(1) | | |
| 5280.4(9) | | 50 | | | | | | | | | |
| 5468.23(21) | $\langle 12^- \rangle$ | | | | | | 45.4(13) | | | | 55(4) |
| 5538.7(5) | 11 ⁺ | | | | 100 | | | | | | |
| 5548.24(14) | 12 ⁺ | | | | | 100 | | | | | |
| 5554.09(13) | 11 ⁻ | | | | | 29(2) | | 24(8) | 40 | | |
| 5586.6(7) | | | | | | | | | | 100 | |
| 5599.4(6) | | | | | 100 | | | | | | |
| 5699.87(23) | $\langle 9, 11^- \rangle$ | | | | | 100 | | | | | |
| 5735.17(23) | $\langle 9, 11^- \rangle$ | | | | | 100 | | | | | |
| 5776.26(17) | 12 ⁺ | | | | | 58(4) | | | | | |
| 5801.1(8) | | | | | x | | | | | | |
| 5857.2(8) | | | | | | x | | | | | |
| 5956.2(6) | | | | | | 100 | | | | | |

(continued)

¹¹⁴Sn
50

| E^* | J^π | Branching ratios in percentage | | | | | | | | | |
|-------------|------------------------|--------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | E_f^* : | 4650.5 | 4669.4 | 4671.2 | 4672.8 | 4736.4 | 4919.3 | 4923.7 | 4926.9 | 4963.6 |
| [keV] | | J_f^π : | | 8^- | 10^- | 10^+ | 10^- | 9^- | 9^- | | 11^- |
| <hr/> | | | | | | | | | | | |
| 6067.8(6) | | | | | | | | | | | 100 |
| 6132.3(6) | | | | | | | | | | | 100 |
| 6173.9(8) | | | | | | | | | | | x |
| 6225.6(6) | | | | | | | 100 | | | | |
| 6279.01(18) | 13^- | | | | | | | | | | x |
| 6460.44(24) | $\langle 13 \rangle^-$ | | | | | | | | | | 100 |
| 6520.5(6) | | | | | | | | | | | 100 |

Energy levels and branching ratios [04Gu01, 02Bl20]. Part 8

¹¹⁴Sn
50

| E^* | J^π | Branching ratios in percentage | | | | | | | | | |
|-------------|------------------------|--------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|------------------------|
| [keV] | | E_f^* : J_f^π : | 5102.9 | 5181.7 | 5182.1 | 5221.7 | 5226.6 | 5233.6 | 5280.4 | 5299.3 | 5468.2 |
| | | | | 12^+ | | | | 10^- | | 11^+ | $\langle 12^- \rangle$ |
| 5468.23(21) | $\langle 12^- \rangle$ | | | | | x | | | | | |
| 5554.09(13) | 11^- | | | | | | | 7(5) | | | |
| 5801.1(8) | | | | | | | x | | | | |
| 5892.0(12) | | | 100 | | | | | | | | |
| 5920.96(18) | 13^+ | | | 79(2) | | | | | | 14(2) | |
| 5921.97(17) | 12^- | | | | | | | 79(6) | | | |
| 5977.1(11) | | | | | | | | | 100 | | |
| 6045.53(20) | 14^+ | | | 90(3) | | | | | | | |
| 6131.7(6) | | | | | 100 | | | | | | |
| 6135.1(3) | | | | | 100 | | | | | | |
| 6164.5(6) | | | | | 100 | | | | | | |
| 6173.9(8) | | | | | | | | | | | x |
| 6174.9(8) | | | | | x | | | | | x | |
| 6266.23(23) | 14^+ | | | 50(3) | | | | | | | |
| 6341.62(20) | 14^+ | | | | 54(4) | | | | | | |
| 6551.0(3) | | | | 100 | | | | | | | |

Energy levels and branching ratios [04Gu01, 02Bl20]. Part 9

¹¹⁴Sn
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| E^* | J^π | Branching ratios in percentage | | | | | | | | | |
|-------------|---------|--------------------------------|--------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| [keV] | | E^*_f : | 5538.7 | 5548.2 | 5554.1 | 5776.3 | 5921.0 | 5922.0 | 5977.1 | 6045.5 | 6266.2 |
| | | J^π_f : | $\langle 9,11 \rangle^+$ | 12^+ | 11^- | 12^+ | 13^+ | 12^- | | 14^+ | 14^+ |
| 5776.7(6) | | | | 100 | | | | | | | |
| 5857.2(8) | | | | x | | | | | | | |
| 5920.96(18) | 13^+ | | | | | 7(1) | | | | | |
| 5921.97(17) | 12^- | | | | 21(3) | | | | | | |

(continued)

¹¹⁴Sn
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| E^* | J^π | Branching ratios in percentage | | | | | | | | | |
|-------------|------------------------|--------------------------------|------------------------------------|------------------|------------------|------------------|------------------|------------------|--------|------------------|------------------|
| [keV] | | $E_f^*:$ $J_f^\pi:$ | 5538.7 $\langle 9,11 \rangle^+$ | 5548.2 12^+ | 5554.1 11^- | 5776.3 12^+ | 5921.0 13^+ | 5922.0 12^- | 5977.1 | 6045.5 14^+ | 6266.2 14^+ |
| 6045.53(20) | 14^+ | | | | | | 10(2) | | | | |
| 6266.23(23) | 14^+ | | | | | | 50(2) | | | | |
| 6279.01(18) | 13^- | | | x | 81(5) | | | 19(2) | | | |
| 6341.62(20) | 14^+ | | | 46(2) | | | | | | | |
| 6496.4(6) | | | | 100 | | | | | | | |
| 6497.3(3) | $\langle 14 \rangle^+$ | | | | | | | | | 100 | |
| 6551.1(3) | 15^+ | | | | | | | | | 90(4) | 9.8(14) |
| 6552.3(6) | | | | 100 | | | | | | | |
| 6610.6(7) | | | 100 | | | | | | | | |
| 6690.64(25) | $\langle 13 \rangle^-$ | | | 100 | | | | | | | |
| 6698.3(6) | | | | 100 | | | | | | | |
| 6715.9(8) | 14^- | | | | | | | 92 | | | |
| 6725.6(12) | | | | | | | | | 100 | | |
| 6925.7(4) | 16^+ | | | | | | | | | <45 | |
| 7204.68(22) | 16^+ | | | | | | | | | 61(4) | |

Energy levels and branching ratios [04Gu01, 02Bl20]. Part 10

¹¹⁴Sn
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| E^* | J^π | Branching ratios in percentage | | | | | | | | | |
|-------------|--------------------|--------------------------------|---------------------------|---------------------------|---------------------------|------|---------------------------|---------------------------|---------------------------|------------------------------|---------------------------|
| [keV] | | E_f^* : J_f^π : | 6279.0 13 ⁻ | 6341.6 14 ⁺ | 6460 ⟨13⟩ ⁻ | 6496 | 6551.1 15 ⁺ | 6715.9 14 ⁻ | 6925.7 16 ⁺ | 7115.1 ⟨15 ⁻ ⟩ | 7204.7 16 ⁺ |
| 6715.9(8) | 14 ⁻ | | 7.8(2) | | | | | | | | |
| 6925.7(4) | 16 ⁺ | | | | | | 100 | | | | |
| 7115.1(6) | ⟨15 ⁻ ⟩ | | 94 | | | | | 5.9(2) | | | |
| 7204.68(22) | 16 ⁺ | | | 39(4) | | | | | | | |
| 7205.18(23) | | | x | | x | | | | | | |
| 7369.7(6) | | | | | | | 100 | | | | |
| 7377.1(8) | | | | | | 100 | | | | | |
| 7607.9(9) | ⟨16 ⁻ ⟩ | | | | | | | 91 | | 8.8(4) | |
| 7709.6(5) | | | | | | | | | 100 | | |
| 7869.7(5) | | | | | | | | | 100 | | |
| 8049.3(6) | ⟨17 ⁻ ⟩ | | | | | | | | | 100 | |
| 8131.4(5) | | | | | | | | | 100 | | |
| 8142.7(3) | 18 ⁺ | | | | | | | | | | 100 |
| 8194.4(4) | | | | | | | 100 | | | | |
| 8644.6(5) | | | | | | | | | 100 | | |

Energy levels and branching ratios [04Gu01, 02Bl20]. Part 11

¹¹⁴Sn
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| E^* | J^π | Branching ratios in percentage | | | | | | | | | |
|------------|------------------------|--------------------------------|------------------------|------------------------|--------|------------------------|------------------------|--------|------------------------|------------------------|-------|
| [keV] | | $E_f^*:$ $J_f^\pi:$ | 7377.1 | 7607.9 | 8049.3 | 8142.7 | 8587.5 | 9060.7 | 9194.9 | 9647.5 | 10114 |
| | | | $\langle 16^- \rangle$ | $\langle 17^- \rangle$ | 18^+ | $\langle 18^- \rangle$ | $\langle 19^- \rangle$ | 20^+ | $\langle 20^- \rangle$ | $\langle 21^- \rangle$ | |
| 8357.7(8) | | | 100 | | | | | | | | |
| 8587.5(9) | $\langle 18^- \rangle$ | | 95 | 4.9(7) | | | | | | | |
| 9060.7(6) | $\langle 19^- \rangle$ | | | | 100 | | | | | | |
| 9194.9(4) | 20^+ | | | | | 100 | | | | | |
| 9647.5(10) | $\langle 20^- \rangle$ | | | | | | 100 | | | | |
| 10113.9(7) | $\langle 21^- \rangle$ | | | | | | | 100 | | | |
| 10359.0(5) | $\langle 22^+ \rangle$ | | | | | | | | 100 | | |
| 10778(1)** | $\langle 22^- \rangle$ | | | | | | | | | 100 | |
| 11174.7(7) | $\langle 23^- \rangle$ | | | | | | | | | | 100 |

Energy levels and branching ratios [04Gu01, 02Bl20]. Part 12

¹¹⁴Sn
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| E^* | J^π | Branching ratios in percentage | | | | | | | | | |
|-------------|------------------------|--------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| | | E^*_f : | 10359 | 11175 | 11609 | 12312 | 12943 | 13517 | 14406 | 14802 | 16237 |
| [keV] | | J^π_f : | $\langle 22^+ \rangle$ | $\langle 23^- \rangle$ | $\langle 24^+ \rangle$ | $\langle 25^- \rangle$ | $\langle 26^+ \rangle$ | $\langle 27^- \rangle$ | $\langle 28^+ \rangle$ | $\langle 29^- \rangle$ | $\langle 31^- \rangle$ |
| 11609.0(11) | $\langle 24^+ \rangle$ | | 100 | | | | | | | | |
| 12311.7(12) | $\langle 25^- \rangle$ | | | 100 | | | | | | | |
| 12943.0(15) | $\langle 26^+ \rangle$ | | | | 100 | | | | | | |
| 13516.7(16) | $\langle 27^- \rangle$ | | | | | 100 | | | | | |
| 14406.0(18) | $\langle 28^+ \rangle$ | | | | | | 100 | | | | |
| 14801.7(19) | $\langle 29^- \rangle$ | | | | | | | 100 | | | |
| 15997(2)** | $\langle 30^+ \rangle$ | | | | | | | | 100 | | |
| 16236.7(21) | $\langle 31^- \rangle$ | | | | | | | | | 100 | |
| 17871(2)** | $\langle 33^- \rangle$ | | | | | | | | | | 100 |

Energy levels and branching ratios [99Bl28, 05Bl06].

¹¹⁵Sn
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| E^* | $2J^\pi$ | σ (d,p) | S_{dp} | L | C^2S | L | σ (p,d) | C^2S | S_N | L | C^2S | σ (d,t) | L | C^2S | σ (p,t) | Ref. |
|-------------|----------------------------|------------------|----------|---------------------|--------|-------|------------------|--------|----------|-----|--------|------------------|-----|--------------------|------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | | | (d,p) | (p,d) | $\mu\text{b/sr}$ | (p,d) | (p,d) | | (d,t) | $\mu\text{b/sr}$ | | (τ, α) | $\mu\text{b/sr}$ | |
| 0.0 | 1^+ | 3670 | 0.96 | 0 | 1.92 | 0 | 14000 | 0.75 | 1.00(10) | 0 | 0.7 | 1610 | | | 3300 | 67Sc12 |
| 497.334(22) | 3^+ | 3960 | 0.62 | 2 | 2.48 | 2 | 3220 | 0.90 | 1.30(15) | 2 | 0.9 | 314 | 2 | 1.2 | 330 | 80Ge01 |
| 612.81(4) | 7^+ | 209 | 0.19 | 4 | 1.52 | 4 | 2120 | 5.00 | 6.0(15) | 4 | 5.9 | 368 | 4 | 7.5 | 720 | 94Va28 |
| 713.64(12) | 11^- | 741 | 0.77 | 5 | 9.24 | 5 | 650 | 1.50 | 3.6(8) | 5 | 1.6 | 112 | 5 | 2.03 | 200 | 67Sc12 |
| 986.56(4) | 5^+ | 1520 | 0.12 | 2 | 0.72 | 2 | 15300 | 3.90 | 6.0(7) | 2 | 4.0 | 1430 | 2 | 4.7 | 1800 | 67Sc12 |
| 1280.28(5) | 3^+ | 400 | 0.03 | 2 | 0.12 | 2 | 270 | 0.095 | 0.14(3) | 2 | 0.1 | 80 | 2 | 0.055 | 170 | 67Sc12 |
| 1416.90(6) | 5^+ | | | | | 2 | 360 | 0.11 | 0.20(3) | 2 | 0.07 | | 2 | 0.205 | 680 | 70Ca01 |
| 1633.76(10) | $3^{(+)}$ | 630 | 0.04 | $\langle 2 \rangle$ | 0.18 | 2 | 340 | 0.13 | 0.17(4) | 2 | 0.13 | | 2 | 0.17 | 200 | 67Sc12 |
| 1643.52(23) | $\langle 7^-, 9^+ \rangle$ | | | | | | | incl | incl | | | | | | | 71Fl05 |

(continued)

¹¹⁵Sn
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| E^* | $2J^\pi$ | σ (d,p) | S_{dp} | L | C^2S | L | σ (p,d) | C^2S | S_N | L | C^2S | L | C^2S | σ (p,t) | Ref. |
|-------------|-------------------------------|------------------|----------|---------------------|--------|-------|------------------|--------|---------|---------------------|-----------------------|---------------------|------------------|------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | | | (d,p) | (p,d) | $\mu\text{b/sr}$ | (p,d) | (p,d) | | (d,t) | | (τ, α) | $\mu\text{b/sr}$ | |
| 1643.73(16) | $\langle 7^- \rangle$ | | | | | | | incl | incl | | | | | | 71Fl05 |
| 1734.06(11) | 5^+ | | | | | 2 | 490 | 0.14 | 0.20(5) | 2 | 0.15 | 2 | 0.18 | | 70Ca01 |
| 1785.92(15) | $\langle 9-13 \rangle^-$ | | | | | | | | incl | | | | | | |
| 1805(10) | $11^+, 13^+$ | | | | | | | | | | | 6 | 0.14 | | 77Be45 |
| 1824.93(21) | $\langle 3^+, 5^+ \rangle$ | | | | | | | | | | | | | | |
| 1857.40(10) | 7^+ | | | | | 4 | 70 | 0.39 | | 4 | 0.33 | 4 | 0.2 | | 70Ca01 |
| 1945.76(13) | $11^-, 13^-$ | | | | | | | | | 5 | 0.08 | 5 | 0.22 | | 77Be45 |
| 1974.0(5) | 1^+ | 410 | 0.08 | 0 | 0.16 | 0 | 1750 | 0.21 | 0.20(4) | 0 | 0.14 | | x | 60 | 79Ra17 |
| 1993.9(5) | $3^+, 5^+$ | | | | | | | | | | | $\langle 2 \rangle$ | | | 77Be45 |
| 1996.53(17) | $\langle 11^+ \rangle$ | | | | | | | | | | | | | | |
| 2025.48(13) | $\langle 15^- \rangle$ | | | | | | | | | | | | | | |
| 2060.15(21) | 5^+ | | | | | 2 | 280 | 0.11 | | 2 | 0.08 | 2 | x | | 70Ca01 |
| 2076.94(11) | $\langle 1^+ \rangle$ | 230 | 0.05 | $\langle 0 \rangle$ | 0.09 | | | | | | | | x | | 67Sc12 |
| 2084.27(14) | $\langle 9^+ \rangle$ | | | | | | | | | | | | | | |
| 2155.77(13) | $\langle 7^+ \rangle$ | | | | | | | | | $\langle 4 \rangle$ | | 4 | 0.12 | | 77Be45 |
| 2164.76(22) | $\langle 3^+, 5^+ \rangle$ | 330 | 0.02 | $\langle 2 \rangle$ | 0.08 | | | | | | | | | | 67Sc12 |
| 2193.16(20) | $\langle 3^+, 5^+ \rangle$ | | | | | | | | | | | | | | |
| 2196.6(4) | | | | | | | | | | | | | | | |
| 2207.48(14) | 5^+ | | | | | | | 0.19 | | 2 | 0.13 | 2 | x | | 77Be45 |
| 2230.27(23) | $\langle 3, 5^+ \rangle$ | | | | | | | | | | | | | | |
| 2265(5) | $1^-, 3^-$ | | | | | 1 | 150 | 0.04 | | 1 | 0.03 | | | | 70Ca01 |
| 2302(5) | $\langle 5^-, 7^- \rangle$ | | | | | | incl | | | $\langle 3 \rangle$ | $\langle 0.1 \rangle$ | 3 | ≈ 0.2 | | 70Ca01 |
| 2313.82(19) | $3^+, 5^+$ | | | | | 2 | incl | | | 2 | 0.02 | | | | 70Ca01 |
| 2347.43(14) | $\langle 11^- \rangle$ | | | | | | | | | | | | | | |
| 2352.16(18) | $\langle 1^+, 3, 5^+ \rangle$ | | | | | | | | | | | | | | |
| 2365.20(12) | $\langle 3^+, 5^+ \rangle$ | | | | | | | 0.13 | | 2 | 0.05 | | x | | 77Be45 |
| 2371(5) | $7^+, 9^+$ | | | | | | | | | 4 | 0.35 | 4 | ≈ 0.2 | | 77Be45 |
| 2440.22(9) | $\langle 7^+ \rangle$ | | | | | | | | | | | | | | |
| 2447.7(3) | $\langle 1^-, 3^- \rangle$ | | | | | | | | | | | $\langle 1 \rangle$ | | | 80Ge01 |
| 2486.7(9) | $7^+, 9^+$ | | | | | | | | | | | 4 | 0.11 | | 80Ge01 |
| 2510(10) | 5^+ | 350 | 0.02 | $\langle 2 \rangle$ | 0.13 | 2 | 70 | 0.04 | | 2 | 0.01 | | | | 67Sc12 |
| 2553.8(3) | $\langle 3^+, 5^+ \rangle$ | | | | | | | | | $\langle 2 \rangle$ | | | | | |
| 2560 | $\langle 1^-, 3^- \rangle$ | | | | | 1 | 65 | | | | | $\langle 1 \rangle$ | 0.15 | | 70Ca01 |
| 2592.35(19) | $\langle 15^- \rangle$ | | | | | | | | | | | | | | |
| 2592.7(6) | 1^- | | | | | | | 0.25 | | 1 | 0.16 | 1 | 0.32 | | 77Be45 |
| 2644.3(2) | 15^- | | | | | | | | | | | | | | |
| 2653.6(2) | 13^- | | | | | | | | | | | | | | |
| 2653.9(1) | $\langle 11^+ \rangle$ | | | | | | | | | | | | | | |
| 2685.51(14) | $\langle 17^- \rangle$ | | | | | | | | | | | | | | |
| 2745 | $11^+, 13^+$ | | | | | | | | | | | $\langle 6 \rangle$ | | | 80Ge01 |
| 2759.7(3) | | | | | | | | | | | | | | | |
| 2770(15) | $\langle 1^-, 3^- \rangle$ | 890 | 0.05 | $\langle 1 \rangle$ | 0.20 | | | | | | | | | | 67Sc12 |
| 2807.4(3) | 5^+ | | | | | 2 | 140 | 0.08 | | 2 | 0.05 | 2 | x | | 70Ca01 |
| 2808.3(2) | $\langle 15, 17 \rangle$ | | | | | | | | | | | | | | |
| 2843.4(1) | 15^- | | | | | | | | | 2 | 0.01 | | | | 77Be45 |

(continued)

¹¹⁵Sn
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| E^* | $2J^\pi$ | σ (d,p) | S_{dp} | L | C^2S | L | σ (p,d) | C^2S | S_N | L | C^2S | σ (d,t) | L | C^2S | σ (p,t) | Ref. |
|-------------|-----------------------------|------------------|----------|-----|--------|-------|------------------|--------|-------|---------------------|--------|------------------|---------------------|-----------------------|------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | | | (d,p) | (p,d) | $\mu\text{b/sr}$ | (p,d) | (p,d) | | (d,t) | $\mu\text{b/sr}$ | | (τ, α) | $\mu\text{b/sr}$ | |
| 2855(10) | $3^+, 5^+$ | | | | | | | | | | | | | | | |
| 2860 | $11^+, 13^+$ | | | | | | | | | | | | $\langle 6 \rangle$ | | | 80Ge01 |
| 2890 | $9^-, 11^-$ | | | | | | | | | | | 5 | 0.027 | | | 80Ge01 |
| 2912.85(18) | $\langle 13^+ \rangle$ | | | | | | | | | | | | | | | |
| 2930(10) | $\langle 9^-, 11^- \rangle$ | | | | | | | | | | | | | | | |
| 2938.24(17) | $\langle 17^- \rangle$ | | | | | | | | | | | | | | | |
| 2950(5) | 5^+ | 560 | 0.06 | | | [2] | 70 | 0.09 | | 2 | 0.03 | | 2 | 0.04 | | 70Ca01 |
| 2975.4(6) | $3^+, 5^+$ | | | | | | | | | 2 | 0.02 | | | | | 77Be45 |
| 2985 | $[11^-]$ | | | | | | | | | | | | 5 | 0.03 | | 80Ge01 |
| 3000(10) | $\langle 3^+, 5^+ \rangle$ | | | | | | | | | 2 | 0.03 | | | | | 77Be45 |
| 3004.09(13) | 19^- | | | | | | | | | | | | | | | |
| 3025(10) | $\langle 3^+, 5^+ \rangle$ | | | | | | | | | 2 | 0.02 | | | | | 77Be45 |
| 3043.25(17) | $\langle 15^+ \rangle$ | | | | | | | | | | | | | | | |
| 3060(20) | $7^+, 9^+$ | | | | | | | | | 4 | 0.03 | | 4 | | | 77Be45 |
| 3085(20) | $[11^-]$ | | | | | | | | | | | | [5] | 0.2 | | 80Ge01 |
| 3130(20) | $3^+, 5^+$ | | | | | | | | | 2 | 0.02 | | | | | 77Be45 |
| 3190(20) | $3^+, 5^+$ | | | | | | | 0.05 | | 2 | 0.01 | | | | | 77Be45 |
| 3191 | $9^-, 11^-$ | | | | | | | | | | | | 5 | 0.08 | | 80Ge01 |
| 3203.8(1) | 17^- | | | | | | | | | | | | | | | |
| 3204.9(1) | $\langle 15^+ \rangle$ | | | | | | | | | | | | | | | |
| 3206.0(4) | $\langle 3^+, 5^+ \rangle$ | | | | | | | | | $\langle 2 \rangle$ | | | | | | 77Be45 |
| 3220.17(15) | 17^+ | | | | | | | | | | | | | | | |
| 3258.80(14) | 19^- | | | | | | | | | | | | | | | |
| 3265(20) | $\langle 3^+, 5^+ \rangle$ | | | | | | | | | $\langle 2 \rangle$ | | | | | | 77Be45 |
| 3300(20) | $\langle 5^-, 7^- \rangle$ | | | | | | | | | $\langle 3 \rangle$ | | | 3 | 0.1,0.2 | | 77Be45 |
| 3318.66(13) | 19^- | | | | | | | | | | | | | | | |
| 3345(20) | $3^+, 5^+$ | | | | | | | | | 2 | 0.15 | | | | | 77Be45 |
| 3380(20) | | | | | | | | | | | | | | | | |
| 3385.64(14) | $\langle 19^+ \rangle$ | | | | | | | | | | | | | | | |
| 3405(20) | $9^-, 11^-$ | | | | | | | | | 5 | broad | | 5 | | | 77Be45 |
| 3420(20) | $3^+, 5^+$ | | | | | | | | | 2 | 0.019 | | | | | 77Be45 |
| 3470(20) | $3^+, 5^+$ | | | | | | | | | 2 | | | | | | 77Be45 |
| 3471.98(14) | 19^- | | | | | | | | | | | | | | | |
| 3500(20) | $7^+, 9^+$ | | | | | | | | | 4 | 0.058 | | 5,4 | $\langle 0.1 \rangle$ | | 77Be45 |
| 3509.75(14) | 21^+ | | | | | | | | | | | | | | | |
| 3526.25(18) | $\langle 17^+ \rangle$ | | | | | | | | | | | | | | | |
| 3533.29(15) | $\langle 19^+ \rangle$ | | | | | | | | | | | | | | | |
| 3550(20) | $3^+, 5^+$ | | | | | | | | | 2 | | | | | | 77Be45 |
| 3590(20) | | | | | | | | | | 4 | | | 4 | <0.07 | | 77Be45 |
| 3645(20) | $3^+, 5^+$ | | | | | | | | | 2 | | | | | | 77Be45 |
| 3665 | 9^+ | | | | | | | 0.17 | | 4 | 0.052 | | 4 | 0.2 | | 81Pe02 |
| 3666.6(2) | 23^+ | | | | | | | | | | | | | | | |
| 3690(20) | | | | | | | | | | | | | | | | |
| 3710(20) | $\langle 7^+, 9^+ \rangle$ | | | | | | | | | 4 | 0.037 | | 4 | incl | | 77Be45 |
| 3745.07(15) | $\langle 21^- \rangle$ | | | | | | | | | | | | | | | |

(continued)

¹¹⁵Sn
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| E^* | $2J^\pi$ | σ (d,p) | S_{dp} | L | C^2S | L | σ (p,d) | C^2S | S_N | L | C^2S | σ (d,t) | L | C^2S | σ (p,t) | E_{anal}^* | Ref. |
|-------------|------------------------|------------------|----------|-----|--------|-------|------------------|--------|-------|-----|--------|------------------|-----|--------------------|------------------|--------------|------|
| [keV] | | $\mu\text{b/sr}$ | | | (d,p) | (p,d) | $\mu\text{b/sr}$ | (p,d) | (p,d) | | (d,t) | $\mu\text{b/sr}$ | | (τ, α) | $\mu\text{b/sr}$ | [keV] | |
| 3839.49(14) | $\langle 25^+ \rangle$ | | | | | | | | | | | | | | | | |
| 3842.1(4) | | | | | | | | | | | | | | | | | |
| 3859.36(17) | $\langle 19^+ \rangle$ | | | | | | | | | | | | | | | | |
| 3879.22(13) | 21^- | | | | | | | | | | | | | | | | |
| 3890.2(2) | | | | | | | | | | | | | | | | | |
| 3959.95(15) | $\langle 23^+ \rangle$ | | | | | | | | | | | | | | | | |
| 3960 | $[9^+]$ | | | | | | | | | | | | 4 | 0.15 | | 80Ge01 | |
| 4029.8(4) | | | | | | | | | | | | | | | | | |
| 4040 | $[9^+]$ | | | | | | | | | | | | 4 | 0.17 | | 80Ge01 | |
| 4047.16(14) | 23^- | | | | | | | | | | | | | | | | |
| 4060.18(13) | $\langle 23^- \rangle$ | | | | | | | | | | | | | | | | |
| 4132.0(2) | | | | | | | | | | | | | [4] | 0.23 | | 80Ge01 | |
| 4163.0(4) | | | | | | | | | | | | | [4] | incl | | | |
| 4242.95(20) | $\langle 21^+ \rangle$ | | | | | | | | | | | | | | | | |
| 4272.25(16) | $\langle 27^+ \rangle$ | | | | | | | | | | | | | | | | |
| 4300 | $[9^+]$ | | | | | | | | | | | | 4 | 0.11 | | 80Ge01 | |
| 4400 | $[9^+]$ | | | | | | | | | | | | 4 | 0.15 | | 80Ge01 | |
| 4510 | $[9^+]$ | | | | | | | | | | | | 4 | 0.06 | | 80Ge01 | |
| 4610 | $[9^+]$ | | | | | | | | | | | | 4 | 0.09 | | 80Ge01 | |
| 4611.26(20) | $\langle 23^+ \rangle$ | | | | | | | | | | | | | | | | |
| 4635.8(5) | | | | | | | | | | | | | | | | | |
| 4687.95(15) | 25^- | | | | | | | | | | | | | | | | |
| 4800* | $[9^+]$ | | | | | | | | | | | | 4+1 | 0.104 | | 86Ma37 | |
| 4865.89(14) | 27^- | | | | | | | | | | | | | | | | |
| 4889.20(14) | $\langle 27^- \rangle$ | | | | | | | | | | | | | | | | |
| 4920* | $[9^+]$ | | | | | | | | | | | | 4 | 0.12 | | 86Ma37 | |
| 4960* | | | | | | | | | | | | | | | | 86Ma37 | |
| 5031.2(2) | | | | | | | | | | | | | | | | | |
| 5060.9(2) | $\langle 25^+ \rangle$ | | | | | | | | | | | | | | | | |
| 5080* | $[9^+]$ | | | | | | | | | | | | 4 | 0.20 | | 86Ma37 | |
| 5092.9(3) | | | | | | | | | | | | | | | | | |
| 5130* | $[9^+]$ | | | | | | | | | | | | 4 | 0.30 | | 86Ma37 | |
| 5225.6(3) | | | | | | | | | | | | | | | | | |
| 5250* | | | | | | | | | | | | | 4 | 1.07 | | 86Ma37 | |
| 5310* | | | | | | | | | | | | | | incl | | 86Ma37 | |
| 5330.86(16) | 29^+ | | | | | | | | | | | | | | | | |
| 5370* | | | | | | | | | | | | | | incl | | 86Ma37 | |
| 5417.87(22) | $\langle 27^+ \rangle$ | | | | | | | | | | | | | | | | |
| 5434.48(17) | 29^+ | | | | | | | | | | | | | | | | |
| 5458.4(3) | $\langle 27^+ \rangle$ | | | | | | | | | | | | | | | | |
| 5510* | $[9^+]$ | | | | | | | | | | | | 4 | 0.13 | | 86Ma37 | |
| 5599.76(19) | $\langle 29 \rangle$ | | | | | | | | | | | | | | | | |
| 5620* | $[9^+]$ | | | | | | | | | | | | 4 | 0.47 | | 86Ma37 | |
| 5629.54(16) | 29^- | | | | | | | | | | | | | | | | |
| 5659.9(2) | | | | | | | | | | | | | | | | | |

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¹¹⁵Sn
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| E^* | $2J^\pi$ | σ (d,p) | S_{dp} | L | C^2S | L | σ (p,d) | C^2S | S_N | L | C^2S | σ (d,t) | L | C^2S | σ (p,t) | E_{anal}^* | Ref. |
|-------------|------------------------|------------------|----------|-----|--------|-------|------------------|--------|-------|-----|--------|------------------|-----|--------------------|------------------|--------------|--------|
| [keV] | | $\mu\text{b/sr}$ | | | (d,p) | (p,d) | $\mu\text{b/sr}$ | (p,d) | (p,d) | | (d,t) | $\mu\text{b/sr}$ | | (τ, α) | $\mu\text{b/sr}$ | [keV] | |
| 5690* | | | | | | | | | | | | | | | | | 86Ma37 |
| 5748+X | $\langle 33 \rangle$ | | | | | | | | | | | | | | | | |
| 5750 | $[9^+]$ | | | | | | | | | | | | 4 | 0.27 | | | 80Ge01 |
| 5749.0(2) | $\langle 31^+ \rangle$ | | | | | | | | | | | | | | | | |
| 5790* | | | | | | | | | | | | | | | | | 86Ma37 |
| 5810.19(15) | 31^- | | | | | | | | | | | | | | | | |
| 5812.83(16) | $\langle 31^- \rangle$ | | | | | | | | | | | | | | | | |
| 5900 | $[9^+]$ | | | | | | | | | | | | 4+1 | 0.35 | | | 80Ge01 |
| 5911.49(17) | $\langle 31^+ \rangle$ | | | | | | | | | | | | | | | | |
| 5966.2(4) | $\langle 29^+ \rangle$ | | | | | | | | | | | | | | | | |
| 6002.0+X | $\langle 35 \rangle$ | | | | | | | | | | | | | | | | |
| 6050* | | | | | | | | | | | | | | incl | | | 86Ma37 |
| 6073.6(5) | | | | | | | | | | | | | | | | | |
| 6110* | | | | | | | | | | | | | | | | | 86Ma37 |
| 6210 | $[9^+]$ | | | | | | | | | | | | 4+1 | 0.28 | | | 80Ge01 |
| 6268.6(3) | $\langle 31^+ \rangle$ | | | | | | | | | | | | | | | | |
| 6286.64(18) | $\langle 33 \rangle$ | | | | | | | | | | | | | | | | |
| 6328.8+X | $\langle 37 \rangle$ | | | | | | | | | | | | | | | | |
| 6357.25(17) | $\langle 31^- \rangle$ | | | | | | | | | | | | | | | | |
| 6440* | | | | | | | | | | | | | | | | | 86Ma37 |
| 6461.3(3) | | | | | | | | | | | | | | | | | |
| 6470 | $[9^+]$ | | | | | | | | | | | | 4+1 | 0.21 | | | 80Ge01 |
| 6575.65(16) | $\langle 33^- \rangle$ | | | | | | | | | | | | | | | | |
| 6580* | | | | | | | | | | | | | | | | | 86Ma37 |
| 6685.2(3) | 33^- | | | | | | | | | | | | | | | | |
| 6700* | | | | | | | | | | | | | | | | | 86Ma37 |
| 6711.1+X | $\langle 39 \rangle$ | | | | | | | | | | | | | | | | |
| 6719.33(17) | 35^- | | | | | | | | | | | | | | | | |
| 6830.63(18) | $\langle 35^- \rangle$ | | | | | | | | | | | | | | | | |
| 6880* | | | | | | | | | | | | | | | | | 86Ma37 |
| 6949.60(17) | $\langle 35^- \rangle$ | | | | | | | | | | | | | | | | |
| 7010* | | | | | | | | | | | | | | | | | 86Ma37 |
| 7157.2(5) | $\langle 35^+ \rangle$ | | | | | | | | | | | | | | | | |
| 7204.2+X | $\langle 41 \rangle$ | | | | | | | | | | | | | | | | |
| 7248.65(18) | $\langle 37^- \rangle$ | | | | | | | | | | | | | | | | |
| 7683.62(20) | $\langle 39^- \rangle$ | | | | | | | | | | | | | | | | |
| 7826.3(11) | $\langle 37^- \rangle$ | | | | | | | | | | | | | | | | |
| 7830.2+X | $\langle 43 \rangle$ | | | | | | | | | | | | | | | | |
| 7922.6(3) | $\langle 39^- \rangle$ | | | | | | | | | | | | | | | | |
| 8163.2(11) | $\langle 39^+ \rangle$ | | | | | | | | | | | | | | | | |
| 9069.6(11) | $\langle 43^- \rangle$ | | | | | | | | | | | | | | | | |
| 13317** | 9^+ | | | | | | | | | | | | | | | 0 | 80Ta04 |
| 13694** | 1^- | | | | | | | | | | | | | | | 340 | 80Ta04 |
| 13948** | 3^- | | | | | | | | | | | | | | | 600 | 80Ta04 |
| 14330 | | | | | | | | | | | | | | | | 1040 | 80Ge01 |

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¹¹⁵Sn
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| E^* | σ (d,p) | S_{dp} | L | C^2S | L | σ (p,d) | C^2S | S_N | L | C^2S | σ (d,t) | L | C^2S | σ (p,t) | E_{anal}^* | Ref. |
|-------|------------------|----------|--------|--------|--------|------------------|--------|--------|--------|--------|------------------|--------|--------------------|------------------|--------------|--------|
| [keV] | $\mu\text{b/sr}$ | | | (d,p) | (p,d) | $\mu\text{b/sr}$ | (p,d) | (p,d) | | (d,t) | $\mu\text{b/sr}$ | | (τ, α) | $\mu\text{b/sr}$ | [keV] | |
| 14760 | | | | | | | | | | | | | | | 1480 | 80Ge01 |
| 14930 | | | | | | | | | | | | | | | 1670 | 80Ge01 |
| | | | 67Sc12 | | | 70Ca01 | | 82Fl02 | 77Be45 | 67Sc12 | | 80Ge01 | | | 80Ge01 | Ref. |
| | 67Sc12 | 67Sc12 | | | 86Ma37 | | 81Pe02 | | | | | | | 79Ra17 | | Ref. |

Additional data on this isotope can be found in [99Lo04, 97Se02, 91Vi10, 84Ga16, 82La12, 81Pe02, 81Si07, 80Ta04, 79Ch08, 79Ra17, 79Fl10, 77Va15, 74De10, 74Va17].

Abundance: 0.34(1) %.

* These levels correspond to maxima in deuteron yield (counts/MeV/ μC) in the (p,d) reaction shown in [86Ma37].

** Cross section of the (p,d), (τ, α) reactions and spectroscopic factors of these IAS states are considered in [77Se01].

Data for this isotope are considered in vol. LB I/18B.

Energy levels and branching ratios [99Bl28, 05Bl06]. Part 2

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| E^* | $2J^\pi$ | σ (p,d) | C^2S | L | σ (p,t) | $T_{1/2}$ or | Ref. | Branching ratios in percentage | | | | | | |
|-------------|-----------------------------------|------------------|--------|-------|------------------|-----------------------|--------|--------------------------------|----------------|----------------|----------------|-----------------|----------------|----------------|
| | | | | | | | | E_f^* : | 0.0 | 497 | 613 | 714 | 987 | 1280 |
| [keV] | | $\mu\text{b/sr}$ | (d,t) | (p,t) | $\mu\text{b/sr}$ | Γ_{cm} | | $2J_f^\pi$: | 1 ⁺ | 3 ⁺ | 7 ⁺ | 11 ⁻ | 5 ⁺ | 3 ⁺ |
| 0.0 | 1 ⁺ | 3900(450) | | 0 | 2160(200) | Stable | 67Sc12 | | | | | | | |
| 497.334(22) | 3 ⁺ | 1400(200) | | 2 | 220(30) | 11(2) ps | 80Ge01 | 100 | | | | | | |
| 612.81(4) | 7 ⁺ | 750(60) | 6.5 | 4 | 100(30) | 3.26(8) μs | 94Va28 | | 100 | | | | | |
| 713.64(12) | 11 ⁻ | 330(40) | 2.1 | 5 | 50(25) | 159(1) μs | 67Sc12 | | | | 100 | | | |
| 986.56(4) | 5 ⁺ | 5600(450) | 4.9 | 2 | 420(50) | 1.97(10) ps | 67Sc12 | 25(2) | 70(4) | 5.0(7) | | | | |
| 1280.28(5) | 3 ⁺ | | | 2 | 50(25) | 0.44(9) ps | 67Sc12 | 86(2) | 7.8(7) | 3.0(7) | | | 3.0(4) | |
| 1416.90(6) | 5 ⁺ | 160(20) | | 2 | 210(30) | 0.35(4) ps | 70Ca01 | 74(2) | 19(1) | 5.2(7) | | | 0.6(4) | 1.3(5) |
| 1633.76(10) | 3 ⁽⁺⁾ | | | 2 | 70(30) | | 67Sc12 | 83(6) | 7.1(13) | 7(1) | | | | 3(2) |
| 1643.52(23) | $\langle 7^-, 9^+ \rangle$ | | | | incl | | 71Fl05 | | | | | | 100 | |
| 1643.73(16) | $\langle 7^- \rangle$ | | | | incl | | 71Fl05 | | | | | 100 | | |
| 1734.06(11) | 5 ⁺ | | | | | | 70Ca01 | 4(2) | 39(13) | 39(7) | | | 10(4) | 8(3) |
| 1785.92(15) | $\langle 9-13 \rangle^-$ | | | | | | | | | | | 98 | | |
| 1805(10) | 11 ⁺ , 13 ⁺ | | | | | | 77Be45 | | | | | | | |
| 1824.93(21) | $\langle 3^+, 5^+ \rangle$ | | | | | | | 60(4) | 30(2) | 10(3) | | | | |
| 1857.40(10) | 7 ⁺ | | | | 100(30) | | 70Ca01 | 11(2) | 73(3) | 16(2) | | | | |
| 1945.76(13) | 11 ⁻ , 13 ⁻ | | | | | | 77Be45 | | | | | 100 | | |
| 1974.0(5) | 1 ⁺ | | | 0 | 130(30) | | 79Ra17 | 17(7) | 83(8) | | | | | |
| 1993.9(5) | 3 ⁺ , 5 ⁺ | | | | | | 77Be45 | | | | | | | |
| 1996.53(17) | $\langle 11^+ \rangle$ | | | | | | | | | | 100 | | | |
| 2025.48(13) | $\langle 15^- \rangle$ | | | | | | | | | | | 100 | | |
| 2060.15(21) | 5 ⁺ | | | | | | 70Ca01 | 24(8) | 76(5) | | | | | |
| 2076.94(11) | $\langle 1^+ \rangle$ | | | | | | 67Sc12 | | 100 | | | | | |
| 2084.27(14) | $\langle 9^+ \rangle$ | | | | | | | | 22(2) | 29(3) | | | 44(4) | 5(1) |
| 2155.77(13) | $\langle 7^+ \rangle$ | | | | | | 77Be45 | | 42(4) | 35(4) | | | 23(2) | |

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¹¹⁵Sn
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| E^* | $2J^\pi$ | σ (p,d) | C^2S | L | σ (p,t) | $T_{1/2}$ or | Ref. | Branching ratios in percentage | | | | | | |
|-------------|-----------------------------------|------------------|--------|-------|------------------|----------------------|--------|--------------------------------|-----------------------|-----------------------|-----------------------|------------------------|-----------------------|------------------------|
| [keV] | | $\mu\text{b/sr}$ | (d,t) | (p,t) | $\mu\text{b/sr}$ | Γ_{cm} | | E_f^* : $2J_f^\pi$: | 0.0 1 ⁺ | 497 3 ⁺ | 613 7 ⁺ | 714 11 ⁻ | 987 5 ⁺ | 1280 3 ⁺ |
| 2164.76(22) | $\langle 3^+, 5^+ \rangle$ | | | | | | 67Sc12 | | | 60(4) | | | 13(4) | |
| 2193.16(20) | $\langle 3^+, 5^+ \rangle$ | | | | | | | | 12(2) | 57(7) | 6(2) | | 25(7) | |
| 2196.6(4) | | | | | | | | | | | | | 60(10) | |
| 2207.48(14) | 5 ⁺ | | | | | | 77Be45 | | | | 48(4) | | 40(4) | |
| 2230.27(23) | $\langle 3, 5^+ \rangle$ | | | | | | | 57(5) | 22(7) | | | | 22(5) | |
| 2265(5) | 1 ⁻ , 3 ⁻ | | | | | | 70Ca01 | | | | | | | |
| 2302(5) | $\langle 5^-, 7^- \rangle$ | | | | | | 70Ca01 | | | | | | | |
| 2313.82(19) | 3 ⁺ , 5 ⁺ | | | | | | 70Ca01 | | | 85(15) | | | | |
| 2347.43(14) | $\langle 11^- \rangle$ | | | | | | | | | | | 52(6) | | |
| 2352.16(18) | $\langle 1^+, 3, 5^+ \rangle$ | | | | | | | 8(6) | 62(11) | | | | | |
| 2365.20(12) | $\langle 3^+, 5^+ \rangle$ | | | | | | 77Be45 | x | x | | 29(4) | | 51(4) | |
| 2371(5) | 7 ⁺ , 9 ⁺ | | | | | | 77Be45 | | | | | | | |
| 2440.22(9) | $\langle 7^+ \rangle$ | | | | | | | 11(3) | | | | | 78(8) | |
| 2447.7(3) | $\langle 1^-, 3^- \rangle$ | | | | | | 80Ge01 | | | | | | | |
| 2486.7(9) | 7 ⁺ , 9 ⁺ | | | | | | 80Ge01 | | | 100 | | | | |
| 2510(10) | 5 ⁺ | | | | | | 67Sc12 | | | | | | | |
| 2553.8(3) | $\langle 3^+, 5^+ \rangle$ | | | | | | | | | | 81(10) | | | |
| 2560 | $\langle 1^-, 3^- \rangle$ | | | | | | 70Ca01 | | | | | | | |
| 2592.35(19) | $\langle 15^- \rangle$ | | | | | | | | | | | 100 | | |
| 2592.7(6) | 1 ⁻ | | | | | | 77Be45 | | | | | | | |
| 2644.3(2) | 15 ⁻ | | | | | | | | | | | | | |
| 2653.6(2) | 13 ⁻ | | | | | | | | | | | | 23(1) | |
| 2653.9(1) | $\langle 11^+ \rangle$ | | | | | | | | | | | | 43(6) | |
| 2685.51(14) | $\langle 17^- \rangle$ | | | | | | | | | | | | | |
| 2745 | 11 ⁺ , 13 ⁺ | | | | | | 80Ge01 | | | | | | | |
| 2759.7(3) | | | | | | | | | | | | | 69(17) | |
| 2770(15) | $\langle 1^-, 3^- \rangle$ | | | | | | 67Sc12 | | | | | | | |
| 2807.4(3) | 5 ⁺ | | | | | | 70Ca01 | | | | | | | |
| 2808.3(2) | $\langle 15, 17 \rangle$ | | | | | | | | | | | | | |
| 2843.4(1) | 15 ⁻ | | | | | | 77Be45 | | | | | | | |
| 2855(10) | 3 ⁺ , 5 ⁺ | | | | | | | | | | | | | |
| 2860 | 11 ⁺ , 13 ⁺ | | | | | | 80Ge01 | | | | | | | |
| 2890 | 9 ⁻ , 11 ⁻ | | | | | | 80Ge01 | | | | | | | |
| 2912.85(18) | $\langle 13^+ \rangle$ | | | | | | | | | | | 100 | | |
| 2930(10) | $\langle 9^-, 11^- \rangle$ | | | | | | | | | | | | | |
| 2938.24(17) | $\langle 17^- \rangle$ | | | | | | | | | | | | | |
| 2950(5) | 5 ⁺ | | | | | | 70Ca01 | | | | | | | |
| 2975.4(6) | 3 ⁺ , 5 ⁺ | | | | | | 77Be45 | | | | | | | |
| 2985 | [11 ⁻] | | | | | | 80Ge01 | | | | | | | |
| 3000(10) | $\langle 3^+, 5^+ \rangle$ | | | | | | 77Be45 | | | | | | | |
| 3004.09(13) | 19 ⁻ | | | | | | | | | | | | | |
| 3025(10) | $\langle 3^+, 5^+ \rangle$ | | | | | | 77Be45 | | | | | | | |
| 3043.25(17) | $\langle 15^+ \rangle$ | | | | | | | | | | | | | |
| 3060(20) | 7 ⁺ , 9 ⁺ | | | | | | 77Be45 | | | | | | | |
| 3085(20) | [11 ⁻] | | | | | | 80Ge01 | | | | | | | |

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| E^* | $2J^\pi$ | σ (p,d) | C^2S | L | σ (p,t) | $T_{1/2}$ or | Ref. | Branching ratios in percentage | | | | | | |
|-------------|---------------------------------|------------------|--------|-------|------------------|----------------------|--------|--------------------------------|-----------------------|-----------------------|-----------------------|------------------------|-----------------------|------------------------|
| [keV] | | $\mu\text{b/sr}$ | (d,t) | (p,t) | $\mu\text{b/sr}$ | Γ_{cm} | | E_f^* : $2J_f^\pi$: | 0.0 1 ⁺ | 497 3 ⁺ | 613 7 ⁺ | 714 11 ⁻ | 987 5 ⁺ | 1280 3 ⁺ |
| 3130(20) | 3 ⁺ ,5 ⁺ | | | | | | 77Be45 | | | | | | | |
| 3190(20) | 3 ⁺ ,5 ⁺ | | | | | | 77Be45 | | | | | | | |
| 3191 | 9 ⁻ ,11 ⁻ | | | | | | 80Ge01 | | | | | | | |
| 3203.8(1) | 17 ⁻ | | | | | | | | | | | | | |
| 3204.9(1) | $\langle 15^+ \rangle$ | | | | | | | | | | | | | |
| 3206.0(4) | $\langle 3^+, 5^+ \rangle$ | | | | | | 77Be45 | | | | 50(30) | | 50(30) | |
| 3220.17(15) | 17 ⁺ | | | | | | | | | | | | | |
| 3258.80(14) | 19 ⁻ | | | | | | | | | | | | | |
| 3265(20) | $\langle 3^+, 5^+ \rangle$ | | | | | | 77Be45 | | | | | | | |
| 3300(20) | $\langle 5^-, 7^- \rangle$ | | | | | | 77Be45 | | | | | | | |
| 3318.66(13) | 19 ⁻ | | | | | | | | | | | | | |
| 3345(20) | 3 ⁺ ,5 ⁺ | | | | | | 77Be45 | | | | | | | |
| 3380(20) | | | | | | | | | | | | | | |
| 3385.64(14) | $\langle 19^+ \rangle$ | | | | | | | | | | | | | |
| 3405(20) | 9 ⁻ ,11 ⁻ | | | | | | 77Be45 | | | | | | | |
| 3420(20) | 3 ⁺ ,5 ⁺ | | | | | | 77Be45 | | | | | | | |
| 3470(20) | 3 ⁺ ,5 ⁺ | | | | | | 77Be45 | | | | | | | |
| 3471.98(14) | 19 ⁻ | | | | | | | | | | | | | |
| 3500(20) | 7 ⁺ ,9 ⁺ | | | | | | 77Be45 | | | | | | | |
| 3509.75(14) | 21 ⁺ | | | | | | | | | | | | | |
| 3526.25(18) | $\langle 17^+ \rangle$ | | | | | | | | | | | | | |
| 3533.29(15) | $\langle 19^+ \rangle$ | | | | | | | | | | | | | |
| 3550(20) | 3 ⁺ ,5 ⁺ | | | | | | 77Be45 | | | | | | | |
| 3590(20) | | | | | | | 77Be45 | | | | | | | |
| 3645(20) | 3 ⁺ ,5 ⁺ | | | | | | 77Be45 | | | | | | | |
| 3665 | 9 ⁺ | | | | | | 81Pe02 | | | | | | | |
| 3666.6(2) | 23 ⁺ | | | | | | | | | | | | | |
| 3690(20) | | | | | | | | | | | | | | |
| 3710(20) | $\langle 7^+, 9^+ \rangle$ | | | | | | 77Be45 | | | | | | | |
| 3745.07(15) | $\langle 21^- \rangle$ | | | | | | | | | | | | | |
| 3839.49(14) | $\langle 25^+ \rangle$ | | | | | | | | | | | | | |
| 3842.1(4) | | | | | | | | | | | | | | |
| 3859.36(17) | $\langle 19^+ \rangle$ | | | | | | | | | | | | | |
| 3879.22(13) | 21 ⁻ | | | | | | | | | | | | | |
| 3890.2(2) | | | | | | | | | | | | | | |
| 3959.95(15) | $\langle 23^+ \rangle$ | | | | | | | | | | | | | |
| 3960 | [9 ⁺] | | | | | | 80Ge01 | | | | | | | |
| 4029.8(4) | | | | | | | | | | | | | | |
| 4040 | [9 ⁺] | | | | | | 80Ge01 | | | | | | | |
| 4047.16(14) | 23 ⁻ | | | | | | | | | | | | | |
| 4060.18(13) | $\langle 23^- \rangle$ | | | | | | | | | | | | | |
| 4132.0(2) | | | | | | | 80Ge01 | | | | | | | |
| 4163.0(4) | | | | | | | | | | | | | | |
| 4242.95(20) | $\langle 21^+ \rangle$ | | | | | | | | | | | | | |
| 4272.25(16) | $\langle 27^+ \rangle$ | | | | | | | | | | | | | |

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| E^* | $2J^\pi$ | σ (p,d) | C^2S | L | σ (p,t) | $T_{1/2}$ or | Ref. | Branching ratios in percentage | | | | | | |
|-------------|------------------------|------------------|--------|-------|------------------|----------------------|--------|---|-----------------------|-----------------------|-----------------------|------------------------|-----------------------|------------------------|
| [keV] | | $\mu\text{b/sr}$ | (d,t) | (p,t) | $\mu\text{b/sr}$ | Γ_{cm} | | E_{f}^* : $2J_{\text{f}}^\pi$: | 0.0 1 ⁺ | 497 3 ⁺ | 613 7 ⁺ | 714 11 ⁻ | 987 5 ⁺ | 1280 3 ⁺ |
| 4300 | [9 ⁺] | | | | | | 80Ge01 | | | | | | | |
| 4400 | [9 ⁺] | | | | | | 80Ge01 | | | | | | | |
| 4510 | [9 ⁺] | | | | | | 80Ge01 | | | | | | | |
| 4610 | [9 ⁺] | | | | | | 80Ge01 | | | | | | | |
| 4611.26(20) | $\langle 23^+ \rangle$ | | | | | | | | | | | | | |
| 4635.8(5) | | | | | | | | | | | | | | |
| 4687.95(15) | 25 ⁻ | | | | | | | | | | | | | |
| 4800* | [9 ⁺] | | | | | | 86Ma37 | | | | | | | |
| 4865.89(14) | 27 ⁻ | | | | | | | | | | | | | |
| 4889.20(14) | $\langle 27^- \rangle$ | | | | | | | | | | | | | |
| 4920* | [9 ⁺] | | | | | | 86Ma37 | | | | | | | |
| 4960* | | | | | | | 86Ma37 | | | | | | | |
| 5031.2(2) | | | | | | | | | | | | | | |
| 5060.9(2) | $\langle 25^+ \rangle$ | | | | | | | | | | | | | |
| 5080* | [9 ⁺] | | | | | | 86Ma37 | | | | | | | |
| 5092.9(3) | | | | | | | | | | | | | | |
| 5130* | [9 ⁺] | | | | | | 86Ma37 | | | | | | | |
| 5225.6(3) | | | | | | | | | | | | | | |
| 5250* | | | | | | | 86Ma37 | | | | | | | |
| 5310* | | | | | | | 86Ma37 | | | | | | | |
| 5330.86(16) | 29 ⁺ | | | | | | | | | | | | | |
| 5370* | | | | | | | 86Ma37 | | | | | | | |
| 5417.87(22) | $\langle 27^+ \rangle$ | | | | | | | | | | | | | |
| 5434.48(17) | 29 ⁺ | | | | | | | | | | | | | |
| 5458.4(3) | $\langle 27^+ \rangle$ | | | | | | | | | | | | | |
| 5510* | [9 ⁺] | | | | | | 86Ma37 | | | | | | | |
| 5599.76(19) | $\langle 29 \rangle$ | | | | | | | | | | | | | |
| 5620* | [9 ⁺] | | | | | | 86Ma37 | | | | | | | |
| 5629.54(16) | 29 ⁻ | | | | | | | | | | | | | |
| 5659.9(2) | | | | | | | | | | | | | | |
| 5690* | | | | | | | 86Ma37 | | | | | | | |
| 5748+X | $\langle 33 \rangle$ | | | | | | | | | | | | | |
| 5750 | [9 ⁺] | | | | | | 80Ge01 | | | | | | | |
| 5749.0(2) | $\langle 31^+ \rangle$ | | | | | | | | | | | | | |
| 5790* | | | | | | | 86Ma37 | | | | | | | |
| 5810.19(15) | 31 ⁻ | | | | | | | | | | | | | |
| 5812.83(16) | $\langle 31^- \rangle$ | | | | | | | | | | | | | |
| 5900 | [9 ⁺] | | | | | | 80Ge01 | | | | | | | |
| 5911.49(17) | $\langle 31^+ \rangle$ | | | | | | | | | | | | | |
| 5966.2(4) | $\langle 29^+ \rangle$ | | | | | | | | | | | | | |
| 6002.0+X | $\langle 35 \rangle$ | | | | | | | | | | | | | |
| 6050* | | | | | | | 86Ma37 | | | | | | | |
| 6073.6(5) | | | | | | | | | | | | | | |
| 6110* | | | | | | | 86Ma37 | | | | | | | |
| 6210 | [9 ⁺] | | | | | | 80Ge01 | | | | | | | |

(continued)

¹¹⁵Sn
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| E^* [keV] | $2J^\pi$ | σ (p,d) $\mu\text{b/sr}$ | C^2S (d,t) | L (p,t) | σ (p,t) $\mu\text{b/sr}$ | $T_{1/2}$ or Γ_{cm} | Ref. | Branching ratios in percentage | | | | | | |
|----------------|------------------------|------------------------------------|-----------------|--------------|------------------------------------|--------------------------------------|--------|--------------------------------|----------------|----------------|----------------|-----------------|----------------|----------------|
| | | | | | | | | E_f^* : | 0.0 | 497 | 613 | 714 | 987 | 1280 |
| | | | | | | | | $2J_f^\pi$: | 1 ⁺ | 3 ⁺ | 7 ⁺ | 11 ⁻ | 5 ⁺ | 3 ⁺ |
| 6268.6(3) | $\langle 31^+ \rangle$ | | | | | | | | | | | | | |
| 6286.64(18) | $\langle 33 \rangle$ | | | | | | | | | | | | | |
| 6328.8+X | $\langle 37 \rangle$ | | | | | | | | | | | | | |
| 6357.25(17) | $\langle 31^- \rangle$ | | | | | | | | | | | | | |
| 6440* | | | | | | | 86Ma37 | | | | | | | |
| 6461.3(3) | | | | | | | | | | | | | | |
| 6470 | [9 ⁺] | | | | | | 80Ge01 | | | | | | | |
| 6575.65(16) | $\langle 33^- \rangle$ | | | | | | | | | | | | | |
| 6580* | | | | | | | 86Ma37 | | | | | | | |
| 6685.2(3) | 33 ⁻ | | | | | | | | | | | | | |
| 6700* | | | | | | | 86Ma37 | | | | | | | |
| 6711.1+X | $\langle 39 \rangle$ | | | | | | | | | | | | | |
| 6719.33(17) | 35 ⁻ | | | | | | | | | | | | | |
| 6830.63(18) | $\langle 35^- \rangle$ | | | | | | | | | | | | | |
| 6880* | | | | | | | 86Ma37 | | | | | | | |
| 6949.60(17) | $\langle 35^- \rangle$ | | | | | | | | | | | | | |
| 7010* | | | | | | | 86Ma37 | | | | | | | |
| 7157.2(5) | $\langle 35^+ \rangle$ | | | | | | | | | | | | | |
| 7204.2+X | $\langle 41 \rangle$ | | | | | | | | | | | | | |
| 7248.65(18) | $\langle 37^- \rangle$ | | | | | | | | | | | | | |
| 7683.62(20) | $\langle 39^- \rangle$ | | | | | | | | | | | | | |
| 7826.3(11) | $\langle 37^- \rangle$ | | | | | | | | | | | | | |
| 7830.2+X | $\langle 43 \rangle$ | | | | | | | | | | | | | |
| 7922.6(3) | $\langle 39^- \rangle$ | | | | | | | | | | | | | |
| 8163.2(11) | $\langle 39^+ \rangle$ | | | | | | | | | | | | | |
| 9069.6(11) | $\langle 43^- \rangle$ | | | | | | | | | | | | | |
| 13317** | 9 ⁺ | | | | | 33(8) keV | 80Ta04 | | | | | | | |
| 13694** | 1 ⁻ | | | | | 22(8) keV | 80Ta04 | | | | | | | |
| 13948** | 3 ⁻ | | | | | 23(6) keV | 80Ta04 | | | | | | | |
| 14330 | | | | | | | 80Ge01 | | | | | | | |
| 14760 | | | | | | | 80Ge01 | | | | | | | |
| 14930 | | | | | | | 80Ge01 | | | | | | | |
| | | | | | | 80Ta04 | Ref. | | | | | | | |
| | | 82F102 | 94Va28 | | 71F105 | | Ref. | | | | | | | |

Energy levels and branching ratios [99Bl28, 05Bl06]. Part 3

¹¹⁵Sn
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| E^* [keV] | $2J^\pi$ | Branching ratios in percentage | | | | | | | | | | | |
|----------------|---------------------------------|--------------------------------|----------------|------------------|----------------------------|-----------------------|----------------|--------------------------|----------------|-----------------------------------|------------------------|------------------------|--|
| | | E_f^* : | 1417 | 1634 | 1643.5 | 1643.7 | 1734.1 | 1785.9 | 1857.4 | 1945.8 | 1996.5 | 2025.5 | |
| | | $2J_f^\pi$: | 5 ⁺ | 3 ⁽⁺⁾ | $\langle 7^-, 9^+ \rangle$ | $\langle 7^- \rangle$ | 5 ⁺ | $\langle 9-13 \rangle^-$ | 7 ⁺ | 11 ⁻ , 13 ⁻ | $\langle 11^+ \rangle$ | $\langle 15^- \rangle$ | |
| 1785.92(15) | $\langle 9-13 \rangle^-$ | | | 2.2(6) | | | | | | | | | |
| 1993.9(5) | 3 ⁺ , 5 ⁺ | | | | 100 | | | | | | | | |

(continued)

 $^{115}_{50}\text{Sn}$

| E^* [keV] | $2J^\pi$ | Branching ratios in percentage | | | | | | | | | | |
|----------------|-------------------------------------|--------------------------------|------------------------|--------------------------|---|-----------------------------|--------------------------|-------------------------------|--------------------------|--|------------------------------|------------------------------|
| | | E_f^* : $2J_f^\pi$: | 1417 5 ⁺ | 1634 3 ⁽⁺⁾ | 1643.5 ⟨7 ⁻ ,9 ⁺ ⟩ | 1643.7 ⟨7 ⁻ ⟩ | 1734.1 5 ⁺ | 1785.9 ⟨9-13⟩ ⁻ | 1857.4 7 ⁺ | 1945.8 11 ⁻ ,13 ⁻ | 1996.5 ⟨11 ⁺ ⟩ | 2025.5 ⟨15 ⁻ ⟩ |
| 2164.76(22) | ⟨3 ⁺ ,5 ⁺ ⟩ | | | | 18(2) | | | | 9(2) | | | |
| 2196.6(4) | | | 40(7) | | | | | | | | | |
| 2207.48(14) | 5 ⁺ | | 6(2) | 6(1) | | | | | | | | |
| 2313.82(19) | 3 ⁺ ,5 ⁺ | | 15(6) | | | | | | | | | |
| 2347.43(14) | ⟨11 ⁻ ⟩ | | | | | 19(4) | | 23(6) | | 6(1) | | |
| 2352.16(18) | ⟨1 ⁺ ,3,5 ⁺ ⟩ | | | | | | 30(6) | | | | | |
| 2365.20(12) | ⟨3 ⁺ ,5 ⁺ ⟩ | | 19(3) | | | | | | | | | |
| 2447.7(3) | ⟨1 ⁻ ,3 ⁻ ⟩ | | 50(3) | 50(8) | | | | | | | | |
| 2653.6(2) | 13 ⁻ | | | | | | | 48(5) | | | | 26(2) |
| 2685.51(14) | ⟨17 ⁻ ⟩ | | | | | | | | | 62(2) | | 38(2) |
| 2759.7(3) | | | | | | | | | | | | 31(6) |
| 2807.4(3) | 5 ⁺ | | | | | | | | | 100 | | |
| 2808.3(2) | ⟨15,17⟩ | | | | | | | | | 100 | | |
| 2843.4(1) | 15 ⁻ | | | | | | | | | 30(5) | | 15(3) |
| 2938.24(17) | ⟨17 ⁻ ⟩ | | | | | | | | | 44(8) | | 29(10) |
| 3004.09(13) | 19 ⁻ | | | | | | | | | | | 96(1) |
| 3043.25(17) | ⟨15 ⁺ ⟩ | | | | | | | | | | 100 | |
| 3203.8(1) | 17 ⁻ | | | | | | | | | 9(1) | | 24(3) |
| 3220.17(15) | 17 ⁺ | | | | | | | | | | | 100 |
| 3258.80(14) | 19 ⁻ | | | | | | | | | | | 56.3(6) |
| 3318.66(13) | 19 ⁻ | | | | | | | | | | | 91(5) |
| 3471.98(14) | 19 ⁻ | | | | | | | | | | | 68(2) |
| 3842.1(4) | | | 100 | | | | | | | | | |

Energy levels and branching ratios [99Bl28, 05Bl06]. Part 4

 $^{115}_{50}\text{Sn}$

| E^* [keV] | $2J^\pi$ | Branching ratios in percentage | | | | | | | | | | |
|----------------|-----------------------------------|--------------------------------|-----------------------------|-----------------------------|---|--------------------------|------------------------------|---|-----------------------------|------------------------------|--------------------------|---------------------------|
| | | E_f^* : $2J_f^\pi$: | 2084.3 ⟨9 ⁺ ⟩ | 2155.8 ⟨7 ⁺ ⟩ | 2164.8 ⟨3 ⁺ ,5 ⁺ ⟩ | 2207.5 5 ⁺ | 2347.4 ⟨11 ⁻ ⟩ | 2365.2 ⟨3 ⁺ ,5 ⁺ ⟩ | 2440.2 ⟨7 ⁺ ⟩ | 2592.3 ⟨15 ⁻ ⟩ | 2592.7 1 ⁻ | 2644.3 15 ⁻ |
| 2440.22(9) | ⟨7 ⁺ ⟩ | | | | | 11(5) | | | | | | |
| 2553.8(3) | ⟨3 ⁺ ,5 ⁺ ⟩ | | | | | | | 19(5) | | | | |
| 2653.6(2) | 13 ⁻ | | | | | | 3.5(9) | | | | | |
| 2653.9(1) | ⟨11 ⁺ ⟩ | | 9(1) | 14(1) | | 13(1) | 11(1) | 6(1) | 5(1) | | | |
| 2843.4(1) | 15 ⁻ | | | | | | 45(5) | | | | | |
| 2938.24(17) | ⟨17 ⁻ ⟩ | | | | | | | | | 9(4) | | |
| 2975.4(6) | 3 ⁺ ,5 ⁺ | | | | 100 | | | | | | | |
| 3203.8(1) | 17 ⁻ | | | | | | | | | | | 5.0(8) |
| 3318.66(13) | 19 ⁻ | | | | | | | | | | 1.8(5) | 2.7(5) |

Energy levels and branching ratios [99Bl28, 05Bl06]. Part 5

¹¹⁵Sn
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| E^* [keV] | $2J^\pi$ | Branching ratios in percentage | | | | | | | | | | |
|----------------|--------------------|--------------------------------|---------------------------|------------------------------|------------------------------|--------------------------|-------------------|---------------------------|------------------------------|------------------------------|---------------------------|------------------------------|
| | | E_f^* : $2J_f^\pi$: | 2653.6 13 ⁻ | 2653.9 ⟨11 ⁺ ⟩ | 2685.5 ⟨17 ⁻ ⟩ | 2807.4 5 ⁺ | 2808.3 ⟨15,17⟩ | 2843.3 15 ⁻ | 2912.8 ⟨13 ⁺ ⟩ | 2938.2 ⟨17 ⁻ ⟩ | 3004.1 19 ⁻ | 3043.2 ⟨15 ⁺ ⟩ |
| 2843.4(1) | 15 ⁻ | | | 11(3) | | | | | | | | |
| 2938.24(17) | ⟨17 ⁻ ⟩ | | | | 19(5) | | | | | | | |
| 3004.09(13) | 19 ⁻ | | | | 4.5(1) | | | | | | | |
| 3203.8(1) | 17 ⁻ | | 44(1) | | | | | 17(1) | | | | |
| 3204.9(1) | ⟨15 ⁺ ⟩ | | | 97(2) | | | | | 2.6(11) | | | |
| 3258.80(14) | 19 ⁻ | | | | 38(3) | | | | | | 5.4(8) | |
| 3318.66(13) | 19 ⁻ | | | | | | | 4.5(3) | | | | |
| 3385.64(14) | ⟨19 ⁺ ⟩ | | | | 78(4) | | 5.7(16) | | | | | |
| 3471.98(14) | 19 ⁻ | | | | | | | 32(3) | | | | |
| 3509.75(14) | 21 ⁺ | | | | | | | | | | 97 | |
| 3526.25(18) | ⟨17 ⁺ ⟩ | | | | | | | 16(4) | 79(11) | | | |
| 3533.29(15) | ⟨19 ⁺ ⟩ | | | | | 17(2) | | | | 14(2) | 21(3) | 49(5) |
| 3745.07(15) | ⟨21 ⁻ ⟩ | | | | | | | | | 12(3) | | |
| 4047.16(14) | 23 ⁻ | | | | | | | | | | 34(4) | |
| 4060.18(13) | ⟨23 ⁻ ⟩ | | | | | | | | | | 16.0(8) | |

Energy levels and branching ratios [99Bl28, 05Bl06]. Part 6

¹¹⁵Sn
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| E^* [keV] | $2J^\pi$ | Branching ratios in percentage | | | | | | | | | | |
|----------------|--------------------|--------------------------------|---------------------------|------------------------------|---------------------------|---------------------------|---------------------------|------------------------------|---------------------------|---------------------------|------------------------------|------------------------------|
| | | E_f^* : $2J_f^\pi$: | 3203.8 17 ⁻ | 3204.9 ⟨15 ⁺ ⟩ | 3220.2 17 ⁺ | 3258.8 19 ⁻ | 3318.7 19 ⁻ | 3385.6 ⟨19 ⁺ ⟩ | 3472.0 19 ⁻ | 3509.7 21 ⁺ | 3526.2 ⟨17 ⁺ ⟩ | 3533.3 ⟨19 ⁺ ⟩ |
| 3318.66(13) | 19 ⁻ | | <0.2 | | | | | | | | | |
| 3385.64(14) | ⟨19 ⁺ ⟩ | | | | 15.9(6) | | | | | | | |
| 3509.75(14) | 21 ⁺ | | | | 2.4(1) | 0.4(1) | | 0.7(1) | | | | |
| 3526.25(18) | ⟨17 ⁺ ⟩ | | | 5(2) | | | | | | | | |
| 3666.6(2) | 23 ⁺ | | | | | | | | | 100 | | |
| 3745.07(15) | ⟨21 ⁻ ⟩ | | | | | 88(5) | | | | | | |
| 3839.49(14) | ⟨25 ⁺ ⟩ | | | | | | | | | 2.2(2) | | |
| 3859.36(17) | ⟨19 ⁺ ⟩ | | | 100 | | | | | | | | |
| 3879.22(13) | 21 ⁻ | | 74(3) | | | | 24(2) | | 2.9(9) | | | |
| 3890.2(2) | | | | | | | | | | | | 100 |
| 3959.95(15) | ⟨23 ⁺ ⟩ | | | | | | | 58(3) | | 26(2) | | 16.5(10) |
| 4029.8(4) | | | | | | | | 100 | | | | |
| 4047.16(14) | 23 ⁻ | | | | | | 40(3) | | 6(2) | | | |
| 4060.18(13) | ⟨23 ⁻ ⟩ | | | | | 3.4(4) | 73(3) | | 4.8(4) | | | |
| 4132.0(2) | | | | | | | | 37(4) | | 33(4) | | |
| 4242.95(20) | ⟨21 ⁺ ⟩ | | | | | | | | | | 100 | |

Energy levels and branching ratios [99Bl28, 05Bl06]. Part 7

¹¹⁵Sn
50

| E^* [keV] | $2J^\pi$ | Branching ratios in percentage | | | | | | | | | | |
|----------------|--------------------|--------------------------------|--------------------------|------------------------------|------------------------------|------------------------------|---------------------------|--------|------------------------------|---------------------------|------------------------------|--------|
| | | E_f^* : $2J_f^\pi$: | 3666.5 9 ⁺ | 3745.1 ⟨21 ⁻ ⟩ | 3839.5 ⟨25 ⁺ ⟩ | 3859.4 ⟨19 ⁺ ⟩ | 3879.2 21 ⁻ | 3890.2 | 3959.9 ⟨23 ⁺ ⟩ | 4047.2 23 ⁻ | 4060.2 ⟨23 ⁻ ⟩ | 4132.0 |
| 3839.49(14) | ⟨25 ⁺ ⟩ | | 98(3) | | | | | | | | | |
| 4047.16(14) | 23 ⁻ | | | 19(1) | | | 1.5(5) | | | | | |
| 4060.18(13) | ⟨23 ⁻ ⟩ | | | | | | 2.5(2) | | | | | |
| 4132.0(2) | | | 10(2) | | 14(2) | | | 7(2) | | | | |
| 4163.0(4) | | | | | 100 | | | | | | | |
| 4272.25(16) | ⟨27 ⁺ ⟩ | | | | 100 | | | | | | | |
| 4611.26(20) | ⟨23 ⁺ ⟩ | | | | | 100 | | | | | | |
| 4635.8(5) | | | 100 | | | | | | | | | |
| 4687.95(15) | 25 ⁻ | | | | | | 82(4) | | | | 17.6(16) | |
| 4865.89(14) | 27 ⁻ | | | | 12.8(10) | | | | | 4.5(10) | 81(4) | |
| 4889.20(14) | ⟨27 ⁻ ⟩ | | | | | | | | | 9.1(10) | 88(4) | |
| 5031.2(2) | | | | | | | | | 61(7) | | | 39(7) |
| 5092.9(3) | | | | | 100 | | | | | | | |
| 5225.6(3) | | | 100 | | | | | | | | | |
| 5330.86(16) | 29 ⁺ | | | | 69(3) | | | | | | | |
| 5434.48(17) | 29 ⁺ | | | | 90(4) | | | | | | | |

Energy levels and branching ratios [99Bl28, 05Bl06]. Part 8

¹¹⁵Sn
50

| E^* [keV] | $2J^\pi$ | Branching ratios in percentage | | | | | | | | | | |
|----------------|--------------------|--------------------------------|------------------------------|------------------------------|------------------------------|---------------------------|---------------------------|------------------------------|------------------------------|---------------------------|------------------------------|---------------------------|
| | | E_f^* : $2J_f^\pi$: | 4242.9 ⟨21 ⁺ ⟩ | 4272.2 ⟨27 ⁺ ⟩ | 4611.3 ⟨23 ⁺ ⟩ | 4687.9 25 ⁻ | 4865.9 27 ⁻ | 4889.2 ⟨27 ⁻ ⟩ | 5060.9 ⟨25 ⁺ ⟩ | 5330.9 29 ⁺ | 5417.9 ⟨27 ⁺ ⟩ | 5434.5 29 ⁺ |
| 4865.89(14) | 27 ⁻ | | | | | 1.5(2) | | | | | | |
| 4889.20(14) | ⟨27 ⁻ ⟩ | | | | | 3.3(4) | | | | | | |
| 5060.9(2) | ⟨25 ⁺ ⟩ | | 100 | | | | | | | | | |
| 5330.86(16) | 29 ⁺ | | | 31(2) | | | | | | | | |
| 5417.87(22) | ⟨27 ⁺ ⟩ | | | | 100 | | | | | | | |
| 5434.48(17) | 29 ⁺ | | | 10.1(16) | | | | | | | | |
| 5458.4(3) | ⟨27 ⁺ ⟩ | | | | 100 | | | | | | | |
| 5599.76(19) | ⟨29⟩ | | | 100 | | | | | | | | |
| 5629.54(16) | 29 ⁻ | | | | | 100 | | | | | | |
| 5659.9(2) | | | | 100 | | | | | | | | |
| 5749.0(2) | ⟨31 ⁺ ⟩ | | | 95(4) | | | | | | 4.9(16) | | |
| 5810.19(15) | 31 ⁻ | | | | | | 66(3) | 34(2) | | | | |
| 5812.83(16) | ⟨31 ⁻ ⟩ | | | | | | 1.8(5) | 97(5) | | | | |
| 5911.49(17) | ⟨31 ⁺ ⟩ | | | 39(3) | | | | | | 31(7) | | 30(3) |
| 5966.2(4) | ⟨29 ⁺ ⟩ | | | | | | | | 100 | | | |
| 6073.6(5) | | | | 100 | | | | | | | | |
| 6268.6(3) | ⟨31 ⁺ ⟩ | | | | | | | | | | 100 | |
| 6286.64(18) | ⟨33⟩ | | | | | | | | | | | 48(7) |
| 6357.25(17) | ⟨31 ⁻ ⟩ | | | | | | | | | 100 | | |

Energy levels and branching ratios [99Bl28, 05Bl06]. Part 9

¹¹⁵Sn
50

| E^* [keV] | $2J^\pi$ | Branching ratios in percentage | | | | | | | | | | |
|----------------|--------------------|--------------------------------|---------------------------|----------------|------------------------------|---------------------------|------------------------------|------------------------------|----------------|------------------------------|----------------|------------------------------|
| | | E_f^* : $2J_f^\pi$: | 5629.5 29 ⁻ | 5748+X ⟨33⟩ | 5749.0 ⟨31 ⁺ ⟩ | 5810.2 31 ⁻ | 5812.8 ⟨31 ⁻ ⟩ | 5911.5 ⟨31 ⁺ ⟩ | 6002+X ⟨35⟩ | 6268.6 ⟨31 ⁺ ⟩ | 6329+X ⟨37⟩ | 6357.2 ⟨31 ⁻ ⟩ |
| 5810.19(15) | 31 ⁻ | | 0.7(2) | | | | | | | | | |
| 5812.83(16) | ⟨31 ⁻ ⟩ | | 1.5(3) | | | | | | | | | |
| 6002.0+X | ⟨35⟩ | | | 100 | | | | | | | | |
| 6286.64(18) | ⟨33⟩ | | | | 36(11) | | | 16(2) | | | | |
| 6328.8+X | ⟨37⟩ | | | | | | | | 100 | | | |
| 6461.3(3) | | | | | | | | 100 | | | | |
| 6575.65(16) | ⟨33 ⁻ ⟩ | | | | 60(5) | 11(3) | | | | | | 30(2) |
| 6685.2(3) | 33 ⁻ | 100 | | | | | | | | | | |
| 6711.1+X | ⟨39⟩ | | | | | | | | | | 100 | |
| 6719.33(17) | 35 ⁻ | | | | 85(4) | 14.5(19) | | | | | | |
| 6830.63(18) | ⟨35 ⁻ ⟩ | | | | 17(7) | 83(7) | | | | | | |
| 6949.60(17) | ⟨35 ⁻ ⟩ | | | | 3(3) | 12.5(3) | | | | | | |
| 7157.2(5) | ⟨35 ⁺ ⟩ | | | | | | | | | 100 | | |

Energy levels and branching ratios [99Bl28, 05Bl06]. Part 10

¹¹⁵Sn
50

| E^* [keV] | $2J^\pi$ | Branching ratios in percentage | | | | | | | | | | |
|----------------|--------------------|--------------------------------|------------------------------|---------------------------|----------------|---------------------------|------------------------------|------------------------------|------------------------------|----------------|------------------------------|------------------------------|
| | | E_f^* : $2J_f^\pi$: | 6575.6 ⟨33 ⁻ ⟩ | 6685.2 33 ⁻ | 6711+X ⟨39⟩ | 6719.3 35 ⁻ | 6830.6 ⟨35 ⁻ ⟩ | 6949.6 ⟨35 ⁻ ⟩ | 7157.2 ⟨35 ⁺ ⟩ | 7204+X ⟨41⟩ | 7248.6 ⟨37 ⁻ ⟩ | 7922.6 ⟨39 ⁻ ⟩ |
| 6949.60(17) | ⟨35 ⁻ ⟩ | | 84(5) | | | | | | | | | |
| 7204.2+X | ⟨41⟩ | | | | 100 | | | | | | | |
| 7248.65(18) | ⟨37 ⁻ ⟩ | | | | | 69(4) | | 31(2) | | | | |
| 7683.62(20) | ⟨39 ⁻ ⟩ | | | | | 40(10) | | | | | 60(7) | |
| 7826.3(11) | ⟨37 ⁻ ⟩ | | | 100 | | | | | | | | |
| 7830.2+X | ⟨43⟩ | | | | | | | | | 100 | | |
| 7922.6(3) | ⟨39 ⁻ ⟩ | | | | | | 100 | | | | | |
| 8163.2(11) | ⟨39 ⁺ ⟩ | | | | | | | | 100 | | | |
| 9069.6(11) | ⟨43 ⁻ ⟩ | | | | | | | | | | | 100 |

Energy levels and branching ratios [01Bl04].

¹¹⁶Sn
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| E^* | J^π | L | C^2S' | S' | σ (d,p) | S_N | σ (p,d) | L | $(2J+1)S$ | σ (d,t) | $d\sigma/d\Omega$ | $I_{s,0}$ | $B(E1)$ | Ref. |
|------------|----------------|-----|--------------|-------|------------------|-------|----------------|-------|-----------|------------------|-------------------|-----------|-------------|--------|
| [keV] | | | (τ ,d) | (d,p) | $\mu\text{b/sr}$ | (p,d) | mb | (d,t) | (d,t) | $\mu\text{b/sr}$ | (α ,t) | [eVb] | $10^{-3}ef$ | |
| 0 | 0 ⁺ | 4 | | 0.54 | 790 | 0.45 | 46.1(40) | 0 | 0.32* | 1260 | 1640 | | | 00Br05 |
| 1293.56(1) | 2 ⁺ | 2+4 | | 0.27 | 329 | 0.41 | 12.1(12) | 2 | 0.20 | 364 | 830 | 12.6(12) | 1883(171) | 69Sh14 |
| 1756.86(2) | 0 ⁺ | | | 0.29 | 554 | 0.09 | 7.1(7) | 0 | 0.06 | 243 | | | | 77Fi04 |
| 2027.48(3) | 0 ⁺ | | | 0.32 | 623 | 0.09 | 7.6(7) | 0 | 0.05 | 290 | | | | 67Sc12 |
| 2112.32(2) | 2 ⁺ | | | | | | | 2 | 0.006 | | | | | 90Sc12 |

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¹¹⁶Sn
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| E^* | J^π | L | C^2S' | S' | σ (d,p) | S_N | σ (p,d) | L | $(2J+1)S$ | σ (d,t) | $d\sigma/d\Omega$ | $I_{s,0}$ | $B(E1)$ | Ref. |
|-------------|--------------------------------|-----|--------------|-------|------------------|-------|----------------|------------------------|-----------|------------------|-------------------|-----------|-------------|--------|
| [keV] | | | (τ ,d) | (d,p) | $\mu\text{b/sr}$ | (p,d) | mb | (d,t) | (d,t) | $\mu\text{b/sr}$ | (α ,t) | [eVb] | $10^{-3}ef$ | |
| 2225.38(2) | 2 ⁺ | 2 | | 0.98 | 1410 | 0.54 | 7.2(10) | | 0.24 | 300 | 60 | | | 69Sh14 |
| 2266.16(2) | 3 ⁻ | 1+3 | | | incl | | | 3 | 0.01 | | 140 | | | |
| 2365.97(2) | 5 ⁻ | | | | 242 | 1.2 | | 5 | 0.40 | 310 | | | | 68Ya01 |
| 2390.88(2) | 4 ⁺ | 0=4 | | 0.16 | incl | | | 4 | 0.26 | incl | 80 | | | 69Sh14 |
| 2529.20(2) | 4 ⁺ | 0=4 | | | | | | 4 | 0.31 | 680 | 80 | | | 69Sh14 |
| 2545.71(3) | $\langle 0^+ \rangle$ | | | 0.72 | 1620 | | 13.6(12) | 0 | 0.04 | incl | | | | 67Sc12 |
| 2585.56(2) | 1 ⁺ | | | | incl | 1.2 | | 2 | 0.22 | | | | | 68Ya01 |
| 2650.44(2) | 2 ⁺ | 2+4 | | | | | 6.5(10) | 2 | 0.01 | | 140 | | | 69Sh14 |
| 2773.33(3) | 6 ⁻ | | | | | 2.0 | | 5 | 0.88 | 251 | | | | 68Ya01 |
| 2790.55(4) | $\langle 0^+ \rangle$ | | | 1.37 | 2190 | | | | | | | | | 67Sc12 |
| 2801.28(4) | 4 ⁺ | 2+4 | | | | | 4.2(5) | 4 | 0.70 | | 180 | | | 69Sh14 |
| 2843.82(5) | 2 ⁺ | 2+4 | | | | | | 2 | 0.07 | | | 5.6(6) | 106(12) | 69Sh14 |
| 2908.85(3) | 7 ⁻ | | | | | | | | | | | | | |
| 2960.03(3) | 2 ⁺ | | | 0.19 | 405 | | | 2 | 0.02 | 184 | | | | 67Sc12 |
| 2996.27(3) | 3 ⁺ | 2+4 | | | | | | 4+ $\langle 2 \rangle$ | 0.80 | | 60 | | | 69Sh14 |
| 3016.44(7) | 6 $\langle - \rangle$ | | | | | | | | | | | | | |
| 3032.70(17) | 6 ⁺ | | | | | | | | | | | | | |
| 3046.40(9) | 4 ⁺ | 2 | | | | 2.64 | | 4 | 0.50 | 226 | 80 | | | 69Sh14 |
| 3088.63(3) | 2 ⁺ | | | | | | 4.1(4) | | | incl | | 2.2(4) | 37(7) | 00Br05 |
| 3096.93(13) | 4 ⁺ | 2+4 | | | | | 7.6(8) | 4 | 1.63 | | 50 | | | 69Sh14 |
| 3105.18(17) | 5 ⁻ | | | | | | | | | | | | | |
| 3157.73(7) | 3 ⁻ ,4 | | | | | | | | | | | | | |
| 3179.68(6) | 3 ⁺ | 2+4 | | 0.12 | 254 | 2.80 | | 4 | 1.30 | 274 | 60 | | | 67Sc12 |
| 3184(5) | 3 ⁻ | | | | | | | | | | | | | |
| 3194.32(6) | 0 ⁺ | | | | | | | | | | | | | |
| 3210.00(5) | 7 ⁻ | | | | | | | | | | | | | |
| 3227.45(5) | $\langle 2^+ \rangle$ | | | | | | | 2 | 0.24 | | | | | 90Sc12 |
| 3227.95(11) | 8 ⁻ | | | | | | | | | | | | | |
| 3228.06(14) | 2 ⁺ | | | | | | | | | | | | | |
| 3236.02(6) | 0 ⁺ | | | | | | | | | | | | | 77Fi04 |
| 3257.67(12) | 3 ⁻ -5 ⁻ | | | | | | | | | | | | | |
| 3277.6(5) | 6 ⁺ | 2 | | | | | 8.2(9) | | | | 80 | | | 69Sh14 |
| 3288.99(17) | ≤ 4 | 2 | | | | | | | | | | | | 69Sh14 |
| 3309.0(4) | 6 ⁻ | | | | | | | | | | | | | |
| 3314.99(13) | 3 ⁺ | | | | | | | 4 | 0.07 | | | | | 90Sc12 |
| 3333.78(6) | 1 ⁻ | | | | | | | | | | | 88(9) | 6.6(7) | 00Br05 |
| 3344.34(5) | 2 ⁺ | | | 0.67 | 1500 | | | | | | | | | |
| 3350.5(4) | $\langle 5^+ \rangle$ | | | | incl | | | | | | | | | 67Sc12 |
| 3371.42(8) | 3 ⁺ | | | | | | | 2 | 0.24 | 657 | 70 | | | 90Sc12 |
| 3379.8(5) | 3 ⁺ | | | | | | | | | incl | | | | 92Sc20 |
| 3416.2(3) | 2 ⁺ | | | | | 1.35 | 19.2(20) | 2+ $\langle 4 \rangle$ | 0.47 | incl | | | | 68Ya01 |
| 3427.91(14) | 4 ⁻ | | | | | | | | | | | | | |
| 3453.2(3) | 4,5 | | | | | | | | | | | | | |
| 3469.61(9) | 2 ⁺ | | | | | | | 2 | 0.27 | | | | | 90Sc12 |
| 3492.98(12) | 8 ⁺ | | | | | | | | | | | | | |

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¹¹⁶Sn
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| E^* | J^π | L | C^2S' | $\sigma(\tau, d)$ | S' | $\sigma(d, p)$ | S_N | $\sigma(p, d)$ | L | $(2J+1)S$ | $\sigma(d, t)$ | $d\sigma/d\Omega$ | $I_{s,0}$ | $B(E1)$ | Ref. |
|-------------|---|-----|---------------|-------------------|------------|----------------|------------|----------------|------------|------------|----------------|-------------------|-----------|-------------|--------|
| [keV] | | | (τ, d) | $\mu b/sr$ | (d, p) | $\mu b/sr$ | (p, d) | mb | (d, t) | (d, t) | $\mu b/sr$ | (α, t) | [eVb] | $10^{-3}ef$ | |
| 3507.25(20) | 5 ⁻ | | | | | | | | | | | | | | |
| 3508.33(7) | 2 ⁺ | | | | | | | | | | | | | | |
| 3510(5) | 4 ⁺ | | | | | | | | | | | | | | |
| 3513.6(3) | $\langle 2 \rangle^+$ | | | | | | | | 2 | 0.09 | 202 | | | | 90Sc12 |
| 3522.66(25) | 9 ⁻ | | | | | | | | | | | | | | |
| 3547.16(17) | 10 ⁺ | | | | | | | | | | | | | | |
| 3551.7(5) | 3 ⁺ | | | | | | | | | | incl | | | | |
| 3572.77(17) | 2 ⁺ , 3 | | | | | | | | | | incl | | | | |
| 3576.2(6) | 4 ⁺ , 5 | | | | | | | | | | | | | | |
| 3586.63(10) | 2 ⁺ | | | | | | | ≈ 20 | 2 | 0.37 | | | | | 90Sc12 |
| 3593.76(9) | 3 ⁺ | | | | | | | incl | | | | | | | |
| 3616.3(4) | 4 ⁻ | | | | | | | incl | | | | | | | |
| 3624.6(7) | 4 ⁺ | | | | | | | | 2 | 0.04 | | | | | 90Sc12 |
| 3640.7(7) | 4, 5 ⁺ | 0+2 | | | 0.41 | 961 | | | | | | | | | 67Sc12 |
| 3648.1(5) | 3 ⁻ , 5 ⁻ | | | | | | | | | | | | | | |
| 3658.05(6) | 2 ⁺ | | | | | | | | | | | 140 | | | |
| 3706.9(7) | 3 ⁺ | | | | | | | | 2+4 | 0.8+0.7 | 629 | | | | 90Sc12 |
| 3711.89(8) | $\langle 1 \rangle^+$ | | | | | | | | | | | | | | |
| 3712.4(3) | 8 ⁺ | | | | | | | | | | | | | | |
| 3730.6(4) | ≤ 3 | | | | | | | | | | | | | | |
| 3739 | 3 ⁺ | 2 | 0.86 | 32 | | | 1.97 | 20.2(21) | 2 | 0.07 | | 410 | | | 69Sh14 |
| 3742.90(18) | 3 ⁻ | | | | | | | | | | | | | | |
| 3747.9(4) | ≤ 3 | | | | | | | | | | | | | | |
| 3776.78(15) | 1 ⁺ | 2 | 1.40 | 40 | | | | | 2 | 0.38 | | | | | 69Sh14 |
| 3787.2(5) | $\langle 6^- \rangle$ | | | | 0.227 | 1070 | | | | | | | | | 67Sc12 |
| 3797 | X ⁺ | 0+2 | | | | | | | | | | 370 | | | 69Sh14 |
| 3805.5(5) | 4 ⁺ | | | | | | | | | | | | | | |
| 3806.02(18) | 2 ⁺ | | | | | | | 7.7(8) | | | | | | | 82Fl02 |
| 3809.3(8) | 2 ⁺ , 3 | | | | | | | | | | | | | | |
| 3836.67(23) | 0 ⁺ | | | | | | | | | | 129 | | | | |
| 3843.66(19) | 2 ⁺ , 3 | | | | | | | | | | incl | | | | |
| 3850.9(5) | 1, 2 ⁺ | | | | | | | | | | incl | | | | |
| 3851(5) | | | | | | | | | | | | | | | |
| 3886.9(4) | 5 ⁺ | 0+2 | 1+7 | 442 | | | | | | | | | | | 69Sh14 |
| 3903.58(24) | 2 ⁺ | | | | | | | | | | | | | | |
| 3904.91(6) | 1 | | | | | | | | | | | | | | |
| 3916.91(7) | 2 ⁺ | | | | | | | | | | | | | | |
| 3945.8(5) | 1 ⁺ -3 | 3 | | 44 | | | | | 2 | 0.34 | | | | | 90Sc12 |
| 3950.52(21) | 1 ⁻ -3 | | | | | | | | | | | | | | |
| 3952.9(3) | 2 ⁺ | 2+4 | | incl | | | | 5.9(6) | | | | | | | 69Sh14 |
| 3973.7(8) | 4 ⁺ | | | | | | 0.64 | | | | | | | | 68Ya01 |
| 3985.5(2) | | | | | | | | | | | | | | | |
| 4001.10(7) | 1 ^{$\langle - \rangle$} | | | | | | | | | | | | | | |
| 4013.3(2)** | 2 ⁺ | 2 | 5.2 | 170 | | | | | | | | | 6.1(26) | 0.5(3) | 69Sh14 |
| 4015.1(6) | 2-4 ⁺ | | | | | | | | | | | | | | |

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¹¹⁶Sn
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| E^* | J^π | L | C^2S' | σ (τ, d) | S' | σ (d,p) | S_N | σ (p,d) | L | $(2J+1)S$ | σ (d,t) | $I_{s,0}$ | $B(E1)$ | Ref. |
|--------------|---------------------------------|-------|---------------|------------------------|-------|----------------|-------|----------------|-------|-----------|----------------|-----------|-------------|--------|
| [keV] | | | (τ, d) | $\mu b/sr$ | (d,p) | $\mu b/sr$ | (p,d) | mb | (d,t) | (d,t) | $\mu b/sr$ | [eVb] | $10^{-3}ef$ | |
| 4023(1) | 5 ⁺ | (2) | | | | | | | | | | | | 69Sh14 |
| 4026.4(3) | 1 | | | | | | | | | | | 10(4) | 0.6(3) | 00Br05 |
| 4028.5(5) | ≤ 3 | | | | | | | | | | | | | |
| 4037.2(4) | 2 ⁺ , 3 ⁺ | | | | | | | | 2 | 0.08 | | | | 90Sc12 |
| 4075.87(20) | 1 ⁺ –3 ⁺ | (2) | 3.3 | 158 | | | | | | | | | | 69Sh14 |
| 4077(10) | 4 ⁺ , 5 ⁺ | (2) | | incl | | | | | 2 | 0.06 | | | | 90Sc12 |
| 4113.89(6) | 1, 2 ⁺ | | | | | | | | | | | | | |
| 4128.28(20) | 1, 2 ⁺ | | | | | | | | | | | | | |
| 4143.9(5) | 1 ⁺ –3 ⁺ | | | | | | | | | | | | | |
| 4162.108(24) | 2 | | | | | | | | | | | | | |
| 4170.9(4) | 2 ⁺ | 2 | 1.1 | 31 | | | | | | | | | | 69Sh14 |
| 4190.5(4) | 2 ⁺ –4 ⁺ | | | | | | | | | | | | | |
| 4200.09(14) | 1 | | | | | | | | | | | 48(4) | | 00Br05 |
| 4201.52(8) | 1, 2 | | | | | | | | | | | | | |
| 4211.59(12) | 0 ⁺ –2 | | | | | | | | | | | | | 77Fi04 |
| 4238.15(22) | 2 ⁺ | 0+2 | 0.9 | 38 | | | | | | | | | | 69Sh14 |
| 4240 | 4 ⁺ , 5 ⁺ | | | | | | | | | | | | | |
| 4251.68(11) | 1 | | | | | | | | | | | | | |
| 4278.51(20) | 1, 2 ⁺ | 2 | 5.0 | 220 | | | | | | | | | | 69Sh14 |
| 4280.7(7) | 2–4 | | | | | | | | | | | | | |
| 4285.0(4) | (7) ⁺ | | | | | | | | | | | | | 92Sc20 |
| 4297.1(5) | ≤ 3 | | | | | | | | | | | | | |
| 4308.5(3) | | | | | | | | | | | | | | |
| 4340 | X ⁺ | 2 | 2.17 | 85 | | | | | | | | | | 69Sh14 |
| 4365 | | 2 | | | | | | | | | | | | 69Sh14 |
| 4392.62(8) | | | | | | | | | | | | | | 92Sc20 |
| 4410.98(15) | | | | | | | | | | | | | | |
| 4430.45(23) | | | | | | | | | | | | | | |
| 4480.19(11) | | 2 | 1.75 | 49 | | | | | | | | | | 69Sh14 |
| 4496.0(6) | (10 [−]) | | | | | | | | | | | | | |
| 4506.2(4) | 10 ⁺ | | | | | | | | | | | | | |
| 4511.36(17) | | | | | | | | | | | | | | |
| 4548.38(14) | 1 [−] | | | | | | | | | | | 53(6) | 2.9(3) | 00Br05 |
| 4584.13(24) | | [0+2] | 1.56 | 59 | | | | | | | | | | 69Sh14 |
| 4649.21(10) | | [0+2] | 1.27 | 54 | | | | | | | | | | 69Sh14 |
| 4701.83(23) | 11 ⁺ | | | | | | | | | | | | | |
| 4765(1) | 7 ⁺ | [0+2] | 4.59 | 227 | | | | | | | | | | 69Sh14 |
| 4840(10) | 8, 10 [−] | 4, 5 | | | | | | | | | | | | 69Sh14 |
| 4852.7(3) | | | | [98] | | | | | | | | | | |
| 4877.07(14) | | [2] | 2.05 | 52 | | | | | | | | | | 69Sh14 |
| 4879.5(6) | (11 [−]) | | | | | | | | | | | | | |
| 4881.95(23) | 12 ⁺ | | | | | | | | | | | | | |
| 4892.55(21) | 1 [−] | | | | | | | | | | | 29(4) | 1.5(2) | 00Br05 |
| 4925.92(14) | | | | | | | | | | | | | | |
| 4940 | 0 ⁺ | | | | | | | | | | | | | 77Fi04 |

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¹¹⁶Sn
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| E^* | J^π | L | C^2S' | σ (τ, d) | S' | σ (d, p) | S_N | σ (p, d) | L | $(2J+1)S$ | σ (d, t) | $I_{s,0}$ | $B(E1)$ | Ref. |
|-------------|------------------------|-----|---------------|------------------------|------------|---------------------|------------|---------------------|------------|------------|---------------------|-----------|-------------|--------|
| [keV] | | | (τ, d) | $\mu b/sr$ | (d, p) | $\mu b/sr$ | (p, d) | mb | (d, t) | (d, t) | $\mu b/sr$ | [eVb] | $10^{-3}ef$ | |
| 4952.02(20) | | | | | | | | | | | | | | |
| 4980.3(5) | 1 | | | | | | | | | | | 63(6) | | 00Br05 |
| 5055.53(8) | | | | | | | | | | | | | | |
| 5066.3(4) | | | | | | | | | | | | | | |
| 5085.7(6) | 1 | | | | | | | | | | | 32(5) | | 00Br05 |
| 5161.27(23) | 12 ⁺ | | | | | | | | | | | | | |
| 5174.4(5) | | | | | | | | | | | | | | |
| 5242.3(3) | | | | | | | | | | | | | | |
| 5329.90(24) | 12 ⁺ | | | | | | | | | | | | | |
| 5357.9(3) | | | | | | | | | | | | | | |
| 5390.4(5) | 12 ⁺ | | | | | | | | | | | | | |
| 5391.2(6) | 1 | | | | | | | | | | | 17(5) | | 00Br05 |
| 5395.5(3) | | | | | | | | | | | | | | |
| 5453.5(4) | 1 ⁽⁻⁾ | | | | | | | | | | | 82(7) | 3.7(3) | 00Br05 |
| 5474.9(3) | | | | | | | | | | | | | | |
| 5484.24(22) | | | | | | | | | | | | | | |
| 5493.2(6) | | | | | | | | | | | | | | |
| 5495.91(23) | 13 ⁺ | | | | | | | | | | | | | |
| 5500 | | [5] | 1.62 | | | | | | | | | | | 86Va02 |
| 5522.19(23) | 13 ⁺ | | | | | | | | | | | | | |
| 5550.7(5) | 1 | | | | | | | | | | | 37(6) | | 00Br05 |
| 5555.4(5) | 1 | | | | | | | | | | | 48(6) | | 00Br05 |
| 5562.72(21) | | | | | | | | | | | | | | |
| 5573.6(5) | $\langle 12^+ \rangle$ | | | | | | | | | | | | | |
| 5630.2(5) | 1 ⁻ | | | | | | | | | | | 24(5) | 1.1(2) | 00Br05 |
| 5668.1(4) | | | | | | | | | | | | | | |
| 5707.2(3) | | | | | | | | | | | | | | |
| 5716.7(4) | | | | | | | | | | | | | | |
| 5723.24(25) | $\langle 12^- \rangle$ | | | | | | | | | | | | | |
| 5730(10) | | | | | | | | | | | | | | 92Sc20 |
| 5740(10) | | | | | | | | | | | | | | 92Sc20 |
| 5767.19(11) | | | | | | | | | | | | | | |
| 5780 | X ⁽⁻⁾ | 5 | 0.84 | | | | | | | | | | | 92Sc20 |
| 5823.68(23) | 14 ⁺ | | | | | | | | | | | | | |
| 5834.7(5) | 1 | | | | | | | | | | | 90(7) | | 00Br05 |
| 5860 | X ⁽⁻⁾ | 5 | 0.15 | | | | | | | | | | | 86Va02 |
| 5923.6(3) | | | | | | | | | | | | | | |
| 5929.3(3) | $\langle 13^+ \rangle$ | | | | | | | | | | | | | |
| 5968.4(4) | | | | | | | | | | | | | | |
| 5977.57(23) | 13 ⁻ | | | | | | | | | | | | | |
| 5989.53(10) | | | | | | | | | | | | | | |
| 5995.58(11) | | | | | | | | | | | | | | |
| 6006.2(5) | 1 ⁽⁻⁾ | | | | | | | | | | | 124(12) | 5.1(5) | 00Br05 |
| 6041.59(22) | | | | | | | | | | | | | | |
| 6083.0(5) | 1 | | | | | | | | | | | 53(12) | | 00Br05 |

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| E^* | J^π | L | C^2S' | $\sigma(\tau, d)$ | S' | $\sigma(d, p)$ | S_N | $\sigma(p, d)$ | L | $(2J+1)S$ | $\sigma(d, t)$ | $I_{s,0}$ | $B(E1)$ | Ref. |
|-------------|------------------------|-----|---------------|-------------------|------------|------------------|------------|----------------|------------|------------|------------------|-----------|-------------|--------|
| [keV] | | | (τ, d) | $\mu\text{b/sr}$ | (d, p) | $\mu\text{b/sr}$ | (p, d) | mb | (d, t) | (d, t) | $\mu\text{b/sr}$ | [eVb] | $10^{-3}ef$ | |
| 6088.7(4) | 1 | | | | | | | | | | | 157(10) | | 00Br05 |
| 6098.30(24) | 14^+ | | | | | | | | | | | | | |
| 6116.8(3) | | | | | | | | | | | | | | |
| 6130.97(17) | | | | | | | | | | | | | | |
| 6151.9(4) | | | | | | | | | | | | | | |
| 6159.57(10) | | | | | | | | | | | | | | |
| 6180.5(4) | 1^- | | | | | | | | | | | 129(9) | 5.2(4) | 00Br05 |
| 6198.74(11) | | | | | | | | | | | | | | |
| 6213.01(23) | 14^- | | | | | | | | | | | | | |
| 6216.7(5) | 1^- | | | | | | | | | | | 146(16) | 5.8(6) | 00Br05 |
| 6289.0(4) | 1^- | | | | | | | | | | | 292(14) | 11.5(6) | 00Br05 |
| 6292.7(11) | $\langle 10^- \rangle$ | 5 | | | | | | | | | | | | 86Va02 |
| 6298.7 | 1 | | | | | | | | | | | 86(4) | | 00Br05 |
| 6313.4(6) | 14^+ | | | | | | | | | | | | | |
| 6323.0(6) | 1^- | | | | | | | | | | | 51(9) | 2.0(4) | 00Br05 |
| 6339.3(5) | 1^- | | | | | | | | | | | 111(10) | 4.4(4) | 00Br05 |
| 6344.08(23) | 15^- | | | | | | | | | | | | | |
| 6357.7(3) | | | | | | | | | | | | | | |
| 6358.0(6) | $\langle 14^+ \rangle$ | | | | | | | | | | | | | |
| 6363.6(5) | 1 | | | | | | | | | | | 72(8) | | 00Br05 |
| 6371.9(5) | 1^- | | | | | | | | | | | 145(9) | 5.7(4) | 00Br05 |
| 6373.0(3) | | | | | | | | | | | | | | |
| 6398.5(5) | 1 | | | | | | | | | | | 135(15) | | 00Br05 |
| 6405.59(15) | | | | | | | | | | | | | | |
| 6423.1(5) | 1^- | | | | | | | | | | | 91(9) | 4.9(5) | 00Br05 |
| 6428.05(23) | | | | | | | | | | | | | | |
| 6436.31(21) | | | | | | | | | | | | | | |
| 6446.5(5) | 1^- | | | | | | | | | | | 124(11) | 4.8(4) | 00Br05 |
| 6457.2(5) | 1^- | | | | | | | | | | | 66(13) | 2.6(5) | 00Br05 |
| 6466.1(10) | 1 | | | | | | | | | | | 69(18) | | 00Br05 |
| 6468.7(3) | | | | | | | | | | | | | | |
| 6472.3(3) | 1^- | | | | | | | | | | | 211(18) | 8.1(7) | 00Br05 |
| 6482.59(17) | | | | | | | | | | | | | | |
| 6484.1(4) | 1^- | | | | | | | | | | | 150(13) | 5.8(5) | 00Br05 |
| 6507.6(6) | 1^- | | | | | | | | | | | 157(12) | 6.0(5) | 00Br05 |
| 6510.55(9) | | | | | | | | | | | | | | |
| 6518.7(4) | 1^- | | | | | | | | | | | 109(10) | 5.3(5) | 00Br05 |
| 6532.01(21) | | | | | | | | | | | | | | |
| 6581.9(6) | 1^- | | | | | | | | | | | 127(11) | 4.8(4) | 00Br05 |
| 6593.2(5) | 1^- | | | | | | | | | | | 111(11) | 4.2(4) | 00Br05 |
| 6654.9(7) | $\langle 1 \rangle$ | | | | | | | | | | | 44(12) | | 00Br05 |
| 6659.52(25) | 16^- | | | | | | | | | | | | | |
| 6663.1(6) | $\langle 15^+ \rangle$ | | | | | | | | | | | | | |
| 6717.24(11) | | | | | | | | | | | | | | |
| 6741.4(6) | $\langle 1 \rangle$ | | | | | | | | | | | 44(8) | | 00Br05 |

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| E^* | J^π | L | C^2S' | $\sigma(\tau, d)$ | S' | $\sigma(d, p)$ | S_N | $\sigma(p, d)$ | L | $(2J+1)S$ | $\sigma(d, t)$ | $I_{s,0}$ | $B(E1)$ | Ref. |
|-------------|--------------------|-----|-------------|-------------------|----------|----------------|----------|----------------|----------|-----------|----------------|-----------|-------------|--------|
| [keV] | | | (τ, d) | $\mu b/sr$ | (d, p) | $\mu b/sr$ | (p, d) | mb | (d, t) | (d, t) | $\mu b/sr$ | [eVb] | $10^{-3}ef$ | |
| 6749.5(5) | 1 | | | | | | | | | | | 60(9) | | 00Br05 |
| 6754.07(18) | | | | | | | | | | | | | | |
| 6834.1(3) | 1 | | | | | | | | | | | 40(6) | | 00Br05 |
| 6877.0(7) | 1 | | | | | | | | | | | 28(6) | | 00Br05 |
| 6889.4(5) | 1 ⁻ | | | | | | | | | | | 115(11) | 4.1(4) | 00Br05 |
| 6967.3(5) | 1 | | | | | | | | | | | 41(8) | | 00Br05 |
| 7011.5(6) | 1 | | | | | | | | | | | 44(7) | | 00Br05 |
| 7035.01(8) | | | | | | | | | | | | | | |
| 7082.15(25) | 17 ⁻ | | | | | | | | | | | | | |
| 7125.6(5) | 1 ⁻ | | | | | | | | | | | 72(6) | 2.5(4) | 00Br05 |
| 7145.8(6) | 1 | | | | | | | | | | | 46(11) | | 00Br05 |
| 7154.7(5) | 1 ⁻ | | | | | | | | | | | 88(8) | 3.1(6) | 00Br05 |
| 7165.0(6) | 1 | | | | | | | | | | | 59(7) | | 00Br05 |
| 7173.9(4) | | | | | | | | | | | | | | |
| 7203.7(8) | 1 | | | | | | | | | | | 38(6) | | 00Br05 |
| 7215.3(6) | 1 | | | | | | | | | | | 60(11) | | 00Br05 |
| 7224.7(4) | | | | | | | | | | | | | | |
| 7229.2(6) | 16 ⁺ | | | | | | | | | | | | | |
| 7235.5(11) | 1 | | | | | | | | | | | 62(10) | | 00Br05 |
| 7241.4(6) | 1 | | | | | | | | | | | 85(9) | | 00Br05 |
| 7246.3(5) | | | | | | | | | | | | | | |
| 7319.9(7) | 1 | | | | | | | | | | | 86(19) | | 00Br05 |
| 7457.3(6) | ⟨16 ⁺ ⟩ | | | | | | | | | | | | | |
| 7692.77(18) | | | | | | | | | | | | | | |
| 7325.27(22) | | | | | | | | | | | | | | |
| 7353.4(3) | 1 ⁻ | | | | | | | | | | | 98(9) | 3.3(3) | 00Br05 |
| 7479.8(14) | 1 ⁻ | | | | | | | | | | | 91(19) | 3.0(6) | 00Br05 |
| 7597.8(10) | 1 | | | | | | | | | | | 50(8) | | 00Br05 |
| 7654.3(7) | 1 ⁻ | | | | | | | | | | | 135(35) | 4.4(11) | 00Br05 |
| 7659.94(19) | | | | | | | | | | | | | | |
| 7758.8(9) | 1 | | | | | | | | | | | 59(15) | | 00Br05 |
| 7826.3(10) | 1 ⁽⁻⁾ | | | | | | | | | | | 86(24) | 2.7(7) | 00Br05 |
| 7896.6(8) | 1 | | | | | | | | | | | 155(21) | | 00Br05 |
| 7917.1(7) | 1 ⁻ | | | | | | | | | | | 94(14) | 2.9(4) | 00Br05 |
| 7925.2(8) | 1 ⁽⁺⁾ | | | | | | | | | | | 101(23) | 0.28(6) | 00Br05 |
| 7933.7(6) | 1 | | | | | | | | | | | 109(11) | | 00Br05 |
| 7947.0(8) | 1 | | | | | | | | | | | 42(6) | | 00Br05 |
| 7961.1(6) | 1 ⁻ | | | | | | | | | | | 65(16) | 1.9(5) | 00Br05 |
| 7991.6(8) | 1 ⁻ | | | | | | | | | | | 122(14) | 3.8(4) | 00Br05 |
| 8187.4(7) | 1 | | | | | | | | | | | 88(12) | | 00Br05 |
| 8214.3(6) | 1 ⁻ | | | | | | | | | | | 148(10) | 4.5(3) | 00Br05 |
| 8227.9(6) | 18 ⁺ | | | | | | | | | | | | | |
| 8234.5(8) | 1 | | | | | | | | | | | 75(16) | | 00Br05 |
| 8247.8(7) | 1 | | | | | | | | | | | 43(9) | | 00Br05 |
| 8282.9(9) | 1 | | | | | | | | | | | 36(8) | | 00Br05 |

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| E^* | J^π | L | C^2S' | $\sigma(\tau, d)$ | S' | $\sigma(d, p)$ | S_N | $\sigma(p, d)$ | $(2J+1)S$ | $\sigma(d, t)$ | $I_{s,0}$ | $B(E1)$ | Ref. |
|------------|------------------------|-----|---------------|-------------------|------------|----------------|------------|----------------|------------|----------------|-----------|-------------|--------|
| [keV] | | | (τ, d) | $\mu b/sr$ | (d, p) | $\mu b/sr$ | (p, d) | mb | (d, t) | $\mu b/sr$ | [eVb] | $10^{-3}ef$ | |
| 8361.3(8) | 1 ⁻ | | | | | | | | | | 98(12) | 2.9(4) | 00Br05 |
| 8427.9(11) | 1 | | | | | | | | | | 67(13) | | 00Br05 |
| 8457.9(8) | 1 | | | | | | | | | | 39(9) | | 00Br05 |
| 8585.6(3) | | | | | | | | | | | | | |
| 8661.2(4) | | | | | | | | | | | | | |
| 8739.7(7) | $\langle 1 \rangle$ | | | | | | | | | | 55(10) | | 00Br05 |
| 9141.4(4) | | | | | | | | | | | | | |
| 9321.9(12) | $\langle 20^+ \rangle$ | | | | | | | | | | | | |
| 16198 | | | | | | | | | | | | | |
| 16308 | | | | | | | | | | | | | |
| 16388 | | | | | | | | | | | | | |
| 16478 | | | | | | | | | | | | | |
| 16568 | | | | | | | | | | | | | |
| 17708 | | | | | | | | | | | | | |
| | | | 69Sh14 | | 67Sc12 | | 68Ya01 | | | 67Sc12 | 00Br05 | 98Go07 | Ref |
| | | | 01Bl04 | 86Va02 | 69Sh14 | | 67Sc12 | 82Fl02 | | | 98Go07 | 00Br05 | Ref |

Additional data on this isotope can be found in [04Yo02, 99Br12, 97SaZN, 97GoZX, 96Ca09, 95Ch27, 96Ca09, 94Go25, 92Sc20, 91Ra01, 91Go07, 91Go24, 90Sc12, 90Ch42, 90De0A, 83To09, 81Cr01, 79Ra17, 77Cr04].

Abundance: 14.54(9) %.

* Spectroscopic strength of the (d,t) reaction $G_j=(2J+1)(d\sigma/d\Omega/N \times \sigma_{DWBA})$ with $N=3.33$ [90Sc12].

** $J=1$ was assigned to this level in [00Br05].

$\sigma(\tau, d)=d\sigma/d\Omega$ from [92Sc20] are given in Supplement, see spectroscopic factors in the work.

For the level at $E^*=7925$ keV $B(M1)$ in units (μ_N^2) is given instead of $B(E1)$ [00Br05].

For three 2^+ levels $B(E2)$ in units e^2fm^4 is given instead of $B(E1)$ in units $10^{-3}e^2fm^2$ [00Br05].

Data for this isotope are considered in vol. LB I/18B.

Energy levels and branching ratios [01Bl04]. Part 2

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| E^* | J^π | L | $\sigma(\tau, n)$ | $d\sigma/d\Omega$ | L | L | S_N | $\Gamma_{\gamma o}$ | $\sigma(p, t)$ | $T_{1/2}$ or | Ref. |
|------------|----------------|---------------|-------------------|-------------------|-----|-----|------------|---------------------|----------------|---------------|--------|
| [keV] | | (τ, n) | $\mu b/sr$ | (τ, d) | | | (p, d) | [meV] | $\mu b/sr$ | Γ_{cm} | |
| 0 | 0 ⁺ | 0 | 139 | | 0 | 0 | 0.65(8) | | 4200 | Stable | 00Br05 |
| 1293.56(1) | 2 ⁺ | | | | 2 | 2 | 0.38(5) | 1.1(1) | 670 | 0.37(1) ps | 69Sh14 |
| 1756.86(2) | 0 ⁺ | 0 | 138 | | 0 | 0 | 0.13(2) | | 80 | 44(6) ps | 77Fi04 |
| 2027.48(3) | 0 ⁺ | | | | 0 | 0 | 0.15(2) | | 50 | 160(20) ps | 67Sc12 |
| 2112.32(2) | 2 ⁺ | | | | | | | | | 1.9(1) ps | 90Sc12 |
| 2225.38(2) | 2 ⁺ | | | | 2 | 2 | 0.35(5) | | | 2.4(12) ps | 69Sh14 |
| 2266.16(2) | 3 ⁻ | | | | | | | | 250 | 0.34(4) ps | |
| 2365.97(2) | 5 ⁻ | | | | | 5 | | | | 348(19) ns | 68Ya01 |
| 2390.88(2) | 4 ⁺ | | | | | | | | | 0.3(1) ps | 69Sh14 |

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| E^* | J^π | L | σ (τ, n) | $d\sigma/d\Omega$ | L | L | S_N | $\Gamma_{\gamma o}$ | σ (p,t) | $T_{1/2}$ or | Ref. |
|-------------|--------------------------------|---------------|------------------------|-------------------|-----|-----|----------|---------------------|------------------|----------------------|--------|
| [keV] | | (τ, n) | $\mu\text{b/sr}$ | (τ, d) | | | (p,d) | [meV] | $\mu\text{b/sr}$ | Γ_{cm} | |
| 2529.20(2) | 4 ⁺ | | | | | | | | | <100 ps | 69Sh14 |
| 2545.71(3) | (0 ⁺) | | | | [0] | | 0.30(3) | | | | 67Sc12 |
| 2585.56(2) | 1 ⁺ | | | | | 4 | | | | | 68Ya01 |
| 2650.44(2) | 2 ⁺ | | | | | | 0.35(5) | | | | 69Sh14 |
| 2773.33(3) | 6 ⁻ | | | | | 5 | | | | | 68Ya01 |
| 2790.55(4) | (0 ⁺) ⁺ | | | | 2 | | | | | | 67Sc12 |
| 2801.28(4) | 4 ⁺ | | | | | | 2.0(6) | | 50 | | 69Sh14 |
| 2843.82(5) | 2 ⁺ | | | | | | | 3.2(4) | | | 69Sh14 |
| 2908.85(3) | 7 ⁻ | | | | | | | | | 0.5(3) ns | |
| 2960.03(3) | 2 ⁺ | | | | 2 | | | | | | 67Sc12 |
| 2996.27(3) | 3 ⁺ | | | | | | | | | | 69Sh14 |
| 3016.44(7) | 6 ⁽⁻⁾ | | | | | | | | | | |
| 3032.70(17) | 6 ⁺ | | | | | | | | | | |
| 3046.40(9) | 4 ⁺ | | | | | 4 | | | | | 69Sh14 |
| 3088.63(3) | 2 ⁺ | | | | | | 0.28(6) | 1.7(3) | | | 00Br05 |
| 3096.93(13) | 4 ⁺ | | | | | | 3.6(13) | | | | 69Sh14 |
| 3105.18(17) | 5 ⁻ | | | | | | | | | | |
| 3157.73(7) | 3 ⁻ , 4 | | | | | | | | | | |
| 3179.68(6) | 3 ⁺ | | | | 2 | 4 | | | | | 67Sc12 |
| 3184(5) | 3 ⁻ | | | | | | | | | | |
| 3194.32(6) | 0 ⁺ | | | | | | | | | | |
| 3210.00(5) | 7 ⁻ | | | | | | | | | <0.5 ns | |
| 3227.45(5) | (2 ⁺) | | | | | | | | | | 90Sc12 |
| 3227.95(11) | 8 ⁻ | | | | | | | | | | |
| 3228.06(14) | 2 ⁺ | | | | | | | | | | |
| 3236.02(6) | 0 ⁺ | 0 | 37 | | | | | | | | 77Fi04 |
| 3257.67(12) | 3 ⁻ -5 ⁻ | | | | | | | | | | |
| 3277.6(5) | 6 ⁺ | | | | | | 0.60(8) | | | | 69Sh14 |
| 3288.99(17) | ≤4 | | | | | | | | | | 69Sh14 |
| 3309.0(4) | 6 ⁻ | | | | | | | | | | |
| 3314.99(13) | 3 ⁺ | | | | | | | | | | 90Sc12 |
| 3333.78(6) | 1 ⁻ | | | | | | | 85(8) | | | 00Br05 |
| 3344.34(5) | 2 ⁺ | | | | 2 | | | | | | |
| 3350.5(4) | (5 ⁺) | | | | | | | | | | 67Sc12 |
| 3371.42(8) | 3 ⁺ | | | | | | | | | | 90Sc12 |
| 3379.8(5) | 3 ⁺ | | | 70 | | | | | | | 92Sc20 |
| 3416.2(3) | 2 ⁺ | | | | | 2 | 1.40(20) | | | | 68Ya01 |
| 3427.91(14) | 4 ⁻ | | | | | | | | | | |
| 3453.2(3) | 4,5 | | | | | | | | | | |
| 3469.61(9) | 2 ⁺ | | | | | | | | | | 90Sc12 |
| 3492.98(12) | 8 ⁺ | | | | | | | | | | |
| 3507.25(20) | 5 ⁻ | | | | | | | | | | |
| 3508.33(7) | 2 ⁺ | | | | | | | | | | |
| 3510(5) | 4 ⁺ | | | | | | | | | | |
| 3513.6(3) | (2 ⁺) ⁺ | | | | | | | | | | 90Sc12 |

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| E^* | J^π | L | σ (τ, n) | $d\sigma/d\Omega$ | L | L | S_N | $\Gamma_{\gamma o}$ | σ (p,t) | $T_{1/2}$ or | Ref. |
|-------------|-------------------------|---------------|------------------------|-------------------|-----|-----|--------|---------------------|------------------|----------------------|--------|
| [keV] | | (τ, n) | $\mu\text{b/sr}$ | (τ, d) | | | (p,d) | [meV] | $\mu\text{b/sr}$ | Γ_{cm} | |
| 3522.66(25) | 9^- | | | | | | | | | | |
| 3547.16(17) | 10^+ | | | | | | | | | 833(30) ns | |
| 3551.7(5) | 3^+ | | | | | | | | | | |
| 3572.77(17) | $2^+, 3$ | | | | | | | | | | |
| 3576.2(6) | $4^+, 5$ | | | | | | | | | | |
| 3586.63(10) | 2^+ | | | | | | | | | | 90Sc12 |
| 3593.76(9) | 3^+ | | | | | | | | | | |
| 3616.3(4) | 4^- | | | | | | | | | | |
| 3624.6(7) | 4^+ | | | | | | | | | | 90Sc12 |
| 3640.7(7) | $4, 5^+$ | | | 140 | 2 | | | | | | 67Sc12 |
| 3648.1(5) | $3^-, 5^-$ | | | | | | | | | | |
| 3658.05(6) | 2^+ | | | | | | | | | | |
| 3706.9(7) | 3^+ | | | | | | | | | | 90Sc12 |
| 3711.89(8) | $\langle 1 \rangle^+$ | | | | | | | | | | |
| 3712.4(3) | 8^+ | | | | | | | | | | |
| 3730.6(4) | ≤ 3 | | | | | | | | | | |
| 3739 | 3^+ | | | 380 | | 2 | 1.8(3) | | | | 69Sh14 |
| 3742.90(18) | 3^- | | | | | | | | | | |
| 3747.9(4) | ≤ 3 | | | | | | | | | | |
| 3776.78(15) | 1^+ | | | | | | | | | | 69Sh14 |
| 3787.2(5) | $\langle 6^- \rangle$ | | | | 1 | | | | | | 67Sc12 |
| 3797 | X^+ | | | 380 | | | | | | | 69Sh14 |
| 3805.5(5) | 4^+ | | | | | | | | | | |
| 3806.02(18) | 2^+ | | | | | | 0.6(1) | | | | 82Fl02 |
| 3809.3(8) | $2^+, 3$ | | | | | | | | | | |
| 3836.67(23) | 0^+ | | | | | | | | | | |
| 3843.66(19) | $2^+, 3$ | | | | | | | | | | |
| 3850.9(5) | $1, 2^+$ | | | | | | | | | | |
| 3851(5) | | | | | | | | | | | |
| 3886.9(4) | 5^+ | | | 1900 | | | | | | | 69Sh14 |
| 3903.58(24) | 2^+ | | | | | | | | | | |
| 3904.91(6) | 1 | | | | | | | | | | |
| 3916.91(7) | 2^+ | | | | | | | | | | |
| 3945.8(5) | $1^+, 3$ | | | 280 | | | | | | | 90Sc12 |
| 3950.52(21) | $1^-, 3$ | | | | | | | | | | |
| 3952.9(3) | 2^+ | | | | | | 0.6(1) | | | | 69Sh14 |
| 3973.7(8) | 4^+ | | | | | 2 | | | | | 68Ya01 |
| 3985.5(2) | | | | | | | | | | | |
| 4001.10(7) | $1^{\langle - \rangle}$ | | | | | | | | | | |
| 4013.3(2)** | 2^+ | | | | | | | | 12(5) | | 69Sh14 |
| 4015.1(6) | $2-4^+$ | | | | | | | | | | |
| 4023(1) | 5^+ | | | 2300 | | | | | | | 69Sh14 |
| 4026.4(3) | 1 | | | | | | | | 15(6) | | 00Br05 |
| 4028.5(5) | ≤ 3 | | | | | | | | | | |
| 4037.2(4) | $2^+, 3^+$ | | | | | | | | | | 90Sc12 |

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| E^* | J^π | L | σ (τ, n) | $d\sigma/d\Omega$ | L | L | S_N | $\Gamma_{\gamma o}$ | σ (p,t) | $T_{1/2}$ or | Ref. |
|--------------|------------------------|---------------|------------------------|-------------------|-----|-----|-------|---------------------|------------------|----------------------|--------|
| [keV] | | (τ, n) | $\mu\text{b/sr}$ | (τ, d) | | | (p,d) | [meV] | $\mu\text{b/sr}$ | Γ_{cm} | |
| 4075.87(20) | $1^+ - 3^+$ | | | 1780 | | | | | | | 69Sh14 |
| 4077(10) | $4^+, 5^+$ | | | incl | | | | | | | 90Sc12 |
| 4113.89(6) | $1, 2^+$ | | | | | | | | | | |
| 4128.28(20) | $1, 2^+$ | | | | | | | | | | |
| 4143.9(5) | $1^+ - 3^+$ | | | | | | | | | | |
| 4162.108(24) | 2 | | | | | | | | | | |
| 4170.9(4) | 2^+ | | | | | | | | | | 69Sh14 |
| 4190.5(4) | $2^+ - 4^+$ | | | | | | | | | | |
| 4200.09(14) | 1 | | | | | | | 73(6) | | | 00Br05 |
| 4201.52(8) | 1, 2 | | | | | | | | | | |
| 4211.59(12) | $0^+ - 2$ | 0 | 10 | | | | | | | | 77Fi04 |
| 4238.15(22) | 2^+ | | | 480 | | | | | | | 69Sh14 |
| 4240 | $4^+, 5^+$ | | | incl | | | | | | | |
| 4251.68(11) | 1 | | | | | | | | | | |
| 4278.51(20) | $1, 2^+$ | | | | | | | | | | 69Sh14 |
| 4280.7(7) | $2 - 4$ | | | | | | | | | | |
| 4285.0(4) | $\langle 7 \rangle^+$ | | | 3610 | | | | | | | 92Sc20 |
| 4297.1(5) | ≤ 3 | | | | | | | | | | |
| 4308.5(3) | | | | | | | | | | | |
| 4340 | X^+ | | | 270 | | | | | | | 69Sh14 |
| 4365 | | | | 430 | | | | | | | 69Sh14 |
| 4392.62(8) | | | | 90 | | | | | | | 92Sc20 |
| 4410.98(15) | | | | | | | | | | | |
| 4430.45(23) | | | | | | | | | | | |
| 4480.19(11) | | | | | | | | | | | 69Sh14 |
| 4496.0(6) | $\langle 10^- \rangle$ | | | | | | | | | | |
| 4506.2(4) | 10^+ | | | | | | | | | | |
| 4511.36(17) | | | | | | | | | | | |
| 4548.38(14) | 1^- | | | | | | | 95(11) | | | 00Br05 |
| 4584.13(24) | | | | | | | | | | | 69Sh14 |
| 4649.21(10) | | | | | | | | | | | 69Sh14 |
| 4701.83(23) | 11^+ | | | | | | | | | | |
| 4765(1) | 7^+ | | | 980 | | | | | | | 69Sh14 |
| 4840(10) | $8, 10^-$ | | | 1080 | | | | | | | 69Sh14 |
| 4852.7(3) | | | | | | | | | | | |
| 4877.07(14) | | | | | | | | | | | 69Sh14 |
| 4879.5(6) | $\langle 11^- \rangle$ | | | | | | | | | | |
| 4881.95(23) | 12^+ | | | | | | | | | | |
| 4892.55(21) | 1^- | | | | | | | 60(8) | | | 00Br05 |
| 4925.92(14) | | | | | | | | | | | |
| 4940 | 0^+ | 0 | 51 | | | | | | | | 77Fi04 |
| 4952.02(20) | | | | | | | | | | | |
| 4980.3(5) | 1 | | | | | | | 135(13) | | | 00Br05 |
| 5055.53(8) | | | | | | | | | | | |
| 5066.3(4) | | | | | | | | | | | |

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| E^* | J^π | L | σ (τ, n) | $d\sigma/d\Omega$ | L | L | S_N | $\Gamma_{\gamma o}$ | σ (p,t) | $T_{1/2}$ or | Ref. |
|-------------|------------------------|---------------|------------------------|-------------------|-----|-----|-------|---------------------|------------------|----------------------|--------|
| [keV] | | (τ, n) | $\mu\text{b/sr}$ | (τ, d) | | | (p,d) | [meV] | $\mu\text{b/sr}$ | Γ_{cm} | |
| 5085.7(6) | 1 | | | | | | | 72(11) | | | 00Br05 |
| 5161.27(23) | 12 ⁺ | | | | | | | | | | |
| 5174.4(5) | | | | | | | | | | | |
| 5242.3(3) | | | | | | | | | | | |
| 5329.90(24) | 12 ⁺ | | | | | | | | | | |
| 5357.9(3) | | | | | | | | | | | |
| 5390.4(5) | 12 ⁺ | | | | | | | | | | |
| 5391.2(6) | 1 | | | | | | | 42(12) | | | 00Br05 |
| 5395.5(3) | | | | | | | | | | | |
| 5453.5(4) | 1 ⁽⁻⁾ | | | | | | | 212(18) | | | 00Br05 |
| 5474.9(3) | | | | | | | | | | | |
| 5484.24(22) | | | | | | | | | | | |
| 5493.2(6) | | | | | | | | | | | |
| 5495.91(23) | 13 ⁺ | | | | | | | | | | |
| 5500 | | | | 7800 | | | | | | | 86Va02 |
| 5522.19(23) | 13 ⁺ | | | | | | | | | | |
| 5550.7(5) | 1 | | | | | | | 99(16) | | | 00Br05 |
| 5555.4(5) | 1 | | | | | | | 128(16) | | | 00Br05 |
| 5562.72(21) | | | | | | | | | | | |
| 5573.6(5) | $\langle 12^+ \rangle$ | | | | | | | | | | |
| 5630.2(5) | 1 ⁻ | | | | | | | 66(13) | | | 00Br05 |
| 5668.1(4) | | | | | | | | | | | |
| 5707.2(3) | | | | | | | | | | | |
| 5716.7(4) | | | | | | | | | | | |
| 5723.24(25) | $\langle 12^- \rangle$ | | | | | | | | | | |
| 5730(10) | | | | 430 | | | | | | | 92Sc20 |
| 5740(10) | | | | 960 | | | | | | | 92Sc20 |
| 5767.19(11) | | | | | | | | | | | |
| 5780 | X ⁽⁻⁾ | | | 1670 | | | | | | | 92Sc20 |
| 5823.68(23) | 14 ⁺ | | | | | | | | | | |
| 5834.7(5) | 1 | | | | | | | 269(22) | | | 00Br05 |
| 5860 | X ⁽⁻⁾ | | | 670 | | | | | | | 86Va02 |
| 5923.6(3) | | | | | | | | | | | |
| 5929.3(3) | $\langle 13^+ \rangle$ | | | | | | | | | | |
| 5968.4(4) | | | | | | | | | | | |
| 5977.57(23) | 13 ⁻ | | | | | | | | | | |
| 5989.53(10) | | | | | | | | | | | |
| 5995.58(11) | | | | | | | | | | | |
| 6006.2(5) | 1 ⁽⁻⁾ | | | | | | | 388(38) | | | 00Br05 |
| 6041.59(22) | | | | | | | | | | | |
| 6083.0(5) | 1 | | | | | | | 170(38) | | | 00Br05 |
| 6088.7(4) | 1 | | | | | | | 538(35) | | | 00Br05 |
| 6098.30(24) | 14 ⁺ | | | | | | | | | | |
| 6116.8(3) | | | | | | | | | | | |
| 6130.97(17) | | | | | | | | | | | |

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| E^* | J^π | L | σ (τ, n) | $d\sigma/d\Omega$ | L | L | S_N | $\Gamma_{\gamma o}$ | σ (p,t) | $T_{1/2}$ or | Ref. |
|-------------|------------------------|---------------|------------------------|-------------------|-----|-----|-------|---------------------|------------------|----------------------|--------|
| [keV] | | (τ, n) | $\mu\text{b/sr}$ | (τ, d) | | | (p,d) | [meV] | $\mu\text{b/sr}$ | Γ_{cm} | |
| 6151.9(4) | | | | | | | | | | | |
| 6159.57(10) | | | | | | | | | | | |
| 6180.5(4) | 1^- | | | | | | | 428(30) | | | 00Br05 |
| 6198.74(11) | | | | | | | | | | | |
| 6213.01(23) | 14^- | | | | | | | | | | |
| 6216.7(5) | 1^- | | | | | | | 490(54) | | | 00Br05 |
| 6289.0(4) | 1^- | | | | | | | 1002(48) | | | 00Br05 |
| 6292.7(11) | $\langle 10^- \rangle$ | | | 880 | | | | | | | 86Va02 |
| 6298.7 | 1 | | | | | | | 296(31) | | | 00Br05 |
| 6313.4(6) | 14^+ | | | | | | | | | | |
| 6323.0(6) | 1^- | | | | | | | 178(31) | | | 00Br05 |
| 6339.3(5) | 1^- | | | | | | | 390(38) | | | 00Br05 |
| 6344.08(23) | 15^- | | | | | | | | | | |
| 6357.7(3) | | | | | | | | | | | |
| 6358.0(6) | $\langle 14^+ \rangle$ | | | | | | | | | | |
| 6363.6(5) | 1 | | | | | | | 493(44) | | | 00Br05 |
| 6371.9(5) | 1^- | | | | | | | 513(35) | | | 00Br05 |
| 6373.0(3) | | | | | | | | | | | |
| 6398.5(5) | 1 | | | | | | | 479(54) | | | 00Br05 |
| 6405.59(15) | | | | | | | | | | | |
| 6423.1(5) | 1^- | | | | | | | 454(48) | | | 00Br05 |
| 6428.05(23) | | | | | | | | | | | |
| 6436.31(21) | | | | | | | | | | | |
| 6446.5(5) | 1^- | | | | | | | 451(40) | | | 00Br05 |
| 6457.2(5) | 1^- | | | | | | | 242(47) | | | 00Br05 |
| 6466.1(10) | 1 | | | | | | | 254(65) | | | 00Br05 |
| 6468.7(3) | | | | | | | | | | | |
| 6472.3(3) | 1^- | | | | | | | 770(65) | | | 00Br05 |
| 6482.59(17) | | | | | | | | | | | |
| 6484.1(4) | 1^- | | | | | | | 551(47) | | | 00Br05 |
| 6507.6(6) | 1^- | | | | | | | 576(44) | | | 00Br05 |
| 6510.55(9) | | | | | | | | | | | |
| 6518.7(4) | 1^- | | | | | | | 512(51) | | | 00Br05 |
| 6532.01(21) | | | | | | | | | | | |
| 6581.9(6) | 1^- | | | | | | | 477(41) | | | 00Br05 |
| 6593.2(5) | 1^- | | | | | | | 418(42) | | | 00Br05 |
| 6654.9(7) | $\langle 1 \rangle$ | | | | | | | 173(46) | | | 00Br05 |
| 6659.52(25) | 16^- | | | | | | | | | | |
| 6663.1(6) | $\langle 15^+ \rangle$ | | | | | | | | | | |
| 6717.24(11) | | | | | | | | | | | |
| 6741.4(6) | $\langle 1 \rangle$ | | | | | | | 173(31) | | | 00Br05 |
| 6749.5(5) | 1 | | | | | | | 237(36) | | | 00Br05 |
| 6754.07(18) | | | | | | | | | | | |
| 6834.1(3) | 1 | | | | | | | 162(24) | | | 00Br05 |
| 6877.0(7) | 1 | | | | | | | 115(25) | | | 00Br05 |

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| E^* | J^π | L | σ (τ, n) | $d\sigma/d\Omega$ | L | L | S_N | $\Gamma_{\gamma o}$ | σ (p,t) | $T_{1/2}$ or | Ref. |
|-------------|------------------------|---------------|------------------------|-------------------|-----|-----|-------|---------------------|------------------|----------------------|--------|
| [keV] | | (τ, n) | $\mu\text{b/sr}$ | (τ, d) | | | (p,d) | [meV] | $\mu\text{b/sr}$ | Γ_{cm} | |
| 6889.4(5) | 1 ⁻ | | | | | | | 473(45) | | | 00Br05 |
| 6967.3(5) | 1 | | | | | | | 173(34) | | | 00Br05 |
| 7011.5(6) | 1 | | | | | | | 380(50) | | | 00Br05 |
| 7035.01(8) | | | | | | | | | | | |
| 7082.15(25) | 17 ⁻ | | | | | | | | | | |
| 7125.6(5) | 1 ⁻ | | | | | | | 318(29) | | | 00Br05 |
| 7145.8(6) | 1 | | | | | | | 204(49) | | | 00Br05 |
| 7154.7(5) | 1 ⁻ | | | | | | | 390(35) | | | 00Br05 |
| 7165.0(6) | 1 | | | | | | | 266(32) | | | 00Br05 |
| 7173.9(4) | | | | | | | | | | | |
| 7203.7(8) | 1 | | | | | | | 171(27) | | | 00Br05 |
| 7215.3(6) | 1 | | | | | | | 271(50) | | | 00Br05 |
| 7224.7(4) | | | | | | | | | | | |
| 7229.2(6) | 16 ⁺ | | | | | | | | | | |
| 7235.5(11) | 1 | | | | | | | 282(45) | | | 00Br05 |
| 7241.4(6) | 1 | | | | | | | 1030(120) | | | 00Br05 |
| 7246.3(5) | | | | | | | | | | | |
| 7319.9(7) | 1 | | | | | | | 403(89) | | | 00Br05 |
| 7457.3(6) | $\langle 16^+ \rangle$ | | | | | | | | | | |
| 7692.77(18) | | | | | | | | | | | |
| 7325.27(22) | | | | | | | | | | | |
| 7353.4(3) | 1 ⁻ | | | | | | | 460(38) | | | 00Br05 |
| 7479.8(14) | 1 ⁻ | | | | | | | 441(92) | | | 00Br05 |
| 7597.8(10) | 1 | | | | | | | 250(40) | | | 00Br05 |
| 7654.3(7) | 1 ⁻ | | | | | | | 685(175) | | | 00Br05 |
| 7659.94(19) | | | | | | | | | | | |
| 7758.8(9) | 1 | | | | | | | 308(78) | | | 00Br05 |
| 7826.3(10) | 1 ⁽⁻⁾ | | | | | | | 456(126) | | | 00Br05 |
| 7896.6(8) | 1 | | | | | | | 838(115) | | | 00Br05 |
| 7917.1(7) | 1 ⁻ | | | | | | | 511(76) | | | 00Br05 |
| 7925.2(8) | 1 ⁽⁺⁾ | | | | | | | 544(123) | | | 00Br05 |
| 7933.7(6) | 1 | | | | | | | 594(60) | | | 00Br05 |
| 7947.0(8) | 1 | | | | | | | 230(33) | | | 00Br05 |
| 7961.1(6) | 1 ⁻ | | | | | | | 341(88) | | | 00Br05 |
| 7991.6(8) | 1 ⁻ | | | | | | | 675(77) | | | 00Br05 |
| 8187.4(7) | 1 | | | | | | | 512(70) | | | 00Br05 |
| 8214.3(6) | 1 ⁻ | | | | | | | 866(60) | | | 00Br05 |
| 8227.9(6) | 18 ⁺ | | | | | | | | | | |
| 8234.5(8) | 1 | | | | | | | 441(94) | | | 00Br05 |
| 8247.8(7) | 1 | | | | | | | 254(53) | | | 00Br05 |
| 8282.9(9) | 1 | | | | | | | 214(48) | | | 00Br05 |
| 8361.3(8) | 1 ⁻ | | | | | | | 594(73) | | | 00Br05 |
| 8427.9(11) | 1 | | | | | | | 413(80) | | | 00Br05 |
| 8457.9(8) | 1 | | | | | | | 242(55) | | | 00Br05 |
| 8585.6(3) | | | | | | | | | | | |

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| E^* | J^π | L | σ (τ, n) | $d\sigma/d\Omega$ | L | L | S_N | $\Gamma_{\gamma o}$ | σ (p,t) | $T_{1/2}$ or | Ref. |
|------------|------------------------|---------------|------------------------|-------------------|-----|--------|-------|---------------------|------------------|----------------------|------------|
| [keV] | | (τ, n) | $\mu\text{b/sr}$ | (τ, d) | | | (p,d) | [meV] | $\mu\text{b/sr}$ | Γ_{cm} | |
| 8661.2(4) | | | | | | | | | | | |
| 8739.7(7) | $\langle 1 \rangle$ | | | | | | | 364(67) | | | 00Br05 |
| 9141.4(4) | | | | | | | | | | | |
| 9321.9(12) | $\langle 20^+ \rangle$ | | | | | | | | | | |
| 16198 | | | | | | | | | | | |
| 16308 | | | | | | | | | | | |
| 16388 | | | | | | | | | | | |
| 16478 | | | | | | | | | | | |
| 16568 | | | | | | | | | | | |
| 17708 | | | | | | | | | | | |
| | | | 77Fi04 | 92Sc20 | | | | | | | |
| | | | | | | 82Fl02 | | 00Br05 98Go07 | 70Fl08 | | Ref Ref |

Energy levels and branching ratios [01Bl04]. Part 3

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| E^* | J^π | Branching ratios in percentage | | | | | | | | | |
|-------------|--------------------------|--------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|---------------------------|---------------------------|
| [keV] | E_f^* : J_f^π : | 0 0 ⁺ | 1293 2 ⁺ | 1757 0 ⁺ | 2027 0 ⁺ | 2112 2 ⁺ | 2225 2 ⁺ | 2266 3 ⁻ | 2366 5 ⁻ | 2390.88 4 ⁺ | 2529.20 4 ⁺ |
| 1293.56(1) | 2 ⁺ | 100 | | | | | | | | | |
| 1756.86(2) | 0 ⁺ | x | 100 | | | | | | | | |
| 2027.48(3) | 0 ⁺ | x | 100 | | | | | | | | |
| 2112.32(2) | 2 ⁺ | 56 | 42(2) | 2.8(3) | 0.003(2) | | | | | | |
| 2225.38(2) | 2 ⁺ | 40(4) | 60(9) | 0.3(1) | <0.008 | <0.001 | | | | | |
| 2266.16(2) | 3 ⁻ | 0.15(2) | 100 | | | | | | | | |
| 2365.97(2) | 5 ⁻ | | 50(3) | | | | | 50 | | | |
| 2390.88(2) | 4 ⁺ | | 100 | | | 0.26(3) | <0.001 | 0.02(1) | | | |
| 2529.20(2) | 4 ⁺ | | 0.3(1) | | | 89(4) | 0.4(1) | 0.4(1) | | 10.1(4) | |
| 2545.71(3) | ⟨0 ⁺ ⟩ | | 97(12) | | | 3(1) | | | | | |
| 2585.56(2) | 1 ⁺ | 36(5) | 54(10) | 3(10) | | | 7(1) | | | | |
| 2650.44(2) | 2 ⁺ | 7(1) | 89(17) | | | 2.5(4) | | 1.8(4) | | | |
| 2773.33(3) | 6 ⁻ | | | | | | | | 100 | | |
| 2790.55(4) | ⟨0 ⁺ ⟩ | | 52 | | | 35(4) | 7(1) | | | | |
| 2801.28(4) | 4 ⁺ | | 98(4) | | | 1.6(3) | | 0.34(8) | 0.35(8) | | |
| 2843.82(5) | 2 ⁺ | 59(14) | 40(11) | | | | | 0.9(4) | | | |
| 2908.85(3) | 7 ⁻ | | | | | | | | 64(4) | | |
| 2960.03(3) | 2 ⁺ | 54(9) | 28(4) | | | | | 9(1) | | | |
| 2996.27(3) | 3 ⁺ | | 62(10) | | | | 12(1) | | | 14(2) | 10(4) |
| 3016.44(7) | 6 ^{⟨-⟩} | | | | | | | | 100 | | |
| 3032.70(17) | 6 ⁺ | | | | | | | | | 64(4) | 35.8(16) |
| 3046.40(9) | 4 ⁺ | | 90(5) | | | | | 4.1(7) | | 4.1(9) | |
| 3088.63(3) | 2 ⁺ | 65(13) | 22(3) | 12(2) | | | | | | | |
| 3096.93(13) | 4 ⁺ | | | | | | | 16(3) | 21(8) | 51(8) | 12(4) |

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| E^* | J^π | Branching ratios in percentage | | | | | | | | | | |
|-------------|--------------------------------|--------------------------------|---------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|---------------------------|---------------------------|
| [keV] | | E_f^* : J_f^π : | 0 0 ⁺ | 1293 2 ⁺ | 1757 0 ⁺ | 2027 0 ⁺ | 2112 2 ⁺ | 2225 2 ⁺ | 2266 3 ⁻ | 2366 5 ⁻ | 2390.88 4 ⁺ | 2529.20 4 ⁺ |
| 3105.18(17) | 5 ⁻ | | | | | | | | 17(7) | 28(10) | 17(7) | |
| 3157.73(7) | 3 ⁻ ,4 | | | | | | | | | 100 | | |
| 3179.68(6) | 3 ⁺ | | | 74(15) | | | | | | | 20(2) | |
| 3194.32(6) | 0 ⁺ | | | 100 | | | | | | | | |
| 3210.00(5) | 7 ⁻ | | | | | | | | | 77(8) | | |
| 3227.45(5) | ⟨2 ⁺ ⟩ | | | | | | 72(10) | | 18(6) | | | 4(1) |
| 3228.06(14) | 2 ⁺ | | | 15(4) | | 71(6) | | 4(1) | 10(4) | | | |
| 3236.02(6) | 0 ⁺ | | | 21(5) | | | 79(16) | | | | | |
| 3257.67(12) | 3 ⁻ -5 ⁻ | | | | | | | | | 100 | | |
| 3277.6(5) | 6 ⁺ | | | | | | | | | | | 100 |
| 3288.99(17) | ≤4 | | | | | | | | 100 | | | |
| 3309.0(4) | 6 ⁻ | | | | | | | | | x | | |
| 3314.99(13) | 3 ⁺ | | | 12(5) | | | 71(10) | 17(7) | | | | |
| 3333.78(6) | 1 ⁻ | 100 | | | | | | | | | | |
| 3344.34(5) | 2 ⁺ | | | 28(7) | | | 12(2) | 30(6) | 28(9) | | | |
| 3371.42(8) | 3 ⁺ | | | 67(9) | | | | 21(4) | | | 12(9) | |
| 3379.8(5) | 3 ⁺ | | | | | | | | | | x | x |
| 3416.2(3) | 2 ⁺ | | | 33(6) | | | | | 40(6) | | | |
| 3427.91(14) | 4 ⁻ | | | | | | | | 67(11) | 33(11) | | |
| 3453.2(3) | 4,5 | 43(9) | | | | | | | 14(3) | | | |
| 3469.61(9) | 2 ⁺ | | | 49(7) | | | | 46(5) | | | | |
| 3507.25(20) | 5 ⁻ | | | | | | | | 100 | | | |
| 3508.33(7) | 2 ⁺ | | | | | | 48(3) | | | | | |
| 3513.6(3) | ⟨2⟩ ⁺ | 21(6) | | 79(19) | | | | | | | | |
| 3551.7(5) | 3 ⁺ | | | 100 | | | | | | | | |
| 3572.77(17) | 2 ⁺ ,3 | | | 100 | | | | | | | | |
| 3576.2(6) | 4 ⁺ ,5 | | | | | | | | | | 100 | |
| 3586.63(10) | 2 ⁺ | 39(4) | | | | | 32(5) | | | | | |
| 3593.76(9) | 3 ⁺ | | | | | | <26 | 100 | | | | |
| 3616.3(4) | 4 ⁻ | | | | | | | | 100 | | | |
| 3624.6(7) | 4 ⁺ | | | 100 | | | | | | | | |
| 3640.7(7) | 4,5 ⁺ | | | | | | | | | | 100 | |
| 3648.1(5) | 3 ⁻ ,5 ⁻ | | | | | | | | | x | x | |
| 3658.05(6) | 2 ⁺ | 50(10) | | | | | 25(7) | 9(2) | | | | |
| 3706.9(7) | 3 ⁺ | | | | | | | | 100 | | | |
| 3711.89(8) | ⟨1⟩ ⁺ | 69(14) | | | | | | | | | | |
| 3730.6(4) | ≤3 | | | 100 | | | | | | | | |
| 3739 | 3 ⁺ | | | | | | | | | | 100 | |
| 3742.90(18) | 3 ⁻ | | | 22(4) | | | 27(5) | | 51(8) | | | |
| 3747.9(4) | ≤3 | | | 100 | | | | | | | | |
| 3776.78(15) | 1 ⁺ | 75(19) | | | | | | | | | | |
| 3787.2(5) | ⟨6 ⁻ ⟩ | | | | | | | | | 100 | | |
| 3805.5(5) | 4 ⁺ | | x | | | | x | | | | | |
| 3806.02(18) | 2 ⁺ | 100 | | | | | | | | | | |
| 3809.3(8) | 2 ⁺ ,3 | | | | | | 100 | | | | | |

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| E^* [keV] | J^π | Branching ratios in percentage | | | | | | | | | | |
|----------------|--------------------------------|--------------------------------|---------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|---------------------------|---------------------------|
| | | $E_f^*:$ $J_f^\pi:$ | 0 0 ⁺ | 1293 2 ⁺ | 1757 0 ⁺ | 2027 0 ⁺ | 2112 2 ⁺ | 2225 2 ⁺ | 2266 3 ⁻ | 2366 5 ⁻ | 2390.88 4 ⁺ | 2529.20 4 ⁺ |
| 3836.67(23) | 0 ⁺ | | | 100 | | | | | | | | |
| 3843.66(19) | 2 ⁺ ,3 | | | 71(13) | | | 16(4) | 13(5) | | | | |
| 3850.9(5) | 1,2 ⁺ | | 71(36) | | | | | | 29(11) | | | |
| 3886.9(4) | 5 ⁺ | | | | | | | | 16 | 21 | 18 | 3 |
| 3903.58(24) | 2 ⁺ | | 79(13) | | | | | 21(5) | | | | |
| 3904.91(6) | 1 | | | | 52(8) | 48(6) | | | | | | |
| 3916.91(7) | 2 ⁺ | | | | | | | | 100 | | | |
| 3945.8(5) | 1 ⁺ -3 | | | 100 | | | | | | | | |
| 3950.52(21) | 1 ⁻ -3 | | | 15(7) | | | | 67(11) | 18(9) | | | |
| 3952.9(3) | 2 ⁺ | | 83(14) | | | | | | | | | |
| 3973.7(8) | 4 ⁺ | | | | | | 100 | | | | | |
| 4001.10(7) | 1 ⁽⁻⁾ | | | 42(9) | 54(7) | | | | | | | |
| 4013.3(2)** | 2 ⁺ | | 71(8) | 21(8) | | | | 8(1) | | | | |
| 4015.1(6) | 2-4 ⁺ | | | x | | x | | | | | | |
| 4026.4(3) | 1 | | 100 | | | | | | | | | |
| 4028.5(5) | ≤3 | | | 100 | | | | | | | | |
| 4037.2(4) | 2 ⁺ ,3 ⁺ | | | 76(27) | | | | | 24(5) | | | |
| 4075.87(20) | 1 ⁺ -3 ⁺ | | | | | 42(8) | | | | | | |
| 4077(10) | 4 ⁺ ,5 ⁺ | | | | | | | | | x | x | x |
| 4113.89(6) | 1,2 ⁺ | | 39(7) | | 55(7) | | | | | | | |
| 4128.28(20) | 1,2 ⁺ | | 100 | | | | | | | | | |
| 4143.9(5) | 1 ⁺ -3 ⁺ | | | 100 | | | | | | | | |
| 4162.108(24) | 2 | | | 60(13) | | | | | 28(4) | | | |
| 4170.9(4) | 2 ⁺ | | 45(13) | 55(12) | | | | | | | | |
| 4190.5(4) | 2 ⁺ -4 ⁺ | | | 73(16) | | | | | 27(11) | | | |
| 4200.09(14) | 1 | | 65(11) | | | | | | | | | |
| 4201.52(8) | 1,2 | | | 10(3) | | | | 32(7) | 19(4) | | | |
| 4211.59(12) | 0 ⁺ -2 | | | 81(18) | | | | | | | | |
| 4238.15(22) | 2 ⁺ | | 50(16) | 50(16) | | | | | | | | |
| 4251.68(11) | 1 | | 88(17) | | | | | | | | | |
| 4278.51(20) | 1,2 ⁺ | | 17(5) | 83(14) | | | | | | | | |
| 4280.7(7) | 2-4 | | | | | | | | 100 | | | |
| 4285.0(4) | (7) ⁺ | | | | | | | | | 19 | | |
| 4297.1(5) | ≤3 | | | 100 | | | | | | | | |
| 4308.5(3) | | | | 65(15) | | | | | | | | |
| 4392.62(8) | | | 48(8) | 23(4) | | | | | | | 7(1) | 7(1) |
| 4410.98(15) | | | 50(15) | 33(6) | | | | | | | | 17(5) |
| 4430.45(23) | | | 40(10) | | | 42(12) | | | | | | |
| 4480.19(11) | | | | 61(11) | | | | 32(5) | | | | |
| 4511.36(17) | | | 27(8) | | 45(10) | | | | | | | |
| 4548.38(14) | 1 ⁻ | | 100 | | | | | | | | | |
| 4584.13(24) | | | 100 | | | | | | | | | |
| 4649.21(10) | | | 52(5) | 13(3) | | 26(10) | 9(4) | | | | | |
| 4852.7(3) | | | 50(12) | 50(12) | | | | | | | | |
| 4877.07(14) | | | 67(10) | | | | | | | | | |

(continued)

 ^{116}Sn
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| E^* [keV] | J^π | Branching ratios in percentage | | | | | | | | | | |
|----------------|----------------|--------------------------------|---------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|---------------------------|---------------------------|
| | | $E_f^*:$ $J_f^\pi:$ | 0 0 ⁺ | 1293 2 ⁺ | 1757 0 ⁺ | 2027 0 ⁺ | 2112 2 ⁺ | 2225 2 ⁺ | 2266 3 ⁻ | 2366 5 ⁻ | 2390.88 4 ⁺ | 2529.20 4 ⁺ |
| 4892.55(21) | 1 ⁻ | | 50(7) | 50(9) | | | | | | | | |
| 4925.92(14) | | | 45(7) | 42(5) | | | | | | | | |
| 4952.02(20) | | | | 73(16) | | | | | | | | |
| 5066.3(4) | | | 25(8) | | 75(25) | | | | | | | |
| 5174.4(5) | | | 73(40) | | 27(9) | | | | | | | |
| 5242.3(3) | | | | 38(9) | | | | | | | | |
| 5357.9(3) | | | | 24(4) | | 65(16) | | 11(40) | | | | |
| 5395.5(3) | | | | 37(6) | | | | | | | | |
| 5474.9(3) | | | 21(6) | 79(16) | | | | | | | | |
| 5484.24(22) | | | 23(8) | | | 77(8) | | | | | | |
| 5493.2(6) | | | 100 | | | | | | | | | |
| 5562.72(21) | | | | 48(10) | | | | | 23(10) | | | |
| 5668.1(4) | | | | | 49(10) | | 51(17) | | | | | |
| 5716.7(4) | | | | 70(10) | | | | 30(15) | | | | |
| 5767.19(11) | | | | 51(8) | | 9(4) | | | 40(6) | | | |
| 5923.6(3) | | | | 62(12) | | | 38(12) | | | | | |
| 5968.4(4) | | | | | | | 34(17) | | | | 22(9) | |
| 5989.53(10) | | | | 87(10) | | | 8(2) | 5(2) | | | | |
| 5995.58(11) | | | | 58(7) | | 42(7) | | | | | | |
| 6041.59(22) | | | | | | | | 43(13) | | | 15(6) | |
| 6116.8(3) | | | | 33(7) | 35(8) | | | | | | | |
| 6130.97(17) | | | | 25(5) | 75(14) | | | | | | | |
| 6151.9(4) | | | | 78(12) | | | | 22(12) | | | | |
| 6159.57(10) | | | 22(4) | 78(8) | | | | | | | | |
| 6198.74(11) | | | | 8(2) | 60(8) | | | | 17(4) | | | |
| 6357.7(3) | | | | | 62(16) | | 38(9) | | | | | |
| 6373.0(3) | | | | 54(13) | | | | | | | | |
| 6405.59(15) | | | | | | | 100 | | | | | |
| 6428.05(23) | | | | | | | | | 36(9) | | | |
| 6436.31(21) | | | | 21(6) | | | | 22(6) | | | | |
| 6468.7(3) | | | | 18(8) | 29(5) | | | | | | 22(6) | |
| 6482.59(17) | | | | 10(2) | 17(4) | | | 9(2) | | | 30(6) | |
| 6510.55(9) | | | | 37(5) | | 39(7) | | | | | | |
| 6532.01(21) | | | | 14(3) | | | | 51(8) | | | | |
| 6717.24(11) | | | | 76(9) | 24(37) | | | | | | | |
| 6754.07(18) | | | | 40(10) | | | 45(10) | | | | | |
| 7035.01(8) | | | | | | | | 53(6) | 14(7) | | | |
| 7173.9(4) | | | | | 32(11) | | 26(6) | | | | | |
| 7224.7(4) | | | | 19(7) | | | | | | | | |
| 7246.3(5) | | | | 50(16) | | | 50(16) | | | | | |
| 7692.77(18) | | | | | | | 24(5) | 48(5) | 29(5) | | | |
| 7325.27(22) | | | | | | 27(7) | | | | | 19(4) | |
| 7659.94(19) | | | | | | | | | | | 20(7) | |

Energy levels and branching ratios [01Bl04]. Part 4

¹¹⁶Sn
50

| E^* | J^π | Branching ratios in percentage | | | | | | | | | | |
|--------------|-------------------------|--------------------------------|----------------------------------|------------------|------------------|------------------|----------------------------------|------------------|------------------|------------------|------------------|------------------|
| [keV] | | E_f^* : J_f^π : | 2545.71 $\langle 0^+ \rangle$ | 2585.56 1^+ | 2650.44 2^+ | 2773.33 6^- | 2790.55 $\langle 0 \rangle^+$ | 2801.28 4^+ | 2843.82 2^+ | 2908.85 7^- | 2960.03 2^+ | 2996.27 3^+ |
| 2790.55(4) | $\langle 0 \rangle^+$ | | | 6(1) | | | | | | | | |
| 2908.85(3) | 7^- | | | | | 36(4) | | | | | | |
| 2960.03(3) | 2^+ | | | 8(1) | 1.2(4) | | | | | | | |
| 2996.27(3) | 3^+ | | | | | | | 2.3(4) | | | | |
| 3046.40(9) | 4^+ | | | | | | | 1.4(3) | | | | |
| 3105.18(17) | 5^- | | | | | 38(7) | | | | | | |
| 3179.68(6) | 3^+ | | | | | | | 7(1) | | | | |
| 3210.00(5) | 7^- | | | | | 23(5) | | | | | | |
| 3227.45(5) | $\langle 2^+ \rangle$ | | | 5.4(8) | | | | | | | | |
| 3227.95(11) | 8^- | | | | | | | | | 100 | | |
| 3309.0(4) | 6^- | | | | | x | | | | | | |
| 3344.34(5) | 2^+ | | | | | | | | 2 | | | |
| 3350.5(4) | $\langle 5^+ \rangle$ | | | | | | | x | | | | x |
| 3379.8(5) | 3^+ | | | | | | | x | | | | |
| 3416.2(3) | 2^+ | | | 27(3) | | | | | | | | |
| 3469.61(9) | 2^+ | | | | | | | 4(1) | | | | |
| 3492.98(12) | 8^+ | | | | | | | | | x | | |
| 3508.33(7) | 2^+ | | | | | | | | 9(1) | | 20(3) | |
| 3586.63(10) | 2^+ | | | 29(4) | | | | | | | | |
| 3658.05(6) | 2^+ | | | | | | | 16(3) | | | | |
| 3711.89(8) | $\langle 1 \rangle^+$ | | | | | | | | 31(3) | | | |
| 3776.78(15) | 1^+ | | | 25(6) | | | | | | | | |
| 3886.9(4) | 5^+ | | | | | 5 | | 5 | | | | |
| 3985.5(2) | | | | | | | | | | 100 | | |
| 4001.10(7) | $1^{\langle - \rangle}$ | | | | | | 4(2) | | | | | |
| 4113.89(6) | $1, 2^+$ | 6(2) | | | | | | | | | | |
| 4162.108(24) | 2 | | | 13(3) | | | | | | | | |
| 4200.09(14) | 1 | | | | | | 35(7) | | | | | |
| 4201.52(8) | 1, 2 | | | 18(2) | 22(13) | | | | | | | |
| 4285.0(4) | $\langle 7 \rangle^+$ | | | | | 10 | | | | 11 | | |
| 4308.5(3) | | | | | | | 35(6) | | | | | |
| 4430.45(23) | | | | | | | | | 18(3) | | | |
| 4511.36(17) | | | | 13(4) | 15(2) | | | | | | | |
| 4840(10) | $8, 10^-$ | | | | | | | | | x | | |
| 4877.07(14) | | | | 33(5) | | | | | | | | |
| 4925.92(14) | | | | | 13(3) | | | | | | | |
| 4952.02(20) | | | | | 27(4) | | | | | | | |
| 5055.53(8) | | | | | | | | | 27(4) | | | |
| 5242.3(3) | | | | | | | | | | | 62(10) | |
| 5562.72(21) | | | | 29(10) | | | | | | | | |
| 5968.4(4) | | | | | | | | | | | 43(17) | |
| 6198.74(11) | | | | | 15(4) | | | | | | | |
| 6373.0(3) | | | | | | | | | 46(13) | | | |
| 6428.05(23) | | | | 25(7) | | | 24(4) | 15(4) | | | | |
| 6436.31(21) | | | | | | | 10(5) | | 48(5) | | | |

(continued)

¹¹⁶Sn
50

| E^* | J^π | Branching ratios in percentage | | | | | | | | | |
|-------------|--|----------------------------------|------------------|------------------|------------------|----------------------------------|------------------|------------------|------------------|------------------|------------------|
| [keV] | E_{f}^* : J_{f}^π : | 2545.71 $\langle 0^+ \rangle$ | 2585.56 1^+ | 2650.44 2^+ | 2773.33 6^- | 2790.55 $\langle 0 \rangle^+$ | 2801.28 4^+ | 2843.82 2^+ | 2908.85 7^- | 2960.03 2^+ | 2996.27 3^+ |
| 6468.7(3) | | | | | | 31(7) | | | | | |
| 6482.59(17) | | | | 9(2) | | | | | | 11(4) | |
| 6510.55(9) | | | | 7(5) | | 17(5) | | | | | |
| 6754.07(18) | | | | | | | | | | 15(5) | |
| 7035.01(8) | | | 33(5) | | | | | | | | |
| 7325.27(22) | | 17(8) | | 38(6) | | | | | | | |
| 7659.94(19) | | 38(7) | | | | | 42(6) | | | | |

Energy levels and branching ratios [01Bl04]. Part 5

¹¹⁶Sn
50

| E^* | J^π | Branching ratios in percentage | | | | | | | | | | |
|-------------|--------------------------------|--------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|------------------------------|---------------------------|---------------------------|---------------------------|
| [keV] | | E_f^* : J_f^π : | 3032.70 6 ⁺ | 3046.40 4 ⁺ | 3088.63 2 ⁺ | 3096.93 4 ⁺ | 3179.68 3 ⁺ | 3210.00 7 [−] | 3227.45 ⟨2 ⁺ ⟩ | 3227.95 8 [−] | 3228.06 2 ⁺ | 3236.02 0 ⁺ |
| 3453.2(3) | 4,5 | | | 43 | | | | | | | | |
| 3492.98(12) | 8 ⁺ | | | | | | | | | | x | |
| 3508.33(7) | 2 ⁺ | | | | 24(4) | | | | | | | |
| 3522.66(25) | 9 [−] | | | | | | | | | | 100 | |
| 3547.16(17) | 10 ⁺ | | | | | | | | | | 93(19) | |
| 3712.4(3) | 8 ⁺ | 100 | | | | | | | | | | |
| 3886.9(4) | 5 ⁺ | | | 4 | | 5 | | | | | | |
| 4077(10) | 4 ⁺ ,5 ⁺ | | | x | | | | | | | | |
| 4285.0(4) | ⟨7⟩ ⁺ | 9 | | | | | | | | 39 | | |
| 4392.62(8) | | | | | 6(1) | | | | 9(1) | | | |
| 4496.0(6) | ⟨10 [−] ⟩ | | | | | | | | | | 100 | |
| 4765(1) | 7 ⁺ | | | | | | | 39 | | 12 | | |
| 5500 | | | | | | | | 100 | | | | |
| 6041.59(22) | | | | | | 43(13) | | | | | | |
| 6116.8(3) | | | | | 32(8) | | | | | | | |
| 6482.59(17) | | | | | 13(4) | | | | | | | |
| 6532.01(21) | | | | | | | 35(8) | | | | | |
| 7173.9(4) | | | | | | | | | | | | 43(11) |
| 7224.7(4) | | | | | 81(24) | | | | | | | |

Energy levels and branching ratios [01Bl04]. Part 6

¹¹⁶Sn
50

| E^* [keV] | J^π | Branching ratios in percentage | | | | | | | | | | |
|----------------|--------------------------------|--------------------------------|--------------------------|---------------------------|---------------------------|--------------------------|--------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------------|
| | | E_f^* : J_f^π : | 3277.6 6 ⁺ | 3344.34 2 ⁺ | 3371.42 3 ⁺ | 3379.8 3 ⁺ | 3416.2 2 ⁺ | 3492.98 8 ⁺ | 3513.6 (2) ⁺ | 3522.66 9 ⁻ | 3547.16 10 ⁺ | 3658.05 2 ⁺ |
| 3469.61(9) | 2 ⁺ | | | 1.1(3) | | | | | | | | |
| 3492.98(12) | 8 ⁺ | x | | | | | | | | | | |
| 3547.16(17) | 10 ⁺ | | | | | | | 7(6) | | | | |
| 3886.9(4) | 5 ⁺ | | | | 24 | | | | | | | |
| 3952.9(3) | 2 ⁺ | | | | | | | | 17(5) | | | |
| 4023(1) | 5 ⁺ | x | | | | | | | | | | |
| 4075.87(20) | 1 ⁺ -3 ⁺ | | | | | | | | | | | 58(20) |
| 4077(10) | 4 ⁺ ,5 ⁺ | x | | | | | | | | | | |
| 4211.59(12) | 0 ⁺ -2 | | | | 19(2) | | | | | | | |
| 4251.68(11) | 1 | | | | | | 12(3) | | | | | |
| 4285.0(4) | (7) ⁺ | 10 | | | | | | | | | | |
| 4480.19(11) | | | | 7(2) | | | | | | | | |
| 4701.83(23) | 11 ⁺ | | | | | | | | | | 100 | |
| 4765(1) | 7 ⁺ | 49 | | | | | | | | | | |
| 4840(10) | 8,10 ⁻ | | | | | | | x | x | | | |
| 4879.5(6) | (11 ⁻) | | | | | | | | | 100 | | |
| 4881.95(23) | 12 ⁺ | | | | | | | | | | 100 | |
| 5055.53(8) | | | | 73(10) | | | | | | | | |
| 5161.27(23) | 12 ⁺ | | | | | | | | | | 65(3) | |
| 5329.90(24) | 12 ⁺ | | | | | | | | | | 100 | |
| 5395.5(3) | | | | 63(20) | | | | | | | | |
| 5780 | X ⁽⁻⁾ | | | | | | | | | 100 | | |
| 6292.7(11) | (10 ⁻) | | | | | | | | | 100 | | |

Energy levels and branching ratios [01Bl04]. Part 7

¹¹⁶Sn
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| E^* [keV] | J^π | Branching ratios in percentage | | | | | | | | | | |
|----------------|--------------------------------|--------------------------------|--------------------------|------------------------|--------------------------|-------------|---------------------------|----------------------------|------------------------------|----------------------------|----------------------------|----------------------------|
| | | E_f^* : J_f^π : | 3712.4 8 ⁺ | 3739 3 ⁺ | 3886.9 5 ⁺ | 4026.4 1 | 4506.2 10 ⁺ | 4701.83 11 ⁺ | 4879.5 (11 ⁻) | 4881.95 12 ⁺ | 5161.27 12 ⁺ | 5329.90 12 ⁺ |
| 4023(1) | 5 ⁺ | | | x | x | | | | | | | |
| 4077(10) | 4 ⁺ ,5 ⁺ | | | | x | | | | | | | |
| 4285.0(4) | (7) ⁺ | | | | | 3 | | | | | | |
| 4506.2(4) | 10 ⁺ | 100 | | | | | | | | | | |
| 5161.27(23) | 12 ⁺ | | | | | | | 35(3) | | | | |
| 5390.4(5) | 12 ⁺ | | | | | | 100 | | | | | |
| 5495.91(23) | 13 ⁺ | | | | | | | 43(4) | | 32(2) | 13(1) | 11.7(6) |
| 5522.19(23) | 13 ⁺ | | | | | | | 18.5(19) | | | 81(4) | |
| 5573.6(5) | (12 ⁺) | | | | | | 100 | | | | | |
| 5707.2(3) | | | | | | | | 100 | | | | |
| 5723.24(25) | (12 ⁻) | | | | | | | | 100 | | | |
| 5823.68(23) | 14 ⁺ | | | | | | | | | 32(2) | 11(2) | |
| 5929.3(3) | (13 ⁺) | | | | | | | | 100 | | | |

(continued)

¹¹⁶Sn
50

| E^* | J^π | Branching ratios in percentage | | | | | | | | | | |
|-------------|-----------------|--------------------------------|----------------|----------------|----------------|--------|-----------------|-----------------|--------------------|-----------------|-----------------|-----------------|
| [keV] | | E_f^* : | 3712.4 | 3739 | 3886.9 | 4026.4 | 4506.2 | 4701.83 | 4879.5 | 4881.95 | 5161.27 | 5329.90 |
| | | J_f^π : | 8 ⁺ | 3 ⁺ | 5 ⁺ | 1 | 10 ⁺ | 11 ⁺ | ⟨11 ⁻ ⟩ | 12 ⁺ | 12 ⁺ | 12 ⁺ |
| 5977.57(23) | 13 ⁻ | | | | | | | | 82(3) | 15.4(15) | | |
| 6098.30(24) | 14 ⁺ | | | | | | | | | 100 | | |

Energy levels and branching ratios [01Bl04]. Part 8

¹¹⁶Sn
50

| E^* | J^π | Branching ratios in percentage | | | | | | | | | | |
|-------------|--------------------|--------------------------------|---------------------------|----------------------------|----------------------------|--------|----------------------------|----------------------------|----------------------------|----------------------------|---------------------------|----------------------------|
| [keV] | | E_f^* : J_f^π : | 5390.4 12 ⁺ | 5495.91 13 ⁺ | 5522.19 13 ⁺ | 5707.2 | 5823.68 14 ⁺ | 5977.57 13 [−] | 6098.30 14 ⁺ | 6213.01 14 [−] | 6313.4 14 ⁺ | 6344.08 15 [−] |
| 5823.68(23) | 14 ⁺ | | | | 57(2) | | | | | | | |
| 5977.57(23) | 13 [−] | | | | | 2(4) | | | | | | |
| 6213.01(23) | 14 [−] | | | 49(2) | | 1.4 | | 44(1) | 5.2 | | | |
| 6313.4(6) | 14 ⁺ | 100 | | | | | | | | | | |
| 6344.08(23) | 15 [−] | | | | | | 35(2) | 13.1(7) | | 52(2) | | |
| 6358.0(6) | ⟨14 ⁺ ⟩ | 100 | | | | | | | | | | |
| 6659.52(25) | 16 [−] | | | | | | | | | 1.9(4) | | 98(3) |
| 7082.15(25) | 17 [−] | | | | | | | | | | | 14.3(17) |
| 7229.2(6) | 16 ⁺ | | | | | | | | | | 100 | |
| 7457.3(6) | ⟨16 ⁺ ⟩ | | | | | | | | | | 100 | |

Energy levels and branching ratios [01Bl04]. Part 9

¹¹⁶Sn
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| E^* [keV] | J^π | Branching ratios in percentage | | | | | | |
|----------------|--------------------|--------------------------------|------------------------------|----------------------------|----------------------------|---------------------------|---------------------------|--------|
| | | E_f^* : J_f^π : | 6358.0 ⟨14 ⁺ ⟩ | 6659.52 16 ⁻ | 7082.15 17 ⁻ | 7229.2 16 ⁺ | 8227.9 18 ⁺ | 8661.2 |
| 6663.1(6) | ⟨15 ⁺ ⟩ | | 100 | | | | | |
| 7082.15(25) | 17 ⁻ | | | 86(3) | | | | |
| 8227.9(6) | 18 ⁺ | | | | | 100 | | |
| 8585.6(3) | | | | | | 100 | | |
| 8661.2(4) | | | | | | 100 | | |
| 9141.4(4) | | | | | | | | 100 |
| 9321.9(12) | ⟨20 ⁺ ⟩ | | | | | | 100 | |

Energy levels and branching ratios [02B110].

¹¹⁷Sn
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| E^* | $2J^\pi$ | σ (d,p) | S_{dp} | L | L | S_N | L | C^2S | σ (p,d) | S_N | L | C^2S | σ (d,t) | $g\Gamma_o^2/\Gamma$ | σ (p,t) | Ref. |
|-------------|----------------------------------|------------------|----------|---------------------|---------------------|------------------|---------------------|--------|------------------|-------|---------------------|--------|------------------|----------------------|------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | | | | (α, τ) | | (p,d) | $\mu\text{b/sr}$ | (p,d) | | (d,t) | $\mu\text{b/sr}$ | [meV] | $\mu\text{b/sr}$ | |
| 0 | 1 ⁺ | 63(3) | 0.65 | 0 | 0 | 0.76 | 0 | 1.4 | 16800 | 1.47 | 0 | 1.31 | 2260 | | 2390(200) | 75Vi06 |
| 158.562(12) | 3 ⁺ | 86(3) | 0.55 | 2 | 2 | 0.47 | 2 | 1.5 | 4720 | 1.25 | 2 | 1.70 | 695 | | 110(15) | 72Ca33 |
| 314.58(4) | 11 ⁻ | 33(2) | 0.81 | 5 | 5 | 0.62 | 5 | 3.1 | 930 | 2.2 | 5 | 3.26 | 212 | | 60(15) | 72Ca33 |
| 711.54(10) | 7 ⁺ | 3.7(7) | 0.13 | 4 | 4 | 0.19 | 4 | 7.3 | 2060 | | 4 | 7.36 | 306 | | 80(20) | 72Ca33 |
| 1004.53(14) | 3 ⁺ | | 0.06 | | | | | | | | | | 1150 | | | |
| 1019.92(6) | 5 ⁺ | 22(2) | incl | 2 | 2 | 0.082 | 2 | 3.5 | 9610 | | 2 | 3.11 | incl | | 280(40) | 72Ca33 |
| 1179.7(5) | 5 ⁺ | 17.1(14) | 0.03 | 2 | | | 2 | 1.9 | 5170 | | 2 | 1.68 | 526 | | 320(40) | 72Ca33 |
| 1304.3(5) | $\langle 7^- \rangle$ | 13.4(13) | 0.03 | 3 | | | | | | | | | | | | 72Ca33 |
| 1446.2(3) | 5 ⁺ | | | | | | | | | | | | | 1.3(2) | 220(30) | 79Fl10 |
| 1468.6(3) | 3 ⁺ , 5 ⁺ | | | | | | 2 | 0.53 | 620 | | | | | | incl | 77Se01 |
| 1496.8(10) | 5 ⁺ , 3 ⁺ | 13(2) | 0.02 | 2 | | | | | | | | | 173 | | | 72Ca33 |
| 1510.1(3) | | | | | | | | | | | | | incl | 2.5(3) | | 00Br33 |
| 1530 | 3 ⁺ , 5 ⁺ | | | | | | 2 | | 630 | | | | | | | 77Se01 |
| 1578.25(24) | $\langle 3^+ \rangle$ | | | | | | | | 140 | | | | | | | 70Ca01 |
| 1589*** | $\langle 11^- \rangle$ | | | | $\langle 5 \rangle$ | 0.058 | $\langle 5 \rangle$ | | incl | | 5 | | | | | 70Bi01 |
| 1589(10) | 3 ⁺ , 5 ⁺ | 0.7(5) | 0.01 | 2 | | | | | incl | | | | | | | 67Se12 |
| 1593.1(3) | $\langle 15^- \rangle$ | | | | | | | | | | | | | | | |
| 1625.4(3) | $\langle 13^- \rangle$ | | | | | | | | | | | | | | | |
| 1628(5) | 7 ⁺ , 9 ⁺ | | | | | | $\langle 4 \rangle$ | | | | $\langle 4 \rangle$ | | | | | 77Se01 |
| 1668.2(15) | 5 ⁺ , 3 ⁺ | 3.6(7) | 0.01 | 2 | | | $\langle 2 \rangle$ | | | | | | | | | 72Ca33 |
| 1710 | 3 ⁺ , 5 ⁺ | | | | | | 2 | 0.33 | 480 | | | | | | | 77Se01 |
| 1770 | 3 ⁺ , 5 ⁺ | | | | | | 2 | | 200 | | | | | | | 77Se01 |
| 1810(10) | | | | | | | | | | | | | | | | 79Fl10 |
| 1874.5(4) | $\langle 11^+ \rangle$ | | | | | | | | | | | | | | | |
| 1910(10) | | | | | | | | | | | | | | | | 79Fl10 |
| 1948(10) | | 3.6(6) | 0.003 | 1 | | | | | | | | | | | | 67Se12 |
| | | | | +3 | | | | | | | | | | | | 67Se12 |
| 2007(10) | 1 ⁻ , 3 ⁻ | 6.6(8) | | | | | 1 | | 210 | | | | | | | 77Se01 |
| 2046(10) | 5 ⁻ , 7 ⁻ | 14.3(13) | | 3 | | | | | | | | | | | | 72Ca33 |
| 2048.2(3) | 1, $\langle 3 \rangle$ | | 0.03 | | | | | | | | | | | 6.8(5) | | 00Br33 |
| 2050(10) | 7 ⁺ , 9 ⁺ | | | | | | 4 | 1.5 | | | | | | | | 77Se01 |
| 2076(10) | 1 ⁻ , 3 ⁻ | 5.0(8) | | 1 | | | | | | | | | | | | 72Ca33 |
| 2079(10) | 1 ⁺ | | | | | | 0 | | 1310 | | | | | | | 77Se01 |
| 2128.6(4) | | | | | | | | | | | | | | 1.2(3) | | 79Fl10 |
| 2146(10) | 3 ⁺ , 5 ⁺ | 1.9(5) | | 2 | | | 2 | | 140 | | | | | | | 72Ca33 |
| 2160(20) | 5 ⁻ , 7 ⁻ | | | | | | | | | | | | | | | 79Fl10 |
| 2203(10) | | 7.1(9) | | | | | | | | | | | | | | 79Fl10 |
| 2256(10) | | 2.6(8) | | | | | | | | | | | | | | 72Ca33 |
| 2280(20) | 5 ⁻ , 7 ⁻ | | | | | | | | 90 | | | | | | | 68Ku20 |
| 2280.4(6) | | | | | | | | | incl | | | | | 0.6(2) | | 00Br33 |
| 2300(15) | 3 ⁺ , 5 ⁺ | 4.6(9) | 0.012 | $\langle 2 \rangle$ | | | 2 | 0.19 | incl | | | | | | | 72Ca33 |
| 2304.6(5) | | | | | | | | | | | | | | 1.0(3) | | 00Br33 |
| 2331.2(15) | | | | | | | | | | | | | | | | 79Fl10 |
| 2350(10) | 9 ⁻ , 11 ⁻ | | | | | | 5 | | 100 | | | | | | | 77Se01 |
| 2356.7(8)* | | 4.3(10) | | | | | | | | | | | | 1.2(4) | | 00Br33 |

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| E^* | $2J^\pi$ | σ (d,p) | S_{dp} | L | L | S_N | L | C^2S | σ (p,d) | S_N | L | C^2S | σ (d,t) | $g\Gamma_o^2/\Gamma$ | σ (p,t) | Ref. |
|----------------|------------------------|------------------|----------|-----|-----|------------------|-----|--------|------------------|-------|-----|--------|------------------|----------------------|------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | | | | (α, τ) | | (p,d) | $\mu\text{b/sr}$ | (p,d) | | (d,t) | $\mu\text{b/sr}$ | [meV] | $\mu\text{b/sr}$ | |
| 2367.3(2) | 3 | | | | | | | | | | | | | 11.5(8) | | 00Br33 |
| 2381.0(4) | $\langle 17^- \rangle$ | | | | | | | | | | | | | | | |
| 2390(15) | $1^-, 3^-$ | 1.5(6) | | 1 | | | | | | | | | | | | 72Ca33 |
| 2400(10) | 1^+ | | | | | | 0 | 0.09 | | | | | | | | 79F110 |
| 2400.7(4) | $\langle 17^- \rangle$ | | | | | | | | | | | | | | | |
| 2406.4(4) | $\langle 19^+ \rangle$ | | | | | | | | | | | | | | | |
| 2415.9(3) | | | | | | | | | | | | | | 2.8(4) | | 00Br33 |
| 2461(10) | $5^-, 7^-$ | 27(4) | 0.03 | 3 | | | | | | | | | | | | 72Ca33 |
| ≈ 2500 | $7^+, 9^+$ | | | | | | 4 | | 40 | | | | | | | 77Se01 |
| 2515.8(5) | | | | | | | | | | | | | | 1.2(3) | | 00Br33 |
| 2545(10) | $5^-, 7^-$ | 14.5(15) | 0.017 | 3 | | | | | | | | | | | | 72Ca33 |
| 2590.2(5) | | | | | | | | | | | | | | 1.8(4) | | 00Br33 |
| 2655.5(11) | $\langle 1, 3 \rangle$ | 4.5(10) | | 3 | | | | | | | | | | | | 72Ca33 |
| 2656(10) | $5^-, 7^-$ | | | | | | | | | | | | | | | |
| 2660(10) | $3^+, 5^+$ | | | | | | 2 | 0.38 | | | | | | | | 77Se01 |
| 2690(10) | $1^-, 3^-$ | | 0.013 | | | | 1 | | 590 | | | | | | | 77Se01 |
| 2709.1(5) | | 3.9(8) | | | | | | | | | | | | 2.8(4) | | 00Br33 |
| 2718.2(4) | | | | | | | | | | | | | | 3.3(8) | | 00Br33 |
| 2750(15) | | | | | | | | | | | | | | | | 68Ku20 |
| 2770(10) | $3^+, 5^+$ | 3.0(15) | | 2 | | | 2 | | 180 | | | | | | | 72Ca33 |
| 2775.2(4) | | | | | | | | | | | | | | 2.0(4) | | 00Br33 |
| 2803.4(5)* | | | | | | | | | | | | | | 2.4(4) | | 00Br33 |
| 2807.6(5) | $\langle 19^- \rangle$ | | | | | | | | | | | | | | | |
| 2827(10) | $3^+, 5^+$ | 38(2) | | | | | 2 | | 180 | | | | | | | 77Se01 |
| 2864.1(11) | | | | | | | | | | | | | | 1.2(4) | | 00Br33 |
| 2879.8(9) | | | | | | | | | | | | | | 1.3(4) | | 00Br33 |
| 2908.5(4) | $1^-, 3^-$ | 8.0(11) | 0.058 | 1 | | | | | | | | | | 4.7(6) | | 72Ca33 |
| 2940(10) | | | | | | | | | 120 | | | | | | | 70Ca01 |
| 2961.9(4) | | | | | | | | | | | | | | 6.1(6) | | 00Br33 |
| 2976.1(5) | | | | | | | | | | | | | | | | 79F110 |
| 2986.7(3) | $1, \langle 3 \rangle$ | | | | | | | | | | | | | 16.9(20) | | 00Br33 |
| 2990.6(5) | | | | | | | | | | | | | | | | |
| 2995.7(3) | 3 | | | | | | | | | | | | | 12.8(10) | | 00Br33 |
| 2998.1(5) | | | | | | | | | | | | | | | | |
| 3024(10) | | 13(2) | | | | | | | | | | | | | | 72Ca33 |
| 3040(10) | | | | | | | | | 60 | | | | | | | 70Ca01 |
| 3065.7(5)* | | | | | | | | | | | | | | 3.7(6) | | 00Br33 |
| 3100.8(7) | | | | | | | 2 | | | | | | | 1.9(4) | | 77Se01 |
| 3108.2(7) | | | | | | | | | | | | | | 2.1(4) | | 00Br33 |
| 3113(10) | $3^+, 5^+$ | 9.6(15) | | 2 | | | | | 130 | | | | | | | 72Ca33 |
| 3127.8(4)* | | | | | | | | | | | | | | 4.5(5) | | |
| 3134.3(6) | | | | | | | | | | | | | | 2.5(4) | | 00Br33 |
| 3140(15) | | 6(3) | | | | | | | | | | | | | | 79F110 |
| 3144.9(5) | | | | | | | | | | | | | | 2.9(5) | | 00Br33 |
| 3152.8(5) | | | | | | | | | | | | | | | | |

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¹¹⁷Sn
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| E^* | $2J^\pi$ | σ (d,p) | S_{dp} | L | L | S_N | L | C^2S | σ (p,d) | S_N | L | C^2S | σ (d,t) | $g\Gamma_o^2/\Gamma$ | σ (p,t) | Ref. |
|------------|---------------------------------|------------------|----------|-----|-----|------------------|-----|--------|------------------|-------|-----|--------|------------------|----------------------|------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | | | | (α, τ) | | (p,d) | $\mu\text{b/sr}$ | (p,d) | | (d,t) | $\mu\text{b/sr}$ | [meV] | $\mu\text{b/sr}$ | |
| 3169.1(4) | 3 | | | | | | | | | | | | | 8.8(8) | | 00Br33 |
| 3172(10) | | 68(4) | | | | | | | | | | | | | | 72Ca33 |
| 3224.6(11) | 1,⟨3⟩ | | | | | | | | | | | | | 15.5(14) | | 00Br33 |
| 3226.1(21) | | | | | | | | | | | | | | | | |
| 3228.2(7) | 3 | | | | | | | | | | | | | 34.7(25) | | 00Br33 |
| 3235(10) | 5 ⁻ , 7 ⁻ | 110(4) | 0.12 | 3 | 3 | 0.113 | | | | | | | | | | 72Ca33 |
| 3286.0(4) | 1,⟨3⟩ | | | | | | | | | | | | | 10.1(10) | | 00Br33 |
| 3325(10) | 1 ⁻ , 3 ⁻ | 43(3) | 0.03 | 1 | | | | | | | | | | | | 67Se12 |
| 3349.9(3) | 1,⟨3⟩ | | | | | | | | | | | | | 9.5(9) | | 00Br33 |
| 3356.9(5) | | | | | | | | | | | | | | | | |
| 3360.1(8) | | | | | | | | | | | | | | 1.6(6) | | 00Br33 |
| 3385.4(4) | | | | | | | | | | | | | | 4.2(6) | | 00Br33 |
| 3408.5(9) | | 5(2) | | | | | | | | | | | | 1.6(6) | | 00Br33 |
| 3425.8(9) | | | | | | | | | | | | | | 1.8(8) | | 00Br33 |
| 3468.8(6) | 1 ⁻ , 3 ⁻ | 45(3) | 0.079 | 1 | | | | | | | | | | 1.5(5) | | 67Se12 |
| 3489.6(3) | 3 | | | | | | | | | | | | | 17.3(15) | | 00Br33 |
| 3506.0(5) | | | | | | | | | | | | | | | | |
| 3520.4(7) | | | | | | | | | | | | | | 1.7(6) | | 00Br33 |
| 3560.5(6) | | | | | | | | | | | | | | 1.8(5) | | 00Br33 |
| 3580(10) | | 20(2) | | | | | | | | | | | | | | 72Ca33 |
| 3602.4(6) | ⟨23 ⁻ ⟩ | | | | | | | | | | | | | | | |
| 3637(10) | 1 ⁻ , 3 ⁻ | 5(2) | 0.039 | 1 | | | | | | | | | | | | 67Se12 |
| 3716(10) | 7 ⁺ , 9 ⁺ | 28(3) | | | | | | | | | | | | | | 72Ca33 |
| 3719.8(7) | | | | | | | | | | | | | | 11.4(16) | | 00Br33 |
| 3749.4(4) | | | | | | | | | | | | | | 7.6(12) | | 00Br33 |
| 3761.4(8)* | | | | | | | | | | | | | | 3.3(12) | | 00Br33 |
| 3773.3(13) | | | | | | | | | | | | | | 3.4(14) | | 00Br33 |
| 3785(10) | 5 ⁻ , 7 ⁻ | 69(4) | 0.03 | 3 | | | | | | | | | | | | 72Ca33 |
| 3788.3(7) | | | | | | | | | | | | | | 5.9(13) | | 00Br33 |
| 3824.0(6) | ⟨27 ⁻ ⟩ | | | | | | | | | | | | | | | |
| 3871.3(4) | 1,⟨3⟩ | 79(4) | | | | | | | | | | | | 19.7(26) | | 00Br33 |
| 3883.2(4) | | | | | | | | | | | | | | 14.1(21) | | 00Br33 |
| 3893.0(6) | | | | | | | | | | | | | | | | |
| 3900.2(6) | | | | | | | | | | | | | | 4.3(12) | | 00Br33 |
| 3920.1(7) | | | | | | | | | | | | | | 5.8(16) | | 00Br33 |
| 3930.4(5) | | | | | | | | | | | | | | 4.5(12) | | 00Br33 |
| 3949.8(16) | | 138(5) | | | | | | | | | | | | 13.0(56) | | 00Br33 |
| 3980.9(5) | | incl | | | | | | | | | | | | 14.3(28) | | 00Br33 |
| 3994.0(6) | | | | | | | | | | | | | | 7.2(19) | | 00Br33 |
| 4013.6(6) | | 108(5) | | | | | | | | | | | | 10.7(32) | | 00Br33 |
| 4027.8(4) | | | | | | | | | | | | | | 27.7(54) | | 00Br33 |
| 4043.6(7) | | | | | | | | | | | | | | 16.8(48) | | 00Br33 |
| 4110(15) | | 30(10) | | | | | | | | | | | | | | 72Ca33 |
| 4160(15) | | 90(10) | | | | | | | | | | | | | | 72Ca33 |
| 4210(15) | | 204(6) | | | | | | | | | | | | | | 72Ca33 |

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| E^* | $2J^\pi$ | σ (d,p) | S_{dp} | L | L | S_N | L | C^2S | σ (p,d) | S_N | L | C^2S | σ (d,t) | gI_o^2/Γ | σ (p,t) | Ref. |
|----------------|-----------------------|------------------|----------|--------|--------|------------------|--------|--------|------------------|-------|-----|--------|------------------|-----------------|------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | | | | (α, τ) | | (p,d) | $\mu\text{b/sr}$ | (p,d) | | (d,t) | $\mu\text{b/sr}$ | [meV] | $\mu\text{b/sr}$ | |
| 4290(15) | | 40(15) | | | | | | | | | | | | | | 72Ca33 |
| 4360(15) | | 30(10) | | | | | | | | | | | | | | 72Ca33 |
| 4420 | | 25(4) | | | | | | | | | | | | | | 72Ca33 |
| 4460 | | 101(7) | | | | | | | | | | | | | | 72Ca33 |
| 4490 | | 21(4) | | | | | | | | | | | | | | 72Ca33 |
| 4550 | | 21(3) | | | | | | | | | | | | | | 72Ca33 |
| ≈ 4970 | $1^-, 3^-$ | | 0.14 | 1 | | | | | | | | | | | | 67Se12 |
| ≈ 5050 | | | | | | | | | | | | | | | | |
| 5300(60) | $7^+, 9^+$ | | | | | | | | | | 4 | | | | | 75Vi06 |
| 6400(60) | $7^+, 9^+$ | | | | | | | | | | | | | | | |
| 6942.9 | 1^+ | | | | | | | | | | | | | | | |
| 7010 | | | | | | | | | | | | | | | | |
| 14180** | $\langle 9^+ \rangle$ | | | | | | 4 | 0.37 | | | | | | | | 80Ta04 |
| 14550** | $\langle 1^- \rangle$ | | | | | | 1 | 0.095 | | | | | | | | 80Ta04 |
| 14810** | $\langle 3^- \rangle$ | | | | | | 1 | 0.11 | | | | | | | | 80Ta04 |
| 15660(40) | | | | | | | | | | | | | | | | |
| 18000 | | | | | | | | | | | | | | | | |
| 19000 | | | | | | | | | | | | | | | | |
| | | | | 67Sc12 | | | | 70Ca01 | | | | 75Vi06 | | 00Br33 | | Ref. |
| | | 72Ca33 | | | 70Bi01 | | 71Ma58 | | 83Ao01 | | | | 67Sc12 | | 71Fl05 | Ref. |

Additional data on this isotope can be found in [87St16, 80Ta04, 79Ch08, 79Ra17, 75Ge09, 74De10, 71Ma58, 70Bi01].

Abundance: 7.68(7) %.

* The γ -transition might be due to an inelastic decay of a higher-lying level [00Br33].

** IAS of ¹¹⁷In ground state and excited levels with $E^*=320$ and 588 keV [77Se01, 02Bl10].

*** Found in [83Se12]; possibly a member of the quintet of the weak-coupling scheme $h_{11/2} \times 2^+$

Cross section of the (p,d), (τ, α) reactions and spectroscopic factors of IAS states are considered in [77Se01], additional σ (p,d) and corresponding values S_n^- are given in [82Fl02].

Fragmentation of the electromagnetic excitation strength in this nucleus is discussed in [99Po22].

Data for this isotope are considered in vol. LB I/18B.

Energy levels and branching ratios [02Bl10]. Part 2

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| E^* | $2J^\pi$ | σ (d,p) | S_N | I_p | L | β_L | $I_{s,0}$ | $B(E1)$ | $T_{1/2}$ or | Ref. |
|-------------|----------|------------------|-------|----------|-----|---------------------|-----------|-------------|---------------|--------|
| [keV] | | $\mu\text{b/sr}$ | (d,p) | (p,p') | | (α, α') | [eVb] | $10^{-3}ef$ | Γ_{cm} | |
| 0 | 1^+ | 2740 | 0.52 | | | | | | Stable | 75Vi06 |
| 158.562(12) | 3^+ | 3720 | 0.76 | 53(10) | | | | | 0.279(9) ns | 72Ca33 |
| 314.58(4) | 11^- | 800 | 0.79 | 115(15) | | | | | 13.76(4) d | 72Ca33 |
| 711.54(10) | 7^+ | 166 | 0.11 | 53(10) | | | | | 980(30) ps | 72Ca33 |
| 1004.53(14) | 3^+ | 875 | | 1000(99) | 2 | | | | 1.32(6) ps | |
| 1019.92(6) | 5^+ | incl | 0.064 | | | | | | 0.46(4) ps | 72Ca33 |

(continued)

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| E^* | $2J^\pi$ | σ (d,p) | S_N | I_p | L | β_L | $I_{s,0}$ | $B(E1)$ | $T_{1/2}$ or | Ref. |
|-------------|------------------------|------------------|-------|---------|-----|---------------------|-----------|-------------|-----------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | (d,p) | (p,p') | | (α, α') | [eVb] | $10^{-3}ef$ | Γ_{cm} | |
| 1179.7(5) | 5^+ | 490 | 0.039 | 35(9) | 2 | 0.108 | | | <0.4 ps | 72Ca33 |
| 1304.3(5) | $\langle 7^- \rangle$ | 226 | 0.027 | 93(12) | | | | | | 72Ca33 |
| 1446.2(3) | 5^+ | | | 206(15) | 2 | | 2.3(4) | 0.40(7) | 0.42(3) ps | 79Fl10 |
| 1468.6(3) | $3^+, 5^+$ | | | | | | | | | 77Se01 |
| 1496.8(10) | $5^+, 3^+$ | 315 | 0.028 | 23(8) | | | | | | 72Ca33 |
| 1510.1(3) | | | | | | | 4.1(5) | 0.68(8) | | 00Br33 |
| 1530 | $3^+, 5^+$ | | | | | | | | | 77Se01 |
| 1578.25(24) | $\langle 3^+ \rangle$ | | | | | | | | | 70Ca01 |
| 1589*** | $\langle 11^- \rangle$ | | | | | | | | | 70Bi01 |
| 1589(10) | $3^+, 5^+$ | 98 | 0.006 | 103(13) | | | | | | 67Se12 |
| 1593.1(3) | $\langle 15^- \rangle$ | | | | | | | | | |
| 1625.4(3) | $\langle 13^- \rangle$ | | | | | | | | | |
| 1628(5) | $7^+, 9^+$ | | | | | | | | | 77Se01 |
| 1668.2(15) | $5^+, 3^+$ | 106 | 0.007 | | | | | | | 72Ca33 |
| 1710 | $3^+, 5^+$ | | | | | | | | | 77Se01 |
| 1770 | $3^+, 5^+$ | | | | | | | | | 77Se01 |
| 1810(10) | | | | 29(9) | | | | | | 79Fl10 |
| 1874.5(4) | $\langle 11^+ \rangle$ | | | | | | | | | |
| 1910(10) | | | | 35(11) | | | | | | 79Fl10 |
| 1948(10) | | 40 | 0.003 | | | | | | | 67Se12 |
| | | | 0.002 | | | | | | | 67Se12 |
| 2007(10) | $1^-, 3^-$ | | | 235(30) | | | | | | 77Se01 |
| 2046(10) | $5^-, 7^-$ | | 0.027 | 430(25) | | | | | | 72Ca33 |
| 2048.2(3) | $1, \langle 3 \rangle$ | 277 | | | | | 6.2(5) | 0.75(6) | | 00Br33 |
| 2050(10) | $7^+, 9^+$ | | | | | | | | | 77Se01 |
| 2076(10) | $1^-, 3^-$ | | 0.009 | | | | | | | 72Ca33 |
| 2079(10) | 1^+ | | | | | | | | | 77Se01 |
| 2128.6(4) | | | | 130(20) | | | 1.1(2) | 0.12(3) | | 79Fl10 |
| 2146(10) | $3^+, 5^+$ | | 0.005 | | | | | | | 72Ca33 |
| 2160(20) | $5^-, 7^-$ | | | 620(30) | 3 | | | | | 79Fl10 |
| 2203(10) | | | | 300(25) | | | | | | 79Fl10 |
| 2256(10) | | | | | | | | | | 72Ca33 |
| 2280(20) | $5^-, 7^-$ | | | 360(30) | 3 | 0.121 | | | | 68Ku20 |
| 2280.4(6) | | | | | | | 0.5(2) | 0.05(2) | | 00Br33 |
| 2300(15) | $3^+, 5^+$ | 205 | 0.004 | | | | | | | 72Ca33 |
| 2304.6(5) | | | | | | | 0.7(2) | 0.08(2) | | 00Br33 |
| 2331.2(15) | | | | 460(25) | | | | | | 79Fl10 |
| 2350(10) | $9^-, 11^-$ | | | | | | | | | 77Se01 |
| 2356.7(8)* | | | | | | | 0.8(3) | 0.08(3) | | 00Br33 |
| 2367.3(2) | 3 | | | | | | 7.9(6) | 0.83(6) | | 00Br33 |
| 2381.0(4) | $\langle 17^- \rangle$ | | | | | | | | | |
| 2390(15) | $1^-, 3^-$ | | 0.004 | | | | | | | 72Ca33 |
| 2400(10) | 1^+ | | | 180(30) | | | | | | 79Fl10 |
| 2400.7(4) | $\langle 17^- \rangle$ | | | | | | | | | |
| 2406.4(4) | $\langle 19^+ \rangle$ | | | | | | | | 1.75(7) μs | |

(continued)

¹¹⁷Sn
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| E^* | $2J^\pi$ | σ (d,p) | S_N | I_p | L | β_L | $I_{s,0}$ | $B(E1)$ | $T_{1/2}$ or | Ref. |
|----------------|------------------------|------------------|-------|---------|-----|---------------------|-----------|-------------|----------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | (d,p) | (p,p') | | (α, α') | [eVb] | $10^{-3}ef$ | Γ_{cm} | |
| 2415.9(3) | | | | | | | 1.9(2) | 0.19(2) | | 00Br33 |
| 2461(10) | $5^-, 7^-$ | 293 | 0.044 | 330(30) | 3 | | | | | 72Ca33 |
| ≈ 2500 | $7^+, 9^+$ | | | | | | | | | 77Se01 |
| 2515.8(5) | | | | 95(28) | | | 0.7(2) | 0.07(2) | | 00Br33 |
| 2545(10) | $5^-, 7^-$ | 167 | 0.019 | | | | | | | 72Ca33 |
| 2590.2(5) | | | | 175(30) | | | 1.0(2) | 0.10(2) | | 00Br33 |
| 2655.5(11) | $\langle 1, 3 \rangle$ | | 0.013 | | | | | | | 72Ca33 |
| 2656(10) | $5^-, 7^-$ | | | | | | | | | |
| 2660(10) | $3^+, 5^+$ | | | | | | | | | 77Se01 |
| 2690(10) | $1^-, 3^-$ | 134 | | 130(25) | | | | | | 77Se01 |
| 2709.1(5) | | | | | | | 1.5(2) | 0.13(2) | | 00Br33 |
| 2718.2(4) | | | | | | | 1.7(4) | 0.16(4) | | 00Br33 |
| 2750(15) | | | | 60(18) | 4 | 0.054 | | | | 68Ku20 |
| 2770(10) | $3^+, 5^+$ | | 0.006 | | | | | | | 72Ca33 |
| 2775.2(4) | | | | | | | 1.0(2) | 0.09(2) | | 00Br33 |
| 2803.4(5)* | | | | | | | 1.2(2) | 0.11(2) | | 00Br33 |
| 2807.6(5) | $\langle 19^- \rangle$ | | | | | | | | | |
| 2827(10) | $3^+, 5^+$ | | | 48(17) | | | | | | 77Se01 |
| 2864.1(11) | | | | | | | 0.6(2) | 0.05(2) | | 00Br33 |
| 2879.8(9) | | | | | | | 0.6(2) | 0.05(2) | | 00Br33 |
| 2908.5(4) | $1^-, 3^-$ | 1076 | 0.058 | | | | 2.1(3) | 0.18(2) | | 72Ca33 |
| 2940(10) | | | | | | | | | | 70Ca01 |
| 2961.9(4) | | | | | | | 2.7(3) | 0.22(2) | | 00Br33 |
| 2976.1(5) | | | | 100(20) | | | | | | 79Fl10 |
| 2986.7(3) | $1, \langle 3 \rangle$ | | | | | | 7.3(9) | 0.61(7) | | 00Br33 |
| 2990.6(5) | | | | | | | | | | |
| 2995.7(3) | 3 | | | | | | 5.5(4) | 0.46(3) | | 00Br33 |
| 2998.1(5) | | | | | | | | | | |
| 3024(10) | | | | | | | | | | 72Ca33 |
| 3040(10) | | | | | | | | | | 70Ca01 |
| 3065.7(5)* | | | | | | | 1.5(2) | 0.12(2) | | 00Br33 |
| 3100.8(7) | | | | 52(18) | | | 0.8(2) | 0.06(1) | | 77Se01 |
| 3108.2(7) | | | | | | | 0.8(2) | 0.07(1) | | 00Br33 |
| 3113(10) | $3^+, 5^+$ | | 0.013 | | | | | | | 72Ca33 |
| 3127.8(4)* | | | | | | | 1.8(2) | 0.14(2) | | |
| 3134.3(6) | | | | | | | 1.0(2) | 0.08(1) | | 00Br33 |
| 3140(15) | | | | 50(18) | | | | | | 79Fl10 |
| 3144.9(5) | | | | | | | 1.1(2) | 0.09(2) | | 00Br33 |
| 3152.8(5) | | | | | | | | | | |
| 3169.1(4) | 3 | | | | | | 3.4(3) | 0.26(3) | | 00Br33 |
| 3172(10) | | | | | | | | | | 72Ca33 |
| 3224.6(11) | $1, \langle 3 \rangle$ | | | | | | 5.7(5) | 0.44(4) | | 00Br33 |
| 3226.1(21) | | | | | | | | | | |
| 3228.2(7) | 3 | | | | | | 12.8(9) | 0.99(7) | | 00Br33 |
| 3235(10) | $5^-, 7^-$ | 1413 | 0.12 | | | | | | | 72Ca33 |

(continued)

¹¹⁷Sn
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| E^* | $2J^\pi$ | σ (d,p) | S_N | I_p | L | β_L | $I_{s,0}$ | $B(E1)$ | $T_{1/2}$ or | Ref. |
|------------|--------------------------------|------------------|-------|--------|-----|---------------------|-----------|-------------|----------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | (d,p) | (p,p') | | (α, α') | [eVb] | $10^{-3}ef$ | Γ_{cm} | |
| 3286.0(4) | 1,⟨3⟩ | | | | | | 3.6(4) | 0.28(3) | | 00Br33 |
| 3325(10) | 1 ⁻ ,3 ⁻ | 538 | 0.030 | | | | | | | 67Se12 |
| 3349.9(3) | 1,⟨3⟩ | | | | | | 3.3(3) | 0.24(2) | | 00Br33 |
| 3356.9(5) | | | | | | | | | | |
| 3360.1(8) | | | | | | | 0.6(2) | 0.04(2) | | 00Br33 |
| 3385.4(4) | | | | | | | 1.4(2) | 0.10(2) | | 00Br33 |
| 3408.5(9) | | | | | | | 0.5(2) | 0.04(1) | | 00Br33 |
| 3425.8(9) | | | | | | | 0.6(3) | 0.04(2) | | 00Br33 |
| 3468.8(6) | 1 ⁻ ,3 ⁻ | 1410 | 0.079 | | | | 0.5(2) | 0.03(1) | | 67Se12 |
| 3489.6(3) | 3 | | | | | | 5.5(5) | 0.39(3) | | 00Br33 |
| 3506.0(5) | | | | | | | | | | |
| 3520.4(7) | | | | | | | 0.5(2) | 0.04(1) | | 00Br33 |
| 3560.5(6) | | | | | | | 0.5(2) | 0.04(1) | | 00Br33 |
| 3580(10) | | | | | | | | | | 72Ca33 |
| 3602.4(6) | ⟨23 ⁻ ⟩ | | | | | | | | | |
| 3637(10) | 1 ⁻ ,3 ⁻ | 682 | 0.039 | | | | | | | 67Se12 |
| 3716(10) | 7 ⁺ ,9 ⁺ | | | | | | | | | 72Ca33 |
| 3719.8(7) | | | | | | | 3.2(5) | 0.21(3) | | 00Br33 |
| 3749.4(4) | | | | | | | 2.1(3) | 0.14(2) | | 00Br33 |
| 3761.4(8)* | | | | | | | 0.9(3) | 0.06(2) | | 00Br33 |
| 3773.3(13) | | | | | | | 0.9(4) | 0.06(3) | | 00Br33 |
| 3785(10) | 5 ⁻ ,7 ⁻ | 410 | 0.058 | | | | | | | 72Ca33 |
| 3788.3(7) | | | | | | | 1.6(4) | 0.10(2) | | 00Br33 |
| 3824.0(6) | ⟨27 ⁻ ⟩ | | | | | | | | | |
| 3871.3(4) | 1,⟨3⟩ | | | | | | 5.1(7) | 0.33(4) | | 00Br33 |
| 3883.2(4) | | | | | | | 3.6(5) | 0.23(3) | | 00Br33 |
| 3893.0(6) | | | | | | | | | | |
| 3900.2(6) | | | | | | | 1.1(3) | 0.07(2) | | 00Br33 |
| 3920.1(7) | | | | | | | 1.5(4) | 0.09(3) | | 00Br33 |
| 3930.4(5) | | | | | | | 1.1(3) | 0.07(2) | | 00Br33 |
| 3949.8(16) | | | | | | | 3.2(14) | 0.20(9) | | 00Br33 |
| 3980.9(5) | | 1820 | | | | | 3.5(7) | 0.22(4) | | 00Br33 |
| 3994.0(6) | | incl | | | | | 1.7(5) | 0.11(3) | | 00Br33 |
| 4013.6(6) | | incl | | | | | 2.5(8) | 0.16(5) | | 00Br33 |
| 4027.8(4) | | incl | | | | | 6.6(13) | 0.41(8) | | 00Br33 |
| 4043.6(7) | | | | | | | 3.9(11) | 0.24(7) | | 00Br33 |
| 4110(15) | | | | | | | | | | 72Ca33 |
| 4160(15) | | | | | | | | | | 72Ca33 |
| 4210(15) | | | | | | | | | | 72Ca33 |
| 4290(15) | | | | | | | | | | 72Ca33 |
| 4360(15) | | | | | | | | | | 72Ca33 |
| 4420 | | | | | | | | | | 72Ca33 |
| 4460 | | | | | | | | | | 72Ca33 |
| 4490 | | | | | | | | | | 72Ca33 |
| 4550 | | | | | | | | | | 72Ca33 |

(continued)

¹¹⁷Sn
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| E^* | $2J^\pi$ | σ (d,p) | S_N | I_p | L | β_L | $I_{s,0}$ | $B(E1)$ | $T_{1/2}$ or | Ref. |
|----------------|-----------------------|------------------|--------|--------|--------|---------------------|-----------|-------------|----------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | (d,p) | (p,p') | | (α, α') | [eVb] | $10^{-3}ef$ | Γ_{cm} | |
| ≈ 4970 | $1^-, 3^-$ | 2200 | 0.14 | | | | | | | 67Se12 |
| ≈ 5050 | | 743 | | | | | | | | |
| 5300(60) | $7^+, 9^+$ | | | | | | | | | 75Vi06 |
| 6400(60) | $7^+, 9^+$ | | | | | | | | | |
| 6942.9 | 1^+ | | | | | | | | | |
| 7010 | | | | | | | | | | |
| 14180** | $\langle 9^+ \rangle$ | | | | | | | | 22(8) | 80Ta04 |
| 14550** | $\langle 1^- \rangle$ | | | | | | | | 38(13) | 80Ta04 |
| 14810** | $\langle 3^- \rangle$ | | | | | | | | 27(9) | 80Ta04 |
| 15660(40) | | | | | | | | | | |
| 18000 | | | | | | | | | | |
| 19000 | | | | | | | | | | |
| | | 67Sc12 | | 79Fl10 | 68Ku20 | | 00Br33 | 00Br33 | 80Ta04 | Ref. |
| | | | 72Ca33 | | | 68Ku20 | | | | Ref. |

Energy levels and branching ratios [02Bl10]. Part 3

¹¹⁷Sn
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| E^* | $2J^\pi$ | Branching ratios in percentage | | | | | | | | | | |
|-------------|------------------------|--------------------------------|---------|---------|---------|-----|------|------|------|------|--------|--------|
| | | $E_f^*:$ | 0 | 158 | 314 | 711 | 1004 | 1180 | 1497 | 1593 | 1625.4 | 2406.4 |
| [keV] | | $2J_f^\pi:$ | | | | | | | | | | |
| 158.562(12) | 3^+ | | 100 | | | | | | | | | |
| 314.58(4) | 11^- | | 0.02(1) | 100 | | | | | | | | |
| 711.54(10) | 7^+ | | | 100 | 0.17(1) | | | | | | | |
| 1004.53(14) | 3^+ | | 83.2(3) | 16.8(3) | | | | | | | | |
| 1019.92(6) | 5^+ | | 20(1) | 80(2) | | | | | | | | |
| 1179.7(5) | 5^+ | | 2(2) | 98 | | | | | | | | |
| 1304.3(5) | $\langle 7^- \rangle$ | | | | 100 | | | | | | | |
| 1446.2(3) | 5^+ | | 58(2) | 42(2) | | | | | | | | |
| 1468.6(3) | $3^+, 5^+$ | | 41(11) | 59(12) | | | | | | | | |
| 1496.8(10) | $5^+, 3^+$ | | | 100 | | | | | | | | |
| 1510.1(3) | | | x | | | | | | | | | |
| 1578.25(24) | $\langle 3^+ \rangle$ | | 63 | 37(9) | | | | | | | | |
| 1593.1(3) | $\langle 15^- \rangle$ | | | | 100 | | | | | | | |
| 1625.4(3) | $\langle 13^- \rangle$ | | | | 100 | | | | | | | |
| 1668.2(15) | $5^+, 3^+$ | | | 100 | | | | | | | | |
| 1874.5(4) | $\langle 11^+ \rangle$ | | | | | 100 | | | | | | |
| 2048.2(3) | $1, \langle 3 \rangle$ | | x | | | | | | | | | |
| 2128.6(4) | | | x | | | | | | | | | |
| 2280.4(6) | | | x | | | | | | | | | |
| 2304.6(5) | | | x | | | | | | | | | |
| 2331.2(15) | | | | 100 | | | | | | | | |
| 2367.3(2) | 3 | | x | | | | | | | | | |

(continued)

 $^{117}_{50}\text{Sn}$

| E^* [keV] | $2J^\pi$ | $E_f^*:$ $2J_f^\pi:$ | Branching ratios in percentage | | | | | | | | | |
|----------------|------------------------|-------------------------|--------------------------------|--------|-----|-----|------|------|------|--------|--------|--------|
| | | | 0 | 158 | 314 | 711 | 1004 | 1180 | 1497 | 1593 | 1625.4 | 2406.4 |
| 2381.0(4) | $\langle 17^- \rangle$ | | | | | | | | | 33(13) | 67(13) | |
| 2400.7(4) | $\langle 17^- \rangle$ | | | | | | | | | 33(5) | 67(9) | |
| 2406.4(4) | $\langle 19^+ \rangle$ | | | | | | | | | 90(15) | 10(5) | |
| 2415.9(3) | | | x | | | | | | | | | |
| 2515.8(5) | | | 43.9 | 56(19) | | | | | | | | |
| 2590.2(5) | | | x | | | | | | | | | |
| 2655.5(11) | $\langle 1,3 \rangle$ | | | 58 | | | 24 | | 18 | | | |
| 2709.1(5) | | | x | | | | | | | | | |
| 2718.2(4) | | | x | | | | | | | | | |
| 2775.2(4) | | | x | | | | | | | | | |
| 2807.6(5) | $\langle 19^- \rangle$ | | | | | | | | | 100 | | |
| 2864.1(11) | | | x | | | | | | | | | |
| 2879.8(9) | | | x | | | | | | | | | |
| 2908.5(4) | $1^-, 3^-$ | | x | | | | | | | | | |
| 2961.9(4) | | | 66 | 34(5) | | | | | | | | |
| 2976.1(5) | | | | | | | | | | 100 | | |
| 2986.7(3) | $1, \langle 3 \rangle$ | | x | | | | | | | | | |
| 2990.6(5) | | | | | | | | | | | | 100 |
| 2995.7(3) | 3 | | x | | | | | | | | | |
| 2998.1(5) | | | | | | | | | | | | 100 |
| 3100.8(7) | | | x | | | | | | | | | |
| 3108.2(7) | | | x | | | | | | | | | |
| 3134.3(6) | | | x | | | | | | | | | |
| 3144.9(5) | | | x | | | | | | | | | |
| 3152.8(5) | | | | | | | | | | | | 100 |
| 3169.1(4) | 3 | | x | | | | | | | | | |
| 3224.6(11) | $1, \langle 3 \rangle$ | | 76 | 24(3) | | | | | | | | |
| 3226.1(21) | | | | | | | | 100 | | | | |
| 3228.2(7) | 3 | | x | | | | | | | | | |
| 3286.0(4) | $1, \langle 3 \rangle$ | | 65 | 35(3) | | | | | | | | |
| 3349.9(3) | $1, \langle 3 \rangle$ | | x | | | | | | | | | |
| 3360.1(8) | | | x | | | | | | | | | |
| 3385.4(4) | | | x | | | | | | | | | |
| 3408.5(9) | | | x | | | | | | | | | |
| 3425.8(9) | | | x | | | | | | | | | |
| 3468.8(6) | $1^-, 3^-$ | | x | | | | | | | | | |
| 3489.6(3) | 3 | | x | | | | | | | | | |
| 3520.4(7) | | | x | | | | | | | | | |
| 3560.5(6) | | | x | | | | | | | | | |
| 3719.8(7) | | | x | | | | | | | | | |
| 3749.4(4) | | | x | | | | | | | | | |
| 3773.3(13) | | | x | | | | | | | | | |
| 3788.3(7) | | | x | | | | | | | | | |
| 3871.3(4) | $1, \langle 3 \rangle$ | | x | | | | | | | | | |
| 3883.2(4) | | | x | | | | | | | | | |

(continued)

¹¹⁷Sn
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| E^* [keV] | $2J^\pi$ | Branching ratios in percentage | | | | | | | | | | |
|----------------|----------|--------------------------------|----|--------|-----|-----|------|------|------|------|--------|--------|
| | | $E_f^*:$ $2J_f^\pi:$ | 0 | 158 | 314 | 711 | 1004 | 1180 | 1497 | 1593 | 1625.4 | 2406.4 |
| 3900.2(6) | | | x | | | | | | | | | |
| 3920.1(7) | | | 51 | 49(19) | | | | | | | | |
| 3930.4(5) | | | x | | | | | | | | | |
| 3949.8(16) | | | x | | | | | | | | | |
| 3980.9(5) | | | x | | | | | | | | | |
| 3994.0(6) | | | x | | | | | | | | | |
| 4013.6(6) | | | x | | | | | | | | | |
| 4027.8(4) | | | x | | | | | | | | | |
| 4043.6(7) | | | x | | | | | | | | | |

Energy levels and branching ratios [02Bl10]. Part 4

¹¹⁷Sn
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| E^* [keV] | $2J^\pi$ | Branching ratios in percentage | | | | | | |
|----------------|------------------------|--------------------------------|--------|--------|--------|--------|--------|--------|
| | | $E_f^*:$ $2J_f^\pi:$ | 2807.6 | 2998.1 | 3152.8 | 3356.9 | 3506.0 | 3602.4 |
| 3356.9(5) | | | | 100 | | | | |
| 3506.0(5) | | | | | x | x | | |
| 3602.4(6) | $\langle 23^- \rangle$ | | 100 | | | | | |
| 3824.0(6) | $\langle 27^- \rangle$ | | | | | | | 100 |
| 3893.0(6) | | | | | | | 100 | |

Energy levels and branching ratios [95Ki07].

¹¹⁸Sn
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| E^* [keV] | J^π | L | σ (t,p) $\mu\text{b/sr}$ | L | S' | $d\sigma/d\Omega$ $\mu\text{b/sr}$ | L | S_N | σ (p,d) mb | σ (d,t) $\mu\text{b/sr}$ | σ (p,t) $\mu\text{b/sr}$ | L | S_α | $I_{s,0}$ | Ref. |
|----------------|-----------------------|-------|------------------------------------|-----|-------|---------------------------------------|-----|-------|----------------------|------------------------------------|------------------------------------|---------------------|----------------------|-----------|--------|
| | | (t,p) | | | (d,p) | | | (p,d) | | | | | (d, ⁶ Li) | [eVb] | |
| 0.0 | 0 ⁺ | 0 | 6400 | 0 | 0.449 | 1049 | 0 | 0.55 | 45.5(40) | 946 | 4900 | | 0.022 | | 83Fr28 |
| 1229.67(2) | 2 ⁺ | 2 | 900 | 2 | 0.236 | 190 | 2 | 0.26 | 9.7(10) | 289 | 980 | | 0.012 | 11.8 | 83Fr28 |
| 1758.31(3) | 0 ⁺ | 0 | 100 | 0 | 0.064 | 188 | 0 | 0.06 | 3.1(3) | 135 | 60 | | 0.018 | | 77Fi04 |
| 2042.88(2) | 2 ⁺ | | | | | | | | | 192 | 100 | 2 | 0.006 | | 79Ja21 |
| 2056.91(4) | 0 ⁺ | 0 | 100 | 0 | 0.062 | 188 | 0 | 0.11 | 5.5(5) | incl | 100 | | 0.001 | | 68Bj02 |
| 2120(15) | $\langle 2^+ \rangle$ | | | | | | | | | 26 | | $\langle 2 \rangle$ | | | 79Ja21 |
| 2280.34(2) | 4 ⁺ | 4 | 100 | | | 4 | 4 | | ≈ 1 | 354 | 60 | | 0.008 | | 68Bj02 |
| 2321.23(4) | 5 ⁻ | | 1400 | | | | | | | incl | 675 | | 0.022 | | 79Ja21 |
| 2324.85(2) | 3 ⁻ | | incl | | | | | | | incl | | | | | 79Ja21 |
| 2328.02(3) | 2 ⁺ | | incl | 2 | 0.837 | 720 | 2 | 0.37 | 8.2(8) | incl | | 3 | 0.015 | | 83Fr28 |
| 2403.22(3) | 2 ⁺ | | 50 | | | | | | | | | 2 | 0.002 | | |
| 2408(3) | 4 ⁺ | 4 | incl | | | 8 | | | | | | | | | 68Bj02 |
| 2488.87(2) | 4 ⁺ | | 100 | | | | | | | 719 | 140 | 4 | 0.005 | | 79Ja21 |

(continued)

 ^{118}Sn
50

| E^* | J^π | L | σ (t,p) | L | S' | $d\sigma/d\Omega$ | L | S_N | σ (p,d) | σ (d,t) | σ (p,t) | L | S_α | $I_{s,0}$ | Ref. |
|-------------|-----------------------|-------|------------------|---------------------|-------|-------------------|---------------------|-------|----------------|------------------|------------------|-----|---------------------|-----------|--------|
| [keV] | | (t,p) | $\mu\text{b/sr}$ | | (d,p) | $\mu\text{b/sr}$ | | (p,d) | mb | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | | (d, ^6Li) | [eVb] | |
| 2496.88(5) | 0^+ | | incl | 0 | 0.172 | 557 | | | | incl | | | 0.001 | | 83Fr28 |
| 2530 | | | | | | | 0 | 0.32 | 16.0(15) | | | | | | 82Fl02 |
| 2574.91(4) | 7^- | 7 | 300 | | | | | | | | | | 0.006 | | 68Bj02 |
| 2577(3) | 2^+ | | | | | 6 | | | | | | 2 | 0.003 | | 83Fr28 |
| 2677.35(3) | 2^+ | | | 2 | 0.124 | 128 | | | | | 70 | | 0.005 | | 83Fr28 |
| 2725(3) | 1^+-3^+ | | | | | | | | | 416 | 100 | | | | 79Ch08 |
| 2733.79(2) | 4^+ | | | | | | | | | | incl | | 0.001 | | |
| 2738.01(4) | 1^+ | | 300 | 2 | 0.933 | 802 | $\langle 2 \rangle$ | 0.61 | 9.8(11) | | | | | | 83Fr28 |
| 2773.94(4) | 4^- | | | | | 10 | | | | | | | | | 83Fr28 |
| 2817(3) | 4^--6^- | | | | | | | | | | | | | | |
| 2817.17(4) | $\langle 3^- \rangle$ | | | $\langle 5 \rangle$ | 1.202 | 421 | | | | | | | | | 83Fr28 |
| 2878.70(5) | $4,5,6^+$ | | 100 | | | | | | | | | | | | |
| 2889(10) | $\langle 8^+ \rangle$ | | 60 | | | | | | | | | | | | |
| 2903.87(4) | 2^+ | | incl | $\langle 2 \rangle$ | 0.455 | 433 | | | | | | | | 5.8 | 83Fr28 |
| 2929.72(7) | $0^+, 1^+$ | | 200 | 0 | 0.018 | 64 | $\langle 2 \rangle$ | 0.30 | 5.0(20) | | 140 | | | | 83Fr28 |
| 2934(10) | $\langle 2^+ \rangle$ | | | | | | | | | | incl | | | | |
| 2953.1(16) | | | | | | | | | | | | | | | 95Lo16 |
| 2963.44(2) | 4^+ | | 70 | | | 30 | | | | | incl | | | | 83Fr28 |
| 2972(3) | 4^+ | | | | | | | | | | | | | | |
| 2991(3) | | | | | | 6 | | | | | | | | | 83Fr28 |
| 2999.45(7) | 6^+ | | | | | | | | | | | | | | |
| 3015.21(6) | $1,2,3$ | | | | | | | | | | | | | | |
| 3020(3) | 0^+ | | | | | 6 | | | | | | | | | 77Fi04 |
| 3048.35(5) | 4 | | | | | | | | | | | | | | |
| 3052.16(7) | $7^+, 8^+$ | | 100 | | | | | | | | | | | | |
| 3057.22(6) | 2^+ | | | 2 | 0.043 | 49 | | | | 325 | | | | 2.3 | 83Fr28 |
| 3089.21(4) | X^+ | | | | | | | | | | | | | | |
| 3108.06(22) | $9^+, 10^+$ | | | | | | | | | | | | | | |
| 3137.48(15) | 0^+ | 0 | 90 | | | 18 | | | | | | | | | 68Bj02 |
| 3159.35(15) | 4^+ | | | | | | | | | | | | | | |
| 3190(20) | | | | | | | | | | | | | | | |
| 3227.67(7) | $2^+, 3^+$ | | | | | | | | | | | | | | |
| 3228.37(8) | 2^+ | | | | | | | | | | | | | 1.5 | 95Lo16 |
| 3231(10) | $\langle 8^+ \rangle$ | | | | | | | | | | | | | | |
| 3237(3) | | | | | | 35 | | | | | | | | | 83Fr28 |
| 3252.03(7) | $\langle 3^+ \rangle$ | | | | | | $\langle 4 \rangle$ | 0.8** | | | | | | | 82Fl02 |
| 3262.53(6) | 3^+ | | | | | 5 | | | | | | | | | 83Fr28 |
| 3270.67(11) | 1 | | | | | | | | | | | | | 95 | 95Lo16 |
| 3274(3) | | | | | | 8 | | | | | | | | | 83Fr28 |
| 3286(3) | | | | | | 8 | | | | | | | | | 83Fr28 |
| 3308.54(15) | 2^+ | | | | | | | | | | | | | | |
| 3317(3) | 0^--2^- | | | 1 | 0.007 | 27 | | | | | | | | | 83Fr28 |
| 3344(3) | $\langle 3^- \rangle$ | | | | | 8 | | | | | | | | | 83Fr28 |
| 3355.86(13) | 2^+ | | | | | | | | | | | | | | 95Lo16 |
| 3363(3) | $0^+, 1^+$ | | 100 | 0 | 0.006 | 20 | | | | | | | | | 83Fr28 |

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| E^* | J^π | L | σ (t,p) | L | S' | $d\sigma/d\Omega$ | L | S_N | σ (p,d) | σ (d,t) | σ (p,t) | L | S_α | $I_{s,0}$ | Ref. |
|-------------|---------------------------------|-------|------------------|---------------------|------------------------|-------------------|---------------------|-------|----------------|------------------|------------------|-----|----------------------|-----------|--------|
| [keV] | | (t,p) | $\mu\text{b/sr}$ | | (d,p) | $\mu\text{b/sr}$ | | (p,d) | mb | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | | (d, ⁶ Li) | [eVb] | |
| 3374.60(4) | 4 ⁺ | | incl | | | | | | | | | | | | |
| 3386.30(8) | 3 ⁺ | | incl | $\langle 2 \rangle$ | 0.052 | 55 | | | | | | | | | 83Fr28 |
| 3389(3) | | | incl | | | | | | | | | | | | |
| 3409(3) | | | | | | 20 | | | | | | | | | 83Fr28 |
| 3427.11(10) | 3 ⁺ | | | | | | 4 | 7.3** | | | | | | | 82Fl02 |
| 3441 | | | | | | 6 | | | | | | | | | 83Fr28 |
| 3460.49(5) | 4 ⁺ | | | | | | | | | | | | | | |
| 3462.63(11) | $\langle 2^-, 3^- \rangle$ | | | $\langle 3 \rangle$ | 0.055 | 45 | | | | | | | | | 83Fr28 |
| 3475(3) | | | | | | | | | | | | | | | |
| 3540.57(9) | 1 ⁺ -3 ⁺ | | | $\langle 2 \rangle$ | 0.025 | 33 | 2 | 0.8** | | | | | | | 83Fr28 |
| 3541(10) | $\langle 6^+, 7^- \rangle$ | | | | | | | | | | | | | | |
| 3558.9(10) | 7 ⁻ -9 ⁻ | | | | | | | | | | | | | | |
| 3576(3) | 2 ⁻ -4 ⁻ | | 400 | 3 | 0.085 | 70 | | | | | | | | | 83Fr28 |
| 3592.54(5) | 4 ⁺ | | | | | | | | | | | | | | |
| 3597(3) | 2 ⁺ | | | 2 | 0.109 | 144 | | | | | | | | | 83Fr28 |
| 3635(3) | | | | | | 7 | | | | | | | | | 83Fr28 |
| 3643(3) | | | | | | 6 | | | | | | | | | 83Fr28 |
| 3673.67(15) | 4 ⁺ | | | | | 5 | | | | | | | | | 83Fr28 |
| 3692.0(4) | 8 ⁺ | | | | | | | | | | | | | | |
| 3696.78(17) | 1 ⁺ , 2 ⁺ | | | | | | 2 | 1.4** | | 359 | | | | | 82Fl02 |
| 3704.84(8) | 4 ⁺ | | | | | | | incl | | incl | | | | | 82Fl02 |
| 3705(10) | $\langle 6^+ \rangle$ | | | | | | | | | | | | | | |
| 3709.87(15) | 1 ⁺ , 2 ⁺ | | | | | | | | | | | | | | |
| 3721(3) | 0 ⁻ -2 ⁻ | | | 1 | 0.042 | 169 | | | | | | | | | 83Fr28 |
| 3750(3) | 0 ⁻ -3 ⁺ | | | | $\langle 0.02 \rangle$ | ≈ 30 | $\langle 2 \rangle$ | 0.90 | 12.4(13) | | | | | | 82Fl02 |
| 3753.85(6) | 4, 5, 6 | | | | | | | | | | | | | | |
| 3762.13(14) | 1, 2, 3 | | | | | | | | | | | | | | |
| 3773(10) | 4 ⁺ | | | | | | | | | | | | | | |
| 3784(3) | 0 ⁺ , 1 ⁺ | | | $\langle 0 \rangle$ | 0.003 | 15 | | | | | | | | | 83Fr28 |
| 3816.64(9) | 1 ⁺ -3 ⁺ | | | 2 | 0.058 | 78 | | | | | | | | | 83Fr28 |
| 3838.88(14) | 4 | | | | | | | | | | | | | | |
| 3857.0(4) | 1 | | | | | 7 | | | | | | | | 2.3 | 83Fr28 |
| 3889(3) | 0 ⁻ -2 ⁻ | | | $\langle 1 \rangle$ | 0.003 | 16 | | | | | | | | | 83Fr28 |
| 3898.90(20) | | | | | | | | | | | | | | | |
| 3916(3) | 1 ⁺ -3 ⁺ | | | 2 | 0.049 | 61 | | | | | | | | | 83Fr28 |
| 3944.4(4) | 1 ⁺ , 2 ⁺ | | | 2 | 0.040 | 49 | $\langle 2 \rangle$ | 0.60 | 7.5(11) | | | | | | 83Fr28 |
| 3977(10) | | | | | | | | | | | | | | | |
| 3982.2(8) | 1 | | | | | | | | | | | | | 4.5 | 00Br05 |
| 3995(3) | 0 ⁻ -2 ⁻ | | | 1 | 0.006 | 23 | | | | | | | | | 83Fr28 |
| 4044.6(3) | $\langle 1^+ - 3^+ \rangle$ | | | | | ≈ 170 | $\langle 2 \rangle$ | 1.2 | 14.3(20) | | | | | | 82Fl02 |
| 4109.0(3) | 0 ⁻ -2 ⁻ | | | 1 | 0.015 | 62 | | | | | | | | | 83Fr28 |
| 4126.7(4) | 1 ⁺ , 2 ⁺ | | | 2 | 0.036 | 44 | $\langle 2 \rangle$ | 0.50 | 5.5(7) | | | | | | 83Fr28 |
| 4203(3) | 1 ⁺ -3 ⁺ | | | 2 | 0.019 | 24 | | | | | | | | | 83Fr28 |
| 4233(3) | $\langle 2^- - 4^- \rangle$ | | | $\langle 3 \rangle$ | 0.025 | 23 | | | | | | | | | 83Fr28 |
| 4252(3) | | | | | | 30 | | | | | | | | | 83Fr28 |

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¹¹⁸Sn
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| E^* | J^π | L | σ (t,p) | L | S' | $d\sigma/d\Omega$ | L | S_N | σ (p,d) | σ (d,t) | σ (p,t) | L | S_α | $I_{s,0}$ | Ref. |
|------------|-----------------------------|-------|------------------|---------------------|------------------------|-------------------|-----|-------|----------------|------------------|------------------|-----|----------------------|-----------|--------|
| [keV] | | (t,p) | $\mu\text{b/sr}$ | | (d,p) | $\mu\text{b/sr}$ | | (p,d) | mb | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | | (d, ⁶ Li) | [eVb] | |
| 4288(3) | | | | | | | | | | | | | | | |
| 4313(3) | | | | | | 25 | | | | | | | | | 83Fr28 |
| 4326(3) | | | | | | | | | | | | | | | |
| 4352(3) | | | | | | 8 | | | | | | | | | 83Fr28 |
| 4365(3) | | | | | | 7 | | | | | | | | | 83Fr28 |
| 4391(3) | | | | | | 25 | | | | | | | | | 83Fr28 |
| 4408(3) | | | | | | | | | | | | | | | |
| 4422(3) | $\langle 0^+, 1^+ \rangle$ | | | $\langle 0 \rangle$ | 0.002 | 12 | | | | | | | | | 83Fr28 |
| 4448(3) | $\langle 1^+ - 3^+ \rangle$ | | | $\langle 2 \rangle$ | 0.012 | 17 | | | | | | | | | 83Fr28 |
| 4472(3) | $\langle 0^- - 2^- \rangle$ | | | $\langle 1 \rangle$ | 0.008 | 38 | | | | | | | | | 83Fr28 |
| 4484(3) | | | | | | | | | | | | | | | |
| 4495.4(5) | $\langle 10^+ \rangle$ | | | | | | | | | | | | | | |
| 4507(3) | | | | | | 7 | | | | | | | | | 83Fr28 |
| 4523(3) | | | | | | 8 | | | | | | | | | 83Fr28 |
| 4540(3) | $\langle 0^- - 3^+ \rangle$ | | | 1,2 | $\langle 0.05 \rangle$ | 14 | | | | | | | | | 83Fr28 |
| 4573(3) | $\langle 0^- - 2^- \rangle$ | | | $\langle 1 \rangle$ | 0.005 | 19 | | | | | | | | | 83Fr28 |
| 4604(7) | | | | | | | | | | | | | | | |
| 4617(3) | | | | | | 24 | | | | | | | | | 83Fr28 |
| 4637(3) | $1^+ - 3^+$ | | | 2 | 0.051 | 82 | | | | | | | | | 83Fr28 |
| 4696(3) | | | | | | 43 | | | | | | | | | 83Fr28 |
| 4706(3) | | | | | | | | | | | | | | | |
| 4798(3) | 3^- | | | 3 | $\langle 0.01 \rangle$ | 16 | | | | | | | | | 83Fr28 |
| 4832(3) | $0^+, 1^+$ | | | 0 | 0.014 | 66 | | | | | | | | | 83Fr28 |
| 4862(3) | $0^+, 1^+$ | | | 0 | 0.006 | 25 | | | | | | | | | 83Fr28 |
| 4879(3) | $0^+, 1^+$ | | | 0 | 0.008 | 40 | | | | | | | | | 83Fr28 |
| 4940(3) | $\langle 2^- - 4^- \rangle$ | | | $\langle 3 \rangle$ | 0.076 | 87 | | | | | | | | | 83Fr28 |
| 5006(3)* | | | | | | | | | | | | | | | 83Fr28 |
| 5014(3) | $2^- - 4^-$ | | | 3 | 0.060 | 67 | | | | | | | | | 83Fr28 |
| 5025(3) | | | | | | | | | | | | | | | 83Fr28 |
| 5043(3) | | | | | | 20 | | | | | | | | | 83Fr28 |
| 5068(3) | $\langle 2^- - 4^- \rangle$ | | | $\langle 3 \rangle$ | 0.073 | 82 | | | | | | | | | 83Fr28 |
| 5098(3) | | | | | | 11 | | | | | | | | | 83Fr28 |
| 5116(3) | $\langle 0^- - 3^+ \rangle$ | | | 1,2 | $\langle 0.01 \rangle$ | 18 | | | | | | | | | 83Fr28 |
| 5142(3)* | | | | | | | | | | | | | | | 83Fr28 |
| 5150(3) | | | | | | 90 | | | | | | | | | 83Fr28 |
| 5163(3) | | | | | | | | | | | | | | | 83Fr28 |
| 5181(3)* | | | | | | | | | | | | | | | 83Fr28 |
| 5193(3) | | | | | | 34 | | | | | | | | | 83Fr28 |
| 5208(3) | | | | | | | | | | | | | | | 83Fr28 |
| 5379.4(12) | $\langle 12^+ \rangle$ | | | | | | | | | | | | | | |
| 5400(80) | 3^- | | | | | | | | | | | | | | |
| 6325(7) | 1 | | | | | | | | | | | | | | |
| 6900(400) | 3^- | | | | | | | | | | | | | | |
| 6988(5) | 1^- | | | | | | | | | | | | | | |
| 7010(5) | 1 | | | | | | | | | | | | | | |

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¹¹⁸Sn
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| E^* | J^π | L | σ (t,p) | L | S' | $d\sigma/d\Omega$ | L | S_N | σ (p,d) | σ (d,t) | σ (p,t) | L | S_α | $I_{s,0}$ | Ref. |
|-------------|-----------------------|-------|------------------|-----|--------|-------------------|-----|--------|----------------|------------------|------------------|-----|----------------------|-----------|------|
| [keV] | | (t,p) | $\mu\text{b/sr}$ | | (d,p) | $\mu\text{b/sr}$ | | (p,d) | mb | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | | (d, ⁶ Li) | [eVb] | |
| 12350(200) | | | | | | | | | | | | | | | |
| 15550(200) | | | | | | | | | | | | | | | |
| 24300(1500) | $\langle 3^- \rangle$ | | | | | | | | | | | | | | |
| | | | | | 83Fr28 | 83Fr28 | | 82Fl02 | | 67Sc12 | | | | 00Br05 | Ref. |
| | | | 68Bj02 | | | | | | 82Fl02 | | 70Fl08 | | | | Ref. |

Additional data on this isotope can be found in [03HoZZ, 02LoZW, 96Ca09, 96Ve07, 95Lo16, 91Go07, 91Go24, 89Mi27, 83To09, 81Cr01, 79Ch08, 77Cr04, 75Kn01, 75Ko19, 70Fl08].

Abundance: 24.22(9) %.

* This level and the following two are members of an unresolved triplet [83Fr28].

** Data from [68Ya05] recommended in [95Ki07].

For four 2^+ levels parameter $B(E2)$ in units $e^2 fm^4$ is given instead of $B(E1)$ in units $10^{-3} e^2 fm^2$ [00Br05].

Theoretical description of excited spectrum can be found in vol. LB I/18B.

Data for this isotope are considered in vol. LB I/18B.

Energy levels and branching ratios [95Ki07]. Part 2

¹¹⁸Sn
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| E^* | J^π | σ (τ, n) | L | S_N | $d\sigma/d\Omega$ | $\Gamma_{\gamma o}$ | $B(E1)$ | $T_{1/2}$ or | Ref. |
|------------|-----------------------|------------------------|-----|-------|-------------------|---------------------|----------------------|---------------|--------|
| [keV] | | $\mu\text{b/sr}$ | | (t,d) | $\mu\text{b/sr}$ | [meV] | $[10^{-3} e^2 fm^2]$ | Γ_{cm} | |
| 0.0 | 0^+ | 91 | 0 | 1.40 | 3.170(150) | | | Stable | 83Fr28 |
| 1229.67(2) | 2^+ | | 2 | 0.16 | 0.166(31) | 0.9(1) | 2051(286) | 0.485(19) ps | 83Fr28 |
| 1758.31(3) | 0^+ | 115 | 0 | 0.20 | 1.323(89) | | | 21(3) ps | 77Fi04 |
| 2042.88(2) | 2^+ | | | | 0.277(29) | | | 2.9(4) ps | 79Ja21 |
| 2056.91(4) | 0^+ | | 0 | 0.17 | incl | | | <200 ps | 68Bj02 |
| 2120(15) | $\langle 2^+ \rangle$ | | | | 0.010(6) | | | | 79Ja21 |
| 2280.34(2) | 4^+ | | | | 0.087(23) | | | 0.76(13) ps | 68Bj02 |
| 2321.23(4) | 5^- | | | | 0.590(46) | | | 21.7(2) ns | 79Ja21 |
| 2324.85(2) | 3^- | | | | incl | | | 0.19(+4-3) ps | 79Ja21 |
| 2328.02(3) | 2^+ | | 2 | 0.46 | | | | >0.2 ps | 83Fr28 |
| 2403.22(3) | 2^+ | | | | | | | 0.18(+8-4) ps | |
| 2408(3) | 4^+ | | | | | | | | 68Bj02 |
| 2488.87(2) | 4^+ | | | | 0.065(20) | | | >0.55 ps | 79Ja21 |
| 2496.88(5) | 0^+ | | 0 | 1.02 | incl | | | | 83Fr28 |
| 2530 | | | | | | | | | 82Fl02 |
| 2574.91(4) | 7^- | | | | 0.061(19) | | | 230(10) ns | 68Bj02 |
| 2577(3) | 2^+ | | | | incl | | | | 83Fr28 |
| 2677.35(3) | 2^+ | | | | | | | >0.28 ps | 83Fr28 |
| 2725(3) | $1^+ - 3^+$ | | 2 | 0.55 | 0.063(21) | | | | 79Ch08 |
| 2733.79(2) | 4^+ | | | | incl | | | 0.5(+6-2) ps | |
| 2738.01(4) | 1^+ | | | | | | | 0.19(6) ps | 83Fr28 |
| 2773.94(4) | 4^- | | | | | | | | 83Fr28 |

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| E^* | J^π | σ (τ, n) | L | S_N | $d\sigma/d\Omega$ | $\Gamma_{\gamma o}$ | $B(E1)$ | $T_{1/2}$ or | Ref. |
|-------------|----------------------------|------------------------|-----|-------|-------------------|---------------------|--------------------|-----------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | | (t,d) | $\mu\text{b/sr}$ | [meV] | $[10^{-3}e^2fm^2]$ | Γ_{cm} | |
| 2817(3) | $4^- - 6^-$ | | | | | | | | |
| 2817.17(4) | $\langle 3^- \rangle$ | | | | | | | | 83Fr28 |
| 2878.70(5) | $4, 5, 6^+$ | | | | | | | | |
| 2889(10) | $\langle 8^+ \rangle$ | | | | | | | | |
| 2903.87(4) | 2^+ | | | | | 3.5(3) | 105(13) | 0.08(1) ps | 83Fr28 |
| 2929.72(7) | $0^+, 1^+$ | | | | 0.180(70) | | | | 83Fr28 |
| 2934(10) | $\langle 2^+ \rangle$ | | | | incl | | | | |
| 2953.1(16) | | | | | | | | | 95Lo16 |
| 2963.44(2) | 4^+ | | | | | | | | 83Fr28 |
| 2972(3) | 4^+ | | | | | | | | |
| 2991(3) | | | | | | | | | 83Fr28 |
| 2999.45(7) | 6^+ | | | | | | | | |
| 3015.21(6) | $1, 2, 3$ | | | | | | | | |
| 3020(3) | 0^+ | 16 | | | | | | | 77Fi04 |
| 3048.35(5) | 4 | | | | | | | | |
| 3052.16(7) | $7^+, 8^+$ | | | | | | | | |
| 3057.22(6) | 2^+ | | | | | 1.3(2) | 32(4) | 0.11(+5-3) ps | 83Fr28 |
| 3089.21(4) | X^+ | | | | | | | | |
| 3108.06(22) | $9^+, 10^+$ | | | | | | | 2.52(6) μs | |
| 3137.48(15) | 0^+ | | | | | | | | 68Bj02 |
| 3159.35(15) | 4^+ | | | | | | | | |
| 3190(20) | | | | | | | | | |
| 3227.67(7) | $2^+, 3^+$ | | | | | | | | |
| 3228.37(8) | 2^+ | | | | | 0.8(2) | 14(3) | 0.15(10) ps | 95Lo16 |
| 3231(10) | $\langle 8^+ \rangle$ | | | | | | | | |
| 3237(3) | | | | | | | | | 83Fr28 |
| 3252.03(7) | $\langle 3^+ \rangle$ | | | | | | | 0.08(+6-3) ps | 82F102 |
| 3262.53(6) | 3^+ | | | | | | | | 83Fr28 |
| 3270.67(11) | 1 | | | | | 89(7) | 7.3(5) | 0.005(3) ps | 95Lo16 |
| 3274(3) | | | | | | | | | 83Fr28 |
| 3286(3) | | | | | | | | | 83Fr28 |
| 3308.54(15) | 2^+ | | | | | | | | |
| 3317(3) | $0^- - 2^-$ | | | | | | | | 83Fr28 |
| 3344(3) | $\langle 3^- \rangle$ | | | | | | | | 83Fr28 |
| 3355.86(13) | 2^+ | | | | | | | | 95Lo16 |
| 3363(3) | $0^+, 1^+$ | | | | | | | | 83Fr28 |
| 3374.60(4) | 4^+ | | | | | | | | |
| 3386.30(8) | 3^+ | | | | | | | | 83Fr28 |
| 3389(3) | | | | | | | | | |
| 3409(3) | | | | | | | | | 83Fr28 |
| 3427.11(10) | 3^+ | | | | | | | | 82F102 |
| 3441 | | | | | | | | | 83Fr28 |
| 3460.49(5) | 4^+ | | | | | | | | |
| 3462.63(11) | $\langle 2^-, 3^- \rangle$ | | | | | | | | 83Fr28 |
| 3475(3) | | | | | | | | | |

(continued)

¹¹⁸Sn
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| E^* | J^π | σ (τ, n) | L | S_N | $d\sigma/d\Omega$ | $\Gamma_{\gamma o}$ | $B(E1)$ | $T_{1/2}$ or | Ref. |
|-------------|-----------------------------|------------------------|-----|-------|-------------------|---------------------|--------------------|----------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | | (t,d) | $\mu\text{b/sr}$ | [meV] | $[10^{-3}e^2fm^2]$ | Γ_{cm} | |
| 3540.57(9) | $1^+ - 3^+$ | | | | 0.243(82) | | | 0.11(+23-5) ps | 83Fr28 |
| 3541(10) | $\langle 6^+, 7^- \rangle$ | | | | | | | | |
| 3558.9(10) | $7^- - 9^-$ | | | | | | | | |
| 3576(3) | $2^- - 4^-$ | | | | | | | | 83Fr28 |
| 3592.54(5) | 4^+ | | | | | | | | |
| 3597(3) | 2^+ | | | | | | | | 83Fr28 |
| 3635(3) | | | | | | | | | 83Fr28 |
| 3643(3) | | | | | | | | | 83Fr28 |
| 3673.67(15) | 4^+ | | | | | | | | 83Fr28 |
| 3692.0(4) | 8^+ | | | | | | | | |
| 3696.78(17) | $1^+, 2^+$ | | | | | | | 0.11(+38-6) ps | 82Fl02 |
| 3704.84(8) | 4^+ | | | | | | | | 82Fl02 |
| 3705(10) | $\langle 6^+ \rangle$ | | | | | | | | |
| 3709.87(15) | $1^+, 2^+$ | | | | | | | | |
| 3721(3) | $0^- - 2^-$ | | | | | | | | 83Fr28 |
| 3750(3) | $0^- - 3^+$ | | | | 0.242(60) | | | | 82Fl02 |
| 3753.85(6) | 4,5,6 | | | | | | | | |
| 3762.13(14) | 1,2,3 | | | | | | | | |
| 3773(10) | 4^+ | | | | | | | | |
| 3784(3) | $0^+, 1^+$ | | | | | | | | 83Fr28 |
| 3816.64(9) | $1^+ - 3^+$ | | | | | | | | 83Fr28 |
| 3838.88(14) | 4 | | | | | | | | |
| 3857.0(4) | 1 | | | | | 5.5(12) | 0.27(6) | | 83Fr28 |
| 3889(3) | $0^- - 2^-$ | | | | | | | | 83Fr28 |
| 3898.90(20) | | | | | | | | | |
| 3916(3) | $1^+ - 3^+$ | | | | | | | | 83Fr28 |
| 3944.4(4) | $1^+, 2^+$ | | | | | | | | 83Fr28 |
| 3977(10) | | | | | | | | | |
| 3982.2(8) | 1 | | | | | 6.2(11) | 0.28(5) | | 00Br05 |
| 3995(3) | $0^- - 2^-$ | | | | | | | | 83Fr28 |
| 4044.6(3) | $\langle 1^+ - 3^+ \rangle$ | | | | | | | | 82Fl02 |
| 4109.0(3) | $0^- - 2^-$ | | | | | | | | 83Fr28 |
| 4126.7(4) | $1^+, 2^+$ | | | | | | | | 83Fr28 |
| 4203(3) | $1^+ - 3^+$ | | | | | | | | 83Fr28 |
| 4233(3) | $\langle 2^- - 4^- \rangle$ | | | | | | | | 83Fr28 |
| 4252(3) | | | | | | | | | 83Fr28 |
| 4288(3) | | | | | | | | | |
| 4313(3) | | | | | | | | | 83Fr28 |
| 4326(3) | | | | | | | | | |
| 4352(3) | | | | | | | | | 83Fr28 |
| 4365(3) | | | | | | | | | 83Fr28 |
| 4391(3) | | | | | | | | | 83Fr28 |
| 4408(3) | | | | | | | | | |
| 4422(3) | $\langle 0^+, 1^+ \rangle$ | 55 | | | | | | | 83Fr28 |
| 4448(3) | $\langle 1^+ - 3^+ \rangle$ | | | | | | | | 83Fr28 |

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| E^* | J^π | σ (τ, n) | L | S_N | $d\sigma/d\Omega$ | $\Gamma_{\gamma o}$ | $B(E1)$ | $T_{1/2}$ or | Ref. |
|-------------|-----------------------------|------------------------|-----|--------|-------------------|---------------------|--------------------|----------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | | (t,d) | $\mu\text{b/sr}$ | [meV] | $[10^{-3}e^2fm^2]$ | Γ_{cm} | |
| 4472(3) | $\langle 0^- - 2^- \rangle$ | | | | | | | | 83Fr28 |
| 4484(3) | | | | | | | | | |
| 4495.4(5) | $\langle 10^+ \rangle$ | | | | | | | | |
| 4507(3) | | | | | | | | | 83Fr28 |
| 4523(3) | | | | | | | | | 83Fr28 |
| 4540(3) | $\langle 0^- - 3^+ \rangle$ | | | | | | | | 83Fr28 |
| 4573(3) | $\langle 0^- - 2^- \rangle$ | | | | | | | | 83Fr28 |
| 4604(7) | | | | | | | | | |
| 4617(3) | | | | | | | | | 83Fr28 |
| 4637(3) | $1^+ - 3^+$ | | | | | | | | 83Fr28 |
| 4696(3) | | | | | | | | | 83Fr28 |
| 4706(3) | | | | | | | | | |
| 4798(3) | 3^- | | | | | | | | 83Fr28 |
| 4832(3) | $0^+, 1^+$ | | | | | | | | 83Fr28 |
| 4862(3) | $0^+, 1^+$ | | | | | | | | 83Fr28 |
| 4879(3) | $0^+, 1^+$ | | | | | | | | 83Fr28 |
| 4940(3) | $\langle 2^- - 4^- \rangle$ | | | | | | | | 83Fr28 |
| 5006(3)* | | | | | | | | | 83Fr28 |
| 5014(3) | $2^- - 4^-$ | | | | | | | | 83Fr28 |
| 5025(3) | | | | | | | | | 83Fr28 |
| 5043(3) | | | | | | | | | 83Fr28 |
| 5068(3) | $\langle 2^- - 4^- \rangle$ | | | | | | | | 83Fr28 |
| 5098(3) | | | | | | | | | 83Fr28 |
| 5116(3) | $\langle 0^- - 3^+ \rangle$ | | | | | | | | 83Fr28 |
| 5142(3)* | | | | | | | | | 83Fr28 |
| 5150(3) | | | | | | | | | 83Fr28 |
| 5163(3) | | | | | | | | | 83Fr28 |
| 5181(3)* | | | | | | | | | 83Fr28 |
| 5193(3) | | | | | | | | | 83Fr28 |
| 5208(3) | | | | | | | | | 83Fr28 |
| 5379.4(12) | $\langle 12^+ \rangle$ | | | | | | | | |
| 5400(80) | 3^- | | | | | | | | |
| 6325(7) | 1 | | | | | | | 5.7(24) fs | |
| 6900(400) | 3^- | | | | | | | | |
| 6988(5) | 1^- | | | | | | | 2.9(6) fs | |
| 7010(5) | 1 | | | | | | | | |
| 12350(200) | | | | | | | | | |
| 15550(200) | | | | | | | | | |
| 24300(1500) | $\langle 3^- \rangle$ | | | | | | | | |
| | | 77Fi04 | | 79Ch08 | 79Ja21 | 00Br05 | 00Br05 | | Ref. |
| | | | | | | | | | Ref. |

Energy levels and branching ratios [95Ki07]. Part 3

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| E^* [keV] | J^π | Branching ratios in percentage | | | | | | | | | | |
|----------------|--------------------------------|--------------------------------|-----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|--------------------------|--------------------------|
| | | $E_f^*:$ $J_f^\pi:$ | 0.0 0 ⁺ | 1230 2 ⁺ | 1758 0 ⁺ | 2043 2 ⁺ | 2280 4 ⁺ | 2321 5 ⁻ | 2325 3 ⁻ | 2328 2 ⁺ | 2403.2 2 ⁺ | 2488.9 4 ⁺ |
| 1229.67(2) | 2 ⁺ | | 100 | | | | | | | | | |
| 1758.31(3) | 0 ⁺ | x | | 100 | | | | | | | | |
| 2042.88(2) | 2 ⁺ | 48(1) | 51 | 1.3(1) | | | | | | | | |
| 2056.91(4) | 0 ⁺ | x | 100 | x | | | | | | | | |
| 2280.34(2) | 4 ⁺ | | 100 | | 0.05(2) | | | | | | | |
| 2321.23(4) | 5 ⁻ | | 11(1) | | | 89(6) | | | | | | |
| 2324.85(2) | 3 ⁻ | 1.1(1) | 99(4) | | | | | | | | | |
| 2328.02(3) | 2 ⁺ | 18(1) | 78(15) | | 4.0(5) | | | | | | | |
| 2403.22(3) | 2 ⁺ | | 98(3) | | 1.8(2) | | | | | | | |
| 2488.87(2) | 4 ⁺ | | 31(1) | | 46(1) | 24(3) | | | | | | |
| 2496.88(5) | 0 ⁺ | x | 100 | | | | | | | | | |
| 2574.91(4) | 7 ⁻ | | | | | | | 100 | | | | |
| 2677.35(3) | 2 ⁺ | 54(2) | 46(2) | | | | | | | | | |
| 2733.79(2) | 4 ⁺ | | 100 | | | | | | | | | |
| 2738.01(4) | 1 ⁺ | 26(1) | 74(4) | | | | | | | | | |
| 2773.94(4) | 4 ⁻ | | | | | | | 70(2) | 29.8(8) | | | |
| 2817.17(4) | $\langle 3^- \rangle$ | | 2.6(5) | | | | | | 97(3) | | | |
| 2878.70(5) | 4,5,6 ⁺ | | | | | 70(2) | 30(1) | | | | | |
| 2903.87(4) | 2 ⁺ | 73(3) | 27(1) | | | | | | | | | |
| 2929.72(7) | 0 ⁺ ,1 ⁺ | | 100 | | | | | | | | | |
| 2963.44(2) | 4 ⁺ | | | | 0.77(3) | 87(3) | | 2.11(6) | 2.72(10) | 1.52(6) | 4.61(16) | |
| 2999.45(7) | 6 ⁺ | | | | | 38(2) | | | | | 62(11) | |
| 3015.21(6) | 1,2,3 | | | | 100 | | | | | | | |
| 3048.35(5) | 4 | | | | | 100 | | | | | | |
| 3057.22(6) | 2 ⁺ | 81(3) | 19(1) | | | | | | | | | |
| 3089.21(4) | X ⁺ | | | | | 100 | | | | | | |
| 3137.48(15) | 0 ⁺ | | 100 | | | | | | | | | |
| 3159.35(15) | 4 ⁺ | | | | 66(9) | | | | | | 34(14) | |
| 3227.67(7) | 2 ⁺ ,3 ⁺ | | 100 | | | | | | | | | |
| 3228.37(8) | 2 ⁺ | 100 | | | | | | | | | | |
| 3252.03(7) | $\langle 3^+ \rangle$ | | 100 | | | | | | | | | |
| 3262.53(6) | 3 ⁺ | | | | 100 | | | | | | | |
| 3270.67(11) | 1 | 100 | | | | | | | | | | |
| 3308.54(15) | 2 ⁺ | 21(2) | 79(4) | | | | | | | | | |
| 3355.86(13) | 2 ⁺ | 20(2) | 80(5) | | | | | | | | | |
| 3374.60(4) | 4 ⁺ | | 7.6(3) | | | 51(2) | | | | | 22(4) | 16.7(13) |
| 3386.30(8) | 3 ⁺ | | | | | | | | 100 | | | |
| 3427.11(10) | 3 ⁺ | | 49(3) | | 51(3) | | | | | | | |
| 3460.49(5) | 4 ⁺ | | 35(1) | | 3(1) | 17(1) | | | 11(1) | | 34(7) | |
| 3462.63(11) | $\langle 2^-, 3^- \rangle$ | | | | 100 | | | | | | | |
| 3540.57(9) | 1 ⁺ -3 ⁺ | | 100 | | | | | | | | | |
| 3592.54(5) | 4 ⁺ | | 10 | | 43(2) | 29(1) | | | | | | |
| 3673.67(15) | 4 ⁺ | | 67(5) | | | 33(5) | | | | | | |
| 3696.78(17) | 1 ⁺ ,2 ⁺ | 76(5) | 24(4) | | | | | | | | | |
| 3704.84(8) | 4 ⁺ | | 49(2) | | 13(2) | 7(1) | | | 12(1) | 18(2) | | |

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| E^* [keV] | J^π | Branching ratios in percentage | | | | | | | | | | |
|----------------|-----------------------------------|--------------------------------|-----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|--------------------------|--------------------------|
| | | $E_f^*:$ $J_f^\pi:$ | 0.0 0 ⁺ | 1230 2 ⁺ | 1758 0 ⁺ | 2043 2 ⁺ | 2280 4 ⁺ | 2321 5 ⁻ | 2325 3 ⁻ | 2328 2 ⁺ | 2403.2 2 ⁺ | 2488.9 4 ⁺ |
| 3709.87(15) | 1 ⁺ , 2 ⁺ | | 39(4) | | | | | | | 61(4) | | |
| 3753.85(6) | 4, 5, 6 | | | | | | 56(3) | | | | | 44(3) |
| 3762.13(14) | 1, 2, 3 | | | 100 | | | | | | | | |
| 3816.64(9) | 1 ⁺ –3 ⁺ | | | 100 | | | | | | | | |
| 3838.88(14) | 4 | | | 100 | | | | | | | | |
| 3857.0(4) | 1 | | 54(5) | 46(5) | | | | | | | | |
| 3898.90(20) | | | | 100 | | | | | | | | |
| 3944.4(4) | 1 ⁺ , 2 ⁺ | | 40(7) | 60(7) | | | | | | | | |
| 4044.6(3) | ⟨1 ⁺ –3 ⁺ ⟩ | | | 100 | | | | | | | | |
| 4109.0(3) | 0 ⁻ –2 ⁻ | | | 100 | | | | | | | | |
| 4126.7(4) | 1 ⁺ , 2 ⁺ | | 26(5) | 74(5) | | | | | | | | |
| 4604(7) | | | 100 | | | | | | | | | |
| 6325(7) | 1 | | 100 | | | | | | | | | |
| 6988(5) | 1 ⁻ | | 79 | 16(2) | | 1.8(6) | | 2.7(6) | | | | |
| 7010(5) | 1 | | 80(4) | 20(3) | | | | | | | | |

Energy levels and branching ratios [95Ki07]. Part 4

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| E^* [keV] | J^π | Branching ratios in percentage | | | | | | | |
|----------------|----------------------------------|--------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---|--------------------------|------------------------------|
| | | $E_f^*:$ $J_f^\pi:$ | 2574.9 7 ⁻ | 2733.8 4 ⁺ | 2963.4 4 ⁺ | 2999.4 6 ⁺ | 3052.2 7 ⁺ , 8 ⁺ | 3692.0 8 ⁺ | 4495.4 ⟨10 ⁺ ⟩ |
| 2963.44(2) | 4 ⁺ | | | 1.20(3) | | | | | |
| 3052.16(7) | 7 ⁺ , 8 ⁺ | | 100 | | | | | | |
| 3108.06(22) | 9 ⁺ , 10 ⁺ | | | | | | 100 | | |
| 3374.60(4) | 4 ⁺ | | | | 2.3(5) | | | | |
| 3558.9(10) | 7 ⁻ –9 ⁻ | | 100 | | | | | | |
| 3592.54(5) | 4 ⁺ | | | 18(3) | | | | | |
| 3692.0(4) | 8 ⁺ | | | | | 100 | | | |
| 4495.4(5) | ⟨10 ⁺ ⟩ | | | | | | | 100 | |
| 5379.4(12) | ⟨12 ⁺ ⟩ | | | | | | | | 100 |

Energy levels and branching ratios [00Oh01, 75Bo25].

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| E^* | $2J^\pi$ | σ (d,p) | S_{dp} | S_N | L | C^2S | σ (p,d) | S_N | C^2S | σ (d,t) | C^2S | E_{anal}^* | Ref. |
|-----------|-----------------|------------------|----------|-------|-----|--------|------------------|--------|--------|------------------|--------------------|--------------|--------|
| [keV] | | $\mu\text{b/sr}$ | | (t,d) | | (p,d) | $\mu\text{b/sr}$ | (p,d) | (d,t) | $\mu\text{b/sr}$ | (τ, α) | | |
| 0 | 1 ⁺ | 2700 | 0.29* | 0.37 | | 0.52 | 17900 | 1.8(3) | | | | | 75Bo25 |
| 23.871(8) | 3 ⁺ | 3630 | 0.52 | 0.44 | | 1.59 | 5960 | 2.4(4) | | | 1.8 | | 75Bo25 |
| 89.53(1) | 11 ⁻ | 522 | 0.69 | 0.85 | 5 | 3.61 | 1540 | 4.6(9) | 4.4 | | 3.5 | | 94Va28 |

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| E^* | $2J^\pi$ | σ (d,p) | S_{dp} | S_N | L | C^2S | σ (p,d) | S_N | C^2S | σ (d,t) | C^2S | E_{anal}^* | Ref. |
|------------|---------------------------------|------------------|----------|-------|-----|--------|------------------|---------|--------|------------------|------------------|--------------|--------|
| [keV] | | $\mu\text{b/sr}$ | | (t,d) | | (p,d) | $\mu\text{b/sr}$ | (p,d) | (d,t) | $\mu\text{b/sr}$ | (τ, α) | | |
| 787.01(4) | 7 ⁺ | 183 | 0.059 | | 4 | 5.49 | 1870 | 5.3(13) | 7.0 | 304 | 6.0 | | 94Va28 |
| 920.5(1) | 3 ⁺ | 85 | 0.009 | | 2 | 0.35 | 1170 | 0.50(7) | | 146 | 0.16 | | 75Bo25 |
| 921.4(2) | 5 ⁺ | incl | | | | | | | | incl | | | |
| 1060(10) | X ⁽⁺⁾ | 1290 | | | | | | | | | | | |
| 1062(1) | 7 ⁻ | incl | 0.034 | | | | | | | | | | 75Bo25 |
| 1089.4(1) | 5 ⁺ | incl | 0.14 | | 2 | 2.58 | 10400 | 4.0(5) | 4.35 | 1320 | 2.6 | | 94Va28 |
| 1187.7(1) | 3 ⁺ , 5 ⁺ | 127 | 0.021 | | | | | | | 55 | | | 75Bo25 |
| 1210 | | incl | | | | | | | | incl | | | |
| 1249.7(1) | 1 ⁺ | incl | 0.011 | | 0 | 0.01 | 150 | | | incl | | | 75Bo25 |
| 1304.4(1) | ≥ 7 | | 0.003 | | | | | | | | | | 75Bo25 |
| 1309.3(9) | 15 ⁻ | | | | | | | | | | | | 95Fo16 |
| 1354.8(5) | 5 ⁺ | 216 | 0.021 | | 2 | 0.90 | 3630 | 1.5(2) | | 356 | 1.32 | | 75Bo25 |
| 1378.8(9) | 13 ⁻ | | | | | | | | | | | | 95Fo16 |
| 1390(10) | | | | | | | | | | | | | |
| 1510 | | | | | | | | | | | | | |
| 1554.4(5) | 3 ⁺ , 5 ⁺ | | 0.017 | | | | | | | 60 | | | 75Bo25 |
| 1562(10) | 3 ⁺ , 5 ⁺ | | | | 2 | 0.08 | 270 | | | incl | | | 82Di04 |
| 1571.8(6) | 1-5 ⁺ | 114 | | | | | incl | | | | | | |
| 1590 | | | | | | | | | | | | | |
| 1617.1(8) | 1 ⁺ -5 ⁺ | incl | | | | | | | | | | | |
| 1633(4) | 3 ⁺ , 5 ⁺ | | 0.003 | | | | 120 | | | 31 | | | 75Bo25 |
| 1718.4(15) | 3 ⁺ , 5 ⁺ | 209 | 0.007 | | | | | | | 85 | | | 75Bo25 |
| 1731(6) | 3 ⁺ , 5 ⁺ | incl | | | 2 | 0.10 | 400 | 0.24(4) | | incl | | | 82Di04 |
| 1774.8(3) | 3 ⁺ , 5 ⁺ | | | | | | incl | | | incl | | | |
| 1789.7(20) | 1-5 ⁺ | | | | | | | | | | | | |
| 1810(8) | | | | | | | | | | | | | |
| 1905(5) | 3 ⁺ , 5 ⁺ | | 0.008 | | | | | | | | | | 75Bo25 |
| 1929.6(20) | 1-5 ⁺ | | | | | | | | | | | | |
| 1938.9(5) | 1 ⁺ -5 ⁺ | | | | | | | 0.10(2) | | | | | |
| 1950(10) | [3 ⁻] | 214 | | | | | 340 | | | | | | 70Ca01 |
| 1983.0(20) | | | | | | | | | | | | | |
| 2003.1(10) | 1,3,5 | | | | | | | | | | | | |
| 2041.0(25) | 1-5 ⁺ | | | | | | | | | | | | |
| 2075(8) | | | | | | | | | | | | | |
| 2100(15) | | | | | | | | | | | | | |
| 2127.0(10) | 19 ⁺ | | | | | | | | | | | | 95Fo16 |
| 2130.2(20) | 1 ⁺ | | 0.011 | | 0 | 0.04 | 810 | 0.08(2) | | | | | 75Bo25 |
| 2155(8) | | | | | | | | | | | | | |
| 2180(15) | 5 ⁻ , 7 ⁻ | | | | | | | | | | | | |
| 2230(15) | 3 ⁺ , 5 ⁺ | | | | 2 | | 130 | | | | | | 70Ca01 |
| 2240 | | | | | | | | | | | | | |
| 2258(6) | 3 ⁺ , 5 ⁺ | | 0.003 | | | | | | | | | | 75Bo25 |
| 2280(15) | $\langle 5^-, 7^- \rangle$ | | | | | | | | | | | | |
| 2322(6) | 3 ⁺ , 5 ⁺ | | 0.006 | | | | 60 | | | | | | 75Bo25 |
| 2350(8) | | | | | | | | | | | | | |

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| E^* | $2J^\pi$ | σ (d,p) | S_{dp} | S_N | L | C^2S | σ (p,d) | S_N | C^2S | σ (d,t) | C^2S | E_{anal}^* | Ref. |
|------------|------------------------|------------------|----------|-------|-----|--------|------------------|-------|--------|------------------|--------------------|--------------|--------|
| [keV] | | $\mu\text{b/sr}$ | | (t,d) | | (p,d) | $\mu\text{b/sr}$ | (p,d) | (d,t) | $\mu\text{b/sr}$ | (τ, α) | | |
| 2367(6) | $3^+, 5^+$ | | 0.011 | | | | | | | | | | 75Bo25 |
| 2390(15) | $5^-, 7^-$ | | | | | | | | | | | | |
| 2400 | $9^-, 11^-$ | | | | 5 | | 80 | | | | | | 70Ca01 |
| 2415.3(14) | $\langle 19^- \rangle$ | | | | | | | | | | | | |
| 2470 | | | | | | | 70 | | | | | | 70Ca01 |
| 2535(8) | | | | | | | 50 | | | | | | 70Ca01 |
| 2549(7) | $5^-, 7^-$ | | 0.047 | | | | | | | | | | 75Bo25 |
| 2636(7) | $5^-, 7^-$ | | 0.090 | | | | | | | | | | 75Bo25 |
| 2640 | $3^+, 5^+$ | | | | 2 | | 110 | | | | | | 70Ca01 |
| 2700 | $1^-, 3^-$ | | | | 1 | | 430 | | | | | | 70Ca01 |
| 2723(7) | $1^-, 3^-$ | | | | | | incl | | | | | | 75Bo25 |
| 2760(8) | | | | | | | | | | | | | 75Bo25 |
| 2813(7)** | | | | | | | | | | | | | 75Bo25 |
| 2823(7) | | | | | | | | | | | | | 75Bo25 |
| 2840 | $1^-, 3^-$ | | | | 1 | | | | | | | | 70Ca01 |
| 2845.8(20) | $3^+, 5^+$ | | 0.032 | | | | | | | | | | 75Bo25 |
| 2881.2(20) | $3^+, 5^+$ | | 0.034 | | 2 | | 320 | | | | | | 75Bo25 |
| 2905.1(20) | $3^+, 5^+$ | | 0.034 | | | | incl | | | | | | 75Bo25 |
| 2928.3(17) | $\langle 23^- \rangle$ | | | | | | | | | | | | |
| 2939(8) | $3^+, 5^+$ | | 0.021 | | | | | | | | | | 75Bo25 |
| 2940 | | | | | | | | | | | | | |
| 2965(8) | | | | | | | | | | | | | 75Bo25 |
| 3011.9(15) | $3^+, 5^+$ | | | | 2 | | 220 | | | | | | 70Ca01 |
| 3046.9(22) | ≤ 5 | | | | | | | | | | | | |
| 3071(8) | $3^+, 5^+$ | | 0.035 | | | | | | | | | | 75Bo25 |
| 3093(8) | $5^-, 7^-$ | | 0.025 | | | | | | | | | | 75Bo25 |
| 3103.3(20) | $\langle 27^- \rangle$ | | | | | | | | | | | | |
| 3120(8) | | | | | | | | | | | | | |
| 3158(8) | $5^-, 7^-$ | | 0.045 | | | | | | | | | | 75Bo25 |
| 3191(8) | | | | | | | | | | | | | 75Bo25 |
| 3279(9) | $3^+, 5^+$ | | 0.032 | | | | | | | | | | 75Bo25 |
| 3300(8) | | | | | | | | | | | | | |
| 3366(9) | | | | | | | | | | | | | 75Bo25 |
| 3375(9) | $3^+ - 7^-$ | | 0.03 | | | | | | | | | | 75Bo25 |
| 3389(9) | | | | | | | | | | | | | 75Bo25 |
| 3405(8) | | | | | | | | | | | | | |
| 3442(9) | $1^-, 3^-$ | | 0.01 | | | | | | | | | | 75Bo25 |
| 3481(9) | $1^-, 3^-$ | | 0.03 | | | | | | | | | | 75Bo25 |
| 3527(9) | $1^-, 3^-$ | | 0.02 | | | | | | | | | | 75Bo25 |
| 3566(9) | $1^-, 3^-$ | | 0.01 | | | | | | | | | | 75Bo25 |
| 3595(9) | $1^- - 5^-$ | | 0.02 | | | | | | | | | | 75Bo25 |
| 3618(9) | $1^-, 3^-$ | | 0.03 | | | | | | | | | | 75Bo25 |
| 3656(10) | $1^-, 3^-$ | | 0.02 | | | | | | | | | | 75Bo25 |
| 3675(10) | | | | | | | | | | | | | 75Bo25 |
| 3690(10) | | | | | | | | | | | | | 75Bo25 |

(continued)

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| E^* | $2J^\pi$ | σ (d,p) | S_{dp} | S_N | L | C^2S | σ (p,d) | S_N | C^2S | σ (d,t) | C^2S | E_{anal}^* | Ref. |
|----------|------------|------------------|----------|-------|-----|--------|------------------|-------|--------|------------------|------------------|--------------|--------|
| [keV] | | $\mu\text{b/sr}$ | | (t,d) | | (p,d) | $\mu\text{b/sr}$ | (p,d) | (d,t) | $\mu\text{b/sr}$ | (τ, α) | | |
| 3730(10) | | | | | | | | | | | | | 75Bo25 |
| 3770(10) | | | | | | | | | | | | | 75Bo25 |
| 3807(10) | $1^-, 3^-$ | | 0.07 | | | | | | | | | | |
| 3843(10) | $1^-, 3^-$ | | 0.03 | | | | | | | | | | 75Bo25 |
| 3880(10) | $7^+, 9^+$ | | | | | | | | | 0.07 | | | 80Ge01 |
| 3891(10) | $1^-, 3^-$ | | 0.001 | | | | | | | | | | 75Bo25 |
| 3905(10) | | | | | | | | | | | | | 75Bo25 |
| 3921(10) | $5^-, 7^-$ | | 0.08 | | | | | | | | | | 75Bo25 |
| 3955(10) | $1^-, 3^-$ | | 0.03 | | | | | | | | | | 75Bo25 |
| 3980(8) | $7^+, 9^+$ | | | | | | | | | 0.08 | | | 80Ge01 |
| 3987(10) | | | | | | | | | | | | | 75Bo25 |
| 4031(10) | | | | | | | | | | | | | 75Bo25 |
| 4050(8) | $7^+, 9^+$ | | | | | | | | | 0.06 | | | 80Ge01 |
| 4062(11) | $1^-, 3^-$ | | 0.02 | | | | | | | | | | 75Bo25 |
| 4115(11) | | | | | | | | | | | | | 75Bo25 |
| 4138(11) | | | | | | | | | | | | | 75Bo25 |
| 4191(11) | | | | | | | | | | | | | 75Bo25 |
| 4210(11) | $7^+, 9^+$ | | | | | | | | | 0.11 | | | 80Ge01 |
| 4235(11) | $5^-, 7^-$ | | 0.01 | | | | | | | | | | 75Bo25 |
| 4261(11) | $5^-, 7^-$ | | 0.01 | | | | | | | | | | 75Bo25 |
| 4301(11) | $1^-, 3^-$ | | 0.01 | | | | | | | | | | 75Bo25 |
| 4350(11) | | | | | | | | | | | | | 75Bo25 |
| 4380(11) | $1^-, 3^-$ | | 0.04 | | | | | | | | | | 75Bo25 |
| 4418(11) | | | | | | | | | | | | | 75Bo25 |
| 4435(12) | | | | | | | | | | | | | 75Bo25 |
| 4451(12) | | | | | | | | | | | | | 75Bo25 |
| 4470(8) | $7^+, 9^+$ | | | | | | | | | 0.03 | | | 80Ge01 |
| 4521(12) | | | | | | | | | | | | | 75Bo25 |
| 4552(12) | $5^-, 7^-$ | | 0.02 | | | | | | | | | | 75Bo25 |
| 4610(12) | $1^-, 3^-$ | | 0.01 | | | | | | | | | | 75Bo25 |
| 4663(12) | | | | | | | | | | 0.10 | | | 80Ge01 |
| 4688(12) | | | | | | | | | | | | | 75Bo25 |
| 4758(12) | | | | | | | | | | | | | 75Bo25 |
| 4790(8)* | | | | | | | | | | incl | | | 86Ma37 |
| 4900(8) | | | | | | | | | | 0.14 | | | 80Ge01 |
| 4950(8)* | | | | | | | | | | incl | | | 86Ma37 |
| 5040(8)* | $7^+, 9^+$ | | | | | | | | | 0.18 | | | 86Ma37 |
| 5120(8)* | $7^+, 9^+$ | | | | | | | | | 0.15 | | | 86Ma37 |
| 5220(8)* | $7^+, 9^+$ | | | | | | | | | 0.10 | | | 86Ma37 |
| 5330(8)* | $7^+, 9^+$ | | | | | | | | | 0.33 | | | 86Ma37 |
| 5480(8)* | $7^+, 9^+$ | | | | | | | | | 0.18 | | | 86Ma37 |
| 5600(8) | | | | | | | | | | 0.55 | | | 80Ge01 |
| 5580* | | | | | | | | | | | | | 86Ma37 |
| 5710(8)* | | | | | | | | | | incl | | | 86Ma37 |
| 5820(8) | $7^+, 9^+$ | | | | | | | | | 0.2 | | | 80Ge01 |

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| E^* | $2J^\pi$ | σ (d,p) | S_{dp} | S_N | L | C^2S | σ (p,d) | S_N | C^2S | σ (d,t) | C^2S | E_{anal}^* | Ref. |
|-----------------|----------------|------------------|----------|--------|--------|--------|------------------|-------|--------|------------------|------------------|--------------|--------|
| [keV] | | $\mu\text{b/sr}$ | | (t,d) | | (p,d) | $\mu\text{b/sr}$ | (p,d) | (d,t) | $\mu\text{b/sr}$ | (τ, α) | | |
| 5950* | | | | | | | | | | | | | 86Ma37 |
| 5960(8) | | | | | | | | | | | 0.27 | | 80Ge01 |
| 6020(15) | | | | | | | | | | | incl | | 80Ge01 |
| 6080* | | | | | | | | | | | | | 86Ma37 |
| 6120(15) | | | | | | | | | | | ≈ 0.3 | | 80Ge01 |
| 6150* | | | | | | | | | | | | | 86Ma37 |
| 6300(15) | | | | | | | | | | | incl | | 80Ge01 |
| 6200* | | | | | | | | | | | | | 86Ma37 |
| 6370(15)* | | | | | | | | | | | incl | | 86Ma37 |
| 6460(15) | | | | | | | | | | | incl | | 80Ge01 |
| 6570* | | | | | | | | | | | | | 86Ma37 |
| ≈ 12900 | | | | | | | | | | | | | |
| 14995(50)*** | 9 ⁺ | | | | | | | | | | | 0.0 | 80Ta04 |
| 15329(50)*** | 1 ⁻ | | | | | | | | | | | 311 | 80Ta04 |
| 15622(50)*** | 3 ⁻ | | | | | | | | | | | 604 | 80Ta04 |
| 16100(30) | | | | | | | | | | | | 1050 | 80Ge01 |
| 16470(30) | 9 ⁺ | | | | | | | | | | | 1450 | 80Ge01 |
| | | 67Sc12 | | 79Ch08 | 82Di04 | | | | 94Va28 | | 80Ge01 | 80Ge01 | Ref. |
| | | 75Bo25 | | | | 70Ca01 | 82F102 | | | 67Sc12 | | | Ref. |

Additional data on this isotope can be found in [95Fo16, 80Ta04, 79Ch08, 79F110, 74De10].

Abundance: 8.59(4) %.* S_{dp} from DWBA-analysis [75Bo25] of experimental $d\sigma/d\Omega$ given in the previous column, see comments on selection of orbital moments in [00Oh01], for $\ell_n=0$ transitions data for $d\sigma/d\Omega$ at the angle 8° were taken.

** possible doublet [75Bo25]

*** Cross section of the (p,d), (τ, α) reactions and spectroscopic factors of these IAS states are considered in [77Se01].Parameters of the (t,d) and (d,t) reactions [79Ch08, 94Va28] as well as $T_{1/2}$, uncertainties in E^* and branching ratios are given in Supplement.

Data for this isotope are considered in vol. LB I/18B.

Energy levels and branching ratios [00Oh01, 75Bo25]. Part 2

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| E^* | $2J^\pi$ | S_{dp} | $d\sigma/d\Omega$ | L | σ (p,d) | L | L | $T_{1/2}$ or | Ref. | Branching ratios in percentage | | | | |
|-----------|-----------------|----------|-------------------|-----|------------------|-----|---------------------|---------------|--------|--------------------------------|----------------|----------------|-----------------|----------------|
| [keV] | | | $\mu\text{b/sr}$ | | $\mu\text{b/sr}$ | | | Γ_{cm} | | E_f^* : | 0 | 23.87 | 89.5 | 787 |
| | | | | | | | | | | $2J_f^\pi$: | 1 ⁺ | 3 ⁺ | 11 ⁻ | 7 ⁺ |
| 0 | 1 ⁺ | 0.59 | 3400 | 0 | 7500(900) | 0 | | Stable | 75Bo25 | | | | | |
| 23.871(8) | 3 ⁺ | 0.52 | 4600 | 2 | | 2 | | 18.0(1) ns | 75Bo25 | | 100 | | | |
| 89.53(1) | 11 ⁻ | 0.56 | 1500 | 5 | 750(80) | 5 | 5 | 293(1) d | 94Va28 | | | 100 | | |
| 787.01(4) | 7 ⁺ | 0.14 | 160 | | 780(90) | 4 | 4 | 0.2(1) ns | 94Va28 | | | | 100 | 0.5(1) |
| 920.5(1) | 3 ⁺ | 0.006 | 150 | | 500(40) | | $\langle 2 \rangle$ | 1.6(5) ps | 75Bo25 | | 74(27) | 26(17) | | |
| 921.4(2) | 5 ⁺ | | | | incl | | | 1.2(4) ps | | | 25(10) | 75(22) | | |

(continued)

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| E^* | $2J^\pi$ | S_{dp} | $d\sigma/d\Omega$ | L | σ (p,d) | L | L | $T_{1/2}$ or | Ref. | Branching ratios in percentage | | | | | |
|------------|---------------------------------|----------|-------------------|-----|------------------|-----|-----------|---------------------|--------|--------------------------------|----------------|----------------|-----------------|----------------|----------------|
| [keV] | | | $\mu\text{b/sr}$ | | $\mu\text{b/sr}$ | | | Γ_{cm} | | E_f^* : | 0 | 23.87 | 89.5 | 787 | 920 |
| | | | | | | | | | | $2J_f^\pi$: | 1 ⁺ | 3 ⁺ | 11 ⁻ | 7 ⁺ | 3 ⁺ |
| 1060(10) | X ⁽⁺⁾ | | | | | | | | | | | | | | |
| 1062(1) | 7 ⁻ | | 390 | | | | | | 75Bo25 | | | | 100 | | |
| 1089.4(1) | 5 ⁺ | 0.08 | 2300 | | 3900(400) | 2 | 2 | 0.2(1) ps | 94Va28 | 5.9(4) | 94(1) | | | | |
| 1187.7(1) | 3 ⁺ ,5 ⁺ | 0.08 | 250 | | | | | | 75Bo25 | 16(6) | 84(10) | | | | |
| 1210 | | | | | | | | | | | | | | | |
| 1249.7(1) | 1 ⁺ | | 150 | | | | | | 75Bo25 | 78(7) | 22(5) | | | | |
| 1304.4(1) | ≥ 7 | | 50 | | | | | | 75Bo25 | | | | 100 | | |
| 1309.3(9) | 15 ⁻ | | | | | | | | 95Fo16 | | | | 100 | | |
| 1354.8(5) | 5 ⁺ | 0.014 | 350 | | 1400(150) | 2 | 0.4(1) ps | | 75Bo25 | 23(1) | 71 | | | | ≈ 6 |
| 1378.8(9) | 13 ⁻ | | | | | | | | 95Fo16 | | | | 100 | | |
| 1390(10) | | | | | | | | | | | | | | | |
| 1510 | | | | | | | | | | | | | | | |
| 1554.4(5) | 3 ⁺ ,5 ⁺ | | 200 | | | | | | 75Bo25 | 24 | | | | 56 | |
| 1562(10) | 3 ⁺ ,5 ⁺ | | | | | | | | 82Di04 | | | | | | |
| 1571.8(6) | 1-5 ⁺ | 0.007 | | | | | | | | 13 | 41 | | | | |
| 1590 | | | | | | | | | | | | | | | |
| 1617.1(8) | 1 ⁺ -5 ⁺ | | | | | | | | | | | 72 | | | |
| 1633(4) | 3 ⁺ ,5 ⁺ | | 50 | (2) | | | | | 75Bo25 | | | | | | |
| 1718.4(15) | 3 ⁺ ,5 ⁺ | 0.011 | 140 | | | | | | 75Bo25 | | x | | | | |
| 1731(6) | 3 ⁺ ,5 ⁺ | | | | | | | | 82Di04 | | | | | | |
| 1774.8(3) | 3 ⁺ ,5 ⁺ | | | | | | | | | | 46 | | | 25 | 25 |
| 1789.7(20) | 1-5 ⁺ | | | | | | | | | | x | | | | |
| 1810(8) | | | | | | | | | | | | | | | |
| 1905(5) | 3 ⁺ ,5 ⁺ | | 190 | | | | | | 75Bo25 | | | | | | |
| 1929.6(20) | 1-5 ⁺ | | | | | | | | | x | | | | | |
| 1938.9(5) | 1 ⁺ -5 ⁺ | | | | | | | | | 37 | 26 | | | | |
| 1950(10) | [3 ⁻] | 0.01 | | | | | | | 70Ca01 | | | | | | |
| 1983.0(20) | | | | | | | | | | | | x | | | |
| 2003.1(10) | 1,3,5 | | | | | | | | | | | | | | x |
| 2041.0(25) | 1-5 ⁺ | | | | | | | | | x | | | | | |
| 2075(8) | | | | | | | | | | | | | | | |
| 2100(15) | | | | | | | | | | | | | | | |
| 2127.0(10) | 19 ⁺ | | | | | | | 10(1) μs | 95Fo16 | | | | | | |
| 2130.2(20) | 1 ⁺ | | 200 | | | | | | 75Bo25 | x | | | | | |
| 2155(8) | | | | | | | | | | | | | | | |
| 2180(15) | 5 ⁻ ,7 ⁻ | | | | | | | | | | | | | | |
| 2230(15) | 3 ⁺ ,5 ⁺ | | | | | | | | 70Ca01 | | | | | | |
| 2240 | | | | | | | | | | | | | | | |
| 2258(6) | 3 ⁺ ,5 ⁺ | | 60 | | | | | | 75Bo25 | | | | | | |
| 2280(15) | $\langle 5^-, 7^- \rangle$ | | | | | | | | | | | | | | |
| 2322(6) | 3 ⁺ ,5 ⁺ | | 80 | | | | | | 75Bo25 | | | | | | |
| 2350(8) | | | | | | | | | | | | | | | |
| 2367(6) | 3 ⁺ ,5 ⁺ | | 200 | | | | | | 75Bo25 | | | | | | |
| 2390(15) | 5 ⁻ ,7 ⁻ | | | | | | | | | | | | | | |
| 2400 | 9 ⁻ ,11 ⁻ | | | | | | | | 70Ca01 | | | | | | |

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| E^* [keV] | $2J^\pi$ | S_{dp} | $d\sigma/d\Omega$ $\mu\text{b/sr}$ | L | σ (p,d) $\mu\text{b/sr}$ | L | L | $T_{1/2}$ or Γ_{cm} | Ref. | Branching ratios in percentage | | | | | |
|----------------|------------------------|----------|---------------------------------------|-----|------------------------------------|-----|-----|-------------------------------|--------|--------------------------------|---------------------|-------------------------|-------------------------|-----------------------|-----------------------|
| | | | | | | | | | | E_f^* : $2J_f^\pi$: | 0 1 ⁺ | 23.87 3 ⁺ | 89.5 11 ⁻ | 787 7 ⁺ | 920 3 ⁺ |
| 2415.3(14) | $\langle 19^- \rangle$ | | | | | | | | | | | | | | |
| 2470 | | | | | | | | | 70Ca01 | | | | | | |
| 2535(8) | | | | | | | | | 70Ca01 | | | | | | |
| 2549(7) | $5^-, 7^-$ | | 810 | | | | | | 75Bo25 | | | | | | |
| 2636(7) | $5^-, 7^-$ | | 1500 | | | | | | 75Bo25 | | | | | | |
| 2640 | $3^+, 5^+$ | | | | | | | | 70Ca01 | | | | | | |
| 2700 | $1^-, 3^-$ | | | | | | | | 70Ca01 | | | | | | |
| 2723(7) | $1^-, 3^-$ | | 70 | | | | | | 75Bo25 | | | | | | |
| 2760(8) | | | 60 | | | | | | 75Bo25 | | | | | | |
| 2813(7)** | | | 40 | | | | | | 75Bo25 | | | | | | |
| 2823(7) | | | ≥ 50 | | | | | | 75Bo25 | | | | | | |
| 2840 | $1^-, 3^-$ | | | | | | | | 70Ca01 | | | | | | |
| 2845.8(20) | $3^+, 5^+$ | | 490 | | | | | | 75Bo25 | | 100 | | | | |
| 2881.2(20) | $3^+, 5^+$ | | 750 | | | | | | 75Bo25 | | 100 | | | | |
| 2905.1(20) | $3^+, 5^+$ | | 510 | | | | | | 75Bo25 | | | | | | |
| 2928.3(17) | $\langle 23^- \rangle$ | | | | | | | | | | | | | | |
| 2939(8) | $3^+, 5^+$ | | 460 | | | | | | 75Bo25 | | | | | | |
| 2940 | | | | | | | | | | | | | | | |
| 2965(8) | | | 250 | | | | | | 75Bo25 | | | | | | |
| 3011.9(15) | $3^+, 5^+$ | | | | | | | | 70Ca01 | | 44 | 56 | | | |
| 3046.9(22) | ≤ 5 | | | | | | | | | | | | | | |
| 3071(8) | $3^+, 5^+$ | | 840 | | | | | | 75Bo25 | | | | | | |
| 3093(8) | $5^-, 7^-$ | | 480 | | | | | | 75Bo25 | | | | | | |
| 3103.3(20) | $\langle 27^- \rangle$ | | | | | | | 34(10) ns | | | | | | | |
| 3120(8) | | | | | | | | | | | | | | | |
| 3158(8) | $5^-, 7^-$ | | 860 | | | | | | 75Bo25 | | | | | | |
| 3191(8) | | | ≥ 150 | | | | | | 75Bo25 | | | | | | |
| 3279(9) | $3^+, 5^+$ | | 760 | | | | | | 75Bo25 | | | | | | |
| 3300(8) | | | | | | | | | | | | | | | |
| 3366(9) | | | ≥ 150 | | | | | | 75Bo25 | | | | | | |
| 3375(9) | $3^+ - 7^-$ | | 530 | | | | | | 75Bo25 | | | | | | |
| 3389(9) | | | ≥ 130 | | | | | | 75Bo25 | | | | | | |
| 3405(8) | | | | | | | | | | | | | | | |
| 3442(9) | $1^-, 3^-$ | | 440 | | | | | | 75Bo25 | | | | | | |
| 3481(9) | $1^-, 3^-$ | | 700 | | | | | | 75Bo25 | | | | | | |
| 3527(9) | $1^-, 3^-$ | | 500 | | | | | | 75Bo25 | | | | | | |
| 3566(9) | $1^-, 3^-$ | | 350 | | | | | | 75Bo25 | | | | | | |
| 3595(9) | $1^- - 5^-$ | | 280 | | | | | | 75Bo25 | | | | | | |
| 3618(9) | $1^-, 3^-$ | | 770 | | | | | | 75Bo25 | | | | | | |
| 3656(10) | $1^-, 3^-$ | | 520 | | | | | | 75Bo25 | | | | | | |
| 3675(10) | | | ≥ 100 | | | | | | 75Bo25 | | | | | | |
| 3690(10) | | | ≥ 50 | | | | | | 75Bo25 | | | | | | |
| 3730(10) | | | 130 | | | | | | 75Bo25 | | | | | | |
| 3770(10) | | | 770 | | | | | | 75Bo25 | | | | | | |
| 3807(10) | $1^-, 3^-$ | | 1700 | | | | | | | | | | | | |

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| E^* [keV] | $2J^\pi$ | S_{dp} | $d\sigma/d\Omega$ $\mu\text{b/sr}$ | L | σ (p,d) $\mu\text{b/sr}$ | L | L | $T_{1/2}$ or Γ_{cm} | Ref. | Branching ratios in percentage | | | | | |
|----------------|--------------------------------|-----------------|---------------------------------------|-----|------------------------------------|-----|-----|--------------------------------------|--------|--------------------------------|----------------|----------------|-----------------|----------------|----------------|
| | | | | | | | | | | E_f^* : | 0 | 23.87 | 89.5 | 787 | 920 |
| | | | | | | | | | | $2J_f^\pi$: | 1 ⁺ | 3 ⁺ | 11 ⁻ | 7 ⁺ | 3 ⁺ |
| 3843(10) | 1 ⁻ ,3 ⁻ | | 550 | | | | | | 75Bo25 | | | | | | |
| 3880(10) | 7 ⁺ ,9 ⁺ | | 110 | | | | 4 | | 80Ge01 | | | | | | |
| 3891(10) | 1 ⁻ ,3 ⁻ | | 130 | | | | | | 75Bo25 | | | | | | |
| 3905(10) | | | ≥ 50 | | | | | | 75Bo25 | | | | | | |
| 3921(10) | 5 ⁻ ,7 ⁻ | | 200 | | | | | | 75Bo25 | | | | | | |
| 3955(10) | 1 ⁻ ,3 ⁻ | | 660 | | | | | | 75Bo25 | | | | | | |
| 3980(8) | 7 ⁺ ,9 ⁺ | | | | | | 4 | | 80Ge01 | | | | | | |
| 3987(10) | | | ≥ 500 | | | | | | 75Bo25 | | | | | | |
| 4031(10) | | | ≥ 150 | | | | | | 75Bo25 | | | | | | |
| 4050(8) | 7 ⁺ ,9 ⁺ | | | | | | 4 | | 80Ge01 | | | | | | |
| 4062(11) | 1 ⁻ ,3 ⁻ | | 490 | | | | | | 75Bo25 | | | | | | |
| 4115(11) | | | ≥ 100 | | | | | | 75Bo25 | | | | | | |
| 4138(11) | | | 230 | | | | | | 75Bo25 | | | | | | |
| 4191(11) | | | ≥ 100 | | | | | | 75Bo25 | | | | | | |
| 4210(11) | 7 ⁺ ,9 ⁺ | | ≥ 100 | | | | 4 | | 80Ge01 | | | | | | |
| 4235(11) | 5 ⁻ ,7 ⁻ | | 170 | | | | | | 75Bo25 | | | | | | |
| 4261(11) | 5 ⁻ ,7 ⁻ | | 240 | | | | | | 75Bo25 | | | | | | |
| 4301(11) | 1 ⁻ ,3 ⁻ | | 380 | | | | | | 75Bo25 | | | | | | |
| 4350(11) | | | ≥ 300 | | | | | | 75Bo25 | | | | | | |
| 4380(11) | 1 ⁻ ,3 ⁻ | | 820 | | | | | | 75Bo25 | | | | | | |
| 4418(11) | | | ≥ 150 | | | | | | 75Bo25 | | | | | | |
| 4435(12) | | | ≥ 100 | | | | | | 75Bo25 | | | | | | |
| 4451(12) | | | ≥ 150 | | | | | | 75Bo25 | | | | | | |
| 4470(8) | 7 ⁺ ,9 ⁺ | | | | | | 4 | | 80Ge01 | | | | | | |
| 4521(12) | | | ≥ 100 | | | | | | 75Bo25 | | | | | | |
| 4552(12) | 5 ⁻ ,7 ⁻ | | 580 | | | | | | 75Bo25 | | | | | | |
| 4610(12) | 1 ⁻ ,3 ⁻ | | 200 | | | | | | 75Bo25 | | | | | | |
| 4663(12) | | | ≥ 50 | | | | | | 80Ge01 | | | | | | |
| 4688(12) | | | ≥ 150 | | | | | | 75Bo25 | | | | | | |
| 4758(12) | | | ≥ 150 | | | | | | 75Bo25 | | | | | | |
| 4790(8)* | | | | | | | | | 86Ma37 | | | | | | |
| 4900(8) | | | | | | | | | 80Ge01 | | | | | | |
| 4950(8)* | | | | | | | | | 86Ma37 | | | | | | |
| 5040(8)* | 7 ⁺ ,9 ⁺ | | | | | | 4 | | 86Ma37 | | | | | | |
| 5120(8)* | 7 ⁺ ,9 ⁺ | | | | | | 4 | | 86Ma37 | | | | | | |
| 5220(8)* | 7 ⁺ ,9 ⁺ | | | | | | 4 | | 86Ma37 | | | | | | |
| 5330(8)* | 7 ⁺ ,9 ⁺ | | | | | | 4 | | 86Ma37 | | | | | | |
| 5480(8)* | 7 ⁺ ,9 ⁺ | | | | | | 4 | | 86Ma37 | | | | | | |
| 5600(8) | | | | | | | 4 | | 80Ge01 | | | | | | |
| 5580* | | | | | | | | | 86Ma37 | | | | | | |
| 5710(8)* | | | | | | | | | 86Ma37 | | | | | | |
| 5820(8) | 7 ⁺ ,9 ⁺ | | | | | | 4 | | 80Ge01 | | | | | | |
| 5950* | | | | | | | | | 86Ma37 | | | | | | |
| 5960(8) | | | | | | | 4+1 | | 80Ge01 | | | | | | |
| 6020(15) | | | | | | | | | 80Ge01 | | | | | | |

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| E^* | $2J^\pi$ | S_{dp} | $d\sigma/d\Omega$ | L | σ (p,d) | L | L | $T_{1/2}$ or | Ref. | Branching ratios in percentage | | | | | |
|-----------------|----------------|----------|-------------------|-----|------------------|-----|---------------------|----------------------|--------|--------------------------------|----------------|----------------|-----------------|----------------|----------------|
| [keV] | | | $\mu\text{b/sr}$ | | $\mu\text{b/sr}$ | | | Γ_{cm} | | E_f^* : | 0 | 23.87 | 89.5 | 787 | 920 |
| | | | | | | | | | | $2J_f^\pi$: | 1 ⁺ | 3 ⁺ | 11 ⁻ | 7 ⁺ | 3 ⁺ |
| 6080* | | | | | | | | | 86Ma37 | | | | | | |
| 6120(15) | | | | | | | | | 80Ge01 | | | | | | |
| 6150* | | | | | | | | | 86Ma37 | | | | | | |
| 6300(15) | | | | | | | | | 80Ge01 | | | | | | |
| 6200* | | | | | | | | | 86Ma37 | | | | | | |
| 6370(15)* | | | | | | | | | 86Ma37 | | | | | | |
| 6460(15) | | | | | | | | | 80Ge01 | | | | | | |
| 6570* | | | | | | | | | 86Ma37 | | | | | | |
| ≈ 12900 | | | | | | | | | | | | | | | |
| 14995(50)*** | 9 ⁺ | | | | | | 4 | 36(9) | 80Ta04 | | | | | | |
| 15329(50)*** | 1 ⁻ | | | | | | 1 | 36(10) | 80Ta04 | | | | | | |
| 15622(50)*** | 3 ⁻ | | | | | | 1 | 36(8) | 80Ta04 | | | | | | |
| 16100(30) | | | | | | | $\langle 1 \rangle$ | 70(20) | 80Ge01 | | | | | | |
| 16470(30) | 9 ⁺ | | | | | | $\langle 4 \rangle$ | | 80Ge01 | | | | | | |
| | | | 75Bo25 | | 82F102 | | | 80Ta04 | Ref. | | | | | | |
| | | 67Sc12 | | | | | | | Ref. | | | | | | |

Energy levels and branching ratios [00Oh01, 75Bo25]. Part 3

¹¹⁹Sn
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| E^* | $2J^\pi$ | Branching ratios in percentage | | | | | | | | | | |
|------------|--------------------------------|--------------------------------|-----------------------|------------------------|--|------------------------|----------------------------|------------------------|----------------------------|------|----------------------------|----------------------------|
| [keV] | | E_f^* : $2J_f^\pi$: | 921 5 ⁺ | 1089 5 ⁺ | 1188 3 ⁺ ,5 ⁺ | 1250 1 ⁺ | 1309 ⟨15 ⁻ ⟩ | 1355 5 ⁺ | 1379 ⟨13 ⁻ ⟩ | 1617 | 2415 ⟨19 ⁻ ⟩ | 2928 ⟨23 ⁻ ⟩ |
| 1554.4(5) | 3 ⁺ ,5 ⁺ | | 10 | 10 | | | | | | | | |
| 1571.8(6) | 1-5 ⁺ | | 29 | | | 17 | | | | | | |
| 1617.1(8) | 1 ⁺ -5 ⁺ | | 14 | | 14 | | | | | | | |
| 1774.8(3) | 3 ⁺ ,5 ⁺ | | | | | | | 4 | | | | |
| 1938.9(5) | 1 ⁺ -5 ⁺ | | | 37 | | | | | | | | |
| 2127.0(10) | 19 ⁺ | | | | | | x | | x | | | |
| 2415.3(14) | ⟨19 ⁻ ⟩ | | | | | | 100 | | | | | |
| 2928.3(17) | ⟨23 ⁻ ⟩ | | | | | | | | | | 100 | |
| 3046.9(22) | ≤5 | | | | | | | | | 100 | | |
| 3103.3(20) | ⟨27 ⁻ ⟩ | | | | | | | | | | | 100 |

Energy levels and branching ratios [02Ki17, 99Gu21].

¹²⁰Sn
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| E^* | J^π | σ (d,p) | L | S_N | L | C^2S | L | σ_{pt} | S_{pt} | S_α | $I_{s,0}$ | $B(E1)$ | σ (p, α) | Ref. |
|------------|--------------------------------|------------------|-----|-------|--------------|--------------|---------------------|----------------------|-----------------|----------------------|-----------|-----------|-------------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | | (d,p) | (d, τ) | (d, τ) | | μb | rel.u. | (d, ⁶ Li) | [eVb] | | μb | |
| 0.0 | 0 ⁺ | 1130 | 0 | 0.65 | 2 | 0.47 | 0 | 2505 | 1.0 | 0.021 | | | 12.4(5) | 67Sc12 |
| 1171.26(2) | 2 ⁺ | 200 | 2 | 0.15 | 2 | 0.19 | 2 | 728 | 0.60 | 0.011 | 12.6(15) | 2051(299) | 4.9(3) | 99Gu21 |
| 1875.11(3) | 0 ⁺ | 87 | 0 | 0.039 | | | 0 | 34.97 | 0.025 | 0.008 | | | | 99Gu21 |
| 2097.21(2) | 2 ⁺ | | | | | | 2 | 3.02 | 0.002 | 0.004 | | | | 99Gu21 |
| 2159.93(3) | 0 ⁺ | 55 | 0 | 0.023 | | | 0 | 48.6 | 0.013 | 0.002 | | | | 99Gu21 |
| 2173 | | | | | | | | | | | | | | |
| 2194.30(2) | 4 ⁺ | | | | 2 | 0.04 | 4 | 67.8 | 0.032 | 0.007 | | | 3.8(3) | 99Gu21 |
| 2284.27(6) | 5 ⁻ | | | | | | 5 | 292.9 | 0.45 | ≤ 0.03 | | | 7.3(3) | 99Gu21 |
| 2297(15) | 0 ⁺ ,1 ⁺ | 170 | 0 | 0.072 | | | | | | | | | | 67Sc12 |
| 2355.38(2) | 2 ⁺ | | | | | | 2 | 118.6 | 0.034 | ≤ 0.01 | | | | 99Gu21 |
| 2400.30(5) | 3 ⁻ | | | | | | 3 | 361.1 | 0.20 | ≈ 0.02 | | | 8.1(4) | 99Gu21 |
| 2420.90(3) | 2 ⁺ | 882 | 2 | 0.52 | 2 | 0.04 | 2 | 195.1 | 0.060 | | | | | 99Gu21 |
| 2465.63(2) | 4 ⁺ | | | | | | 4 | 170.8 | 0.082 | | | | 1.6(2) | 99Gu21 |
| 2481.63(6) | 7 ⁻ | | | | | | 7 | 114.6 | 0.59 | ≈ 0.03 | | | 4.1(2) | 99Gu21 |
| 2540(10) | $\langle 5^- \rangle$ | | | | | | | | | | | | | |
| 2587.3(2) | 0 ⁺ | 817 | 0 | 0.32 | | | 0 | 87.2 | 0.025 | | | | | 99Gu21 |
| 2643.35(2) | 4 ⁺ | | | | | | 4 | 18.5 | 0.008 | 0.001 | | | | 99Gu21 |
| 2685.16(6) | 6 ⁺ | | | | | | | | | | | | 4.3(2) | 05Gu32 |
| 2691(3) | 2 ⁺ ,6 ⁺ | | | | | | | 36.8 | | | | | | 99Gu21 |
| 2695.94(6) | 4 ⁻ | | | | | | | | | | | | | |
| 2728.12(3) | 2 ⁺ | 186 | 2 | 0.11 | | | 2 | 35.2 | 0.026 | ≤ 0.01 | 1.5(6) | 54(21) | | 79Ja21 |
| 2749.71(6) | 6 ⁻ | | | | | | | | | | | | | |
| 2751(3) | 4 ⁺ | | | | | | 4 | 4.92 | 0.002 | | | | | 99Gu21 |
| 2800.05(7) | 5 ⁻ | | | | | | 5 | 15.1 | 0.048 | | | | | 99Gu21 |
| 2802(10) | 7 ⁻ ,8 ⁺ | | | | | | | | | | | | | |
| 2835.39(3) | 1 ⁺ | 1450 | 2 | 0.83 | | | | | | | | | | 67Sc12 |
| 2836.52(7) | $\langle 8^+ \rangle$ | | | | | | 1+8 | 31.9 | | | | | 3.1(2) | 99Gu21 |
| 2844.34(7) | $\langle 6^- \rangle$ | | | | | | | | | | | | | |
| 2857.61(8) | $\langle 0^+ \rangle$ | | | | | | | | | | | | | |
| 2902.2(2) | $\langle 10^+ \rangle$ | | | | | | | | | | | | 2.0(2) | 05Gu32 |
| 2930.53(5) | 2 ⁺ | 1050 | 2 | 0.57 | | | 2,3 | 30.5 | 0.019 | | 3.9(5) | 78(10) | | 99Gu21 |
| 2975.69(7) | 4 ⁻ | | | | | | 4,5 | 3.73 | 0.012 | | | | 1.1(1) | 99Gu21 |
| 2997 | | | | | | | | | | | | | | |
| 3009(9) | 2 ⁺ | | | | | | 2 | 1.23 | 0.0005 | | | | | 99Gu21 |
| 3034.75(9) | $\langle 0^+ \rangle$ | | | | | | | | | | | | | |
| 3057.95(2) | 4 ⁺ | | | | | | 4 | 170.2 | 0.17 | | | | 1.3(1) | 99Gu21 |
| 3069.73(8) | $\langle 6^+ \rangle$ | | | | | | | | | | | | | |
| 3077.38(8) | 3 ⁺ | | | | | | | | | | | | | |
| 3100(3) | $\langle 1^- \rangle$ | | | | | | $\langle 1 \rangle$ | 5.94 | 0.007 | | | | 0.8(1) | 99Gu21 |
| 3157.97(9) | 2 ⁺ | | | | | | 2 | 19.1 | 0.012 | | 8.4(8) | 104(10) | | 99Gu21 |
| 3179.06(3) | 4 ⁺ | | | | | | 4 | 312.9 | 0.31 | | | | 1.5(1) | 99Gu21 |
| 3208.5(2) | 0 ⁺ | | | | | | 0 | 15.7 | 0.008 | | | | | 99Gu21 |
| 3210(10) | 1 ⁺ -3 ⁺ | 71 | 2 | 0.030 | | | | | | | | | | 67Sc12 |
| 3231.95(7) | 1 ⁺ -3 ⁺ | | | | | | | | | | | | | |
| 3236 | | | | | | | | | | | | | 1.6(1) | 05Gu32 |

(continued)

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| E^* | J^π | σ (d,p) | L | S_N | L | C^2S | L | σ_{pt} | S_{pt} | S_α | $I_{s,0}$ | $B(E1)$ | σ (p, α) | Ref. |
|------------|----------------------------|------------------|-----|-------|--------------|--------------|---------------------|---------------|----------|----------------------|-----------|---------|-------------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | | (d,p) | (d, τ) | (d, τ) | | μb | rel.u. | (d, ⁶ Li) | [eVb] | | μb | |
| 3237.33(8) | $\langle 1,2 \rangle$ | | | | | | | | | | | | | |
| 3252(3) | 5^- | | | | | | 5 | 7.28 | 0.023 | | | | | 99Gu21 |
| 3262.9(1) | | | | | | | | | | | | | | |
| 3279.29(9) | $\langle 1^- \rangle$ | | | | | | $\langle 1 \rangle$ | 14.6 | 0.016 | | 100(7) | 7.6(5) | | 99Gu21 |
| 3284.62(9) | 2^+ | | | | | | | | | | 0.6(2) | 8(3) | | |
| 3330(10) | $\langle 6^+, 7^- \rangle$ | | | | | | | | | | | | | |
| 3341(3) | | | | | | | 3+4 | 12.5 | | | | | | 99Gu21 |
| 3349.92(5) | $\langle 4 \rangle^+$ | | | | | | | | | | | | | |
| 3386.3(2) | 2^+ | | | | | | 2,3 | 11.1 | 0.008 | | | | 1.2(1) | 99Gu21 |
| 3438.23(8) | 4^+ | | | | | | 4,5 | 15.1 | 0.007 | | | | | 99Gu21 |
| 3446.48(7) | $\langle 7^-, 8^- \rangle$ | | | | | | | | | | | | 3.6(2) | 05Gu32 |
| 3455(3) | | | | | | | 3+7 | 31.6 | | | | | | 99Gu21 |
| 3471.5(1) | 3^- | | | | | | 3 | 18.9 | 0.027 | | | | | 99Gu21 |
| 3547.6(2) | $1,2$ | 353 | 2 | 0.14 | | | | | | | | | | 67Sc12 |
| 3559(10) | | | | | | | | | | | | | | |
| 3581.9(2) | 2^+ | | | | | | | | | | 0.8(2) | 10(3) | | |
| 3610 | 2^+ | | | | | | | | | | | | 7.5(3) | 05Gu32 |
| 3631.1(2) | 2^+ | | | | | | | | | | | | | 78Ba25 |
| 3644.5(2) | $\langle 6^+, 7^- \rangle$ | | | | | | | | | | | | 4.1(2) | 05Gu32 |
| 3670 | 4^+ | | | | | | | | | | | | 13.4(4) | 05Gu32 |
| 3695 | 7^+ | | | | | | | | | | | | 23.0(5) | 05Gu32 |
| 3711.0(2) | $\langle 1,2 \rangle$ | 291 | 2 | 0.11 | | | | | | | | | | 67Sc12 |
| 3733 | | | | | | | | | | | | | 4.1(2) | 05Gu32 |
| 3752 | 3^+ | | | | | | | | | | | | 10.3(4) | 05Gu32 |
| 3765.3(2) | 1 | | | | | | | | | | 2.2(4) | 0.28(5) | | 78Ba25 |
| 3772.1(2) | X^+ | | | | | | | | | | | | | |
| 3777.21(6) | 4^+ | | | | | | | | | | | | 2.1(2) | 70Be20 |
| 3824 | | | | | | | | | | | | | 5.5(3) | 05Gu32 |
| 3835.4(2) | 2^+ | | | | | | | | | | 1.1(4) | 13(5) | | |
| 3857.6(1) | $\langle 4 \rangle$ | | | | | | | | | | | | 3.0(2) | 05Gu32 |
| 3875.0(2) | 2^+ | 300 | 2 | 0.11 | | | | | | | | | 6.2(3) | 67Sc12 |
| 3906.6(3) | 2^- | | | | | | | | | | | | 2.9(2) | 78Ba25 |
| 3928(10) | | | | | | | | | | | | | | |
| 3946 | 8^+ | | | | | | | | | | | | 29.3(6) | 05Gu32 |
| 3990.1(4) | $\langle 2 \rangle^+$ | | | | 4 | 0.53 | | | | | | | | 78Ba25 |
| 4006.5(6) | 2^+ | | | | | | | | | | 3.2(8) | 16(5) | 3.6(2) | 05Gu32 |
| 4011.4(6) | $\langle 1,2 \rangle$ | | | | | | | | | | | | | |
| 4055 | 4^- | | | | | | | | | | | | 12.2(4) | 05Gu32 |
| 4079.0(4) | $1^+ - 3^+$ | 238 | 2 | 0.088 | | | | | | | | | 11.6(4) | 05Gu32 |
| 4096.5(4) | 1^- | | | | | | | | | | | | 2.3(2) | 05Gu32 |
| 4110.4(7) | $0^-, 1^-$ | | | | | x | | | | | | | | 78Ba25 |
| 4135 | | | | | | | | | | | | | 3.3(2) | 05Gu32 |
| 4146.9(11) | | | | | | | | | | | | | | |
| 4167 | 1^+ | | | | | | | | | | | | 5.7(3) | 05Gu32 |
| 4179 | 3^- | | | | 4 | 0.65 | | | | | | | 10.5(4) | 02Ki17 |

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¹²⁰Sn
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| E^* | J^π | σ (d,p) | L | S_N | L | C^2S | L | σ_{pt} | S_{pt} | S_α | $I_{\text{s},0}$ | $B(E1)$ | σ (p, α) | Ref. |
|------------|--------------------------------|------------------|-----|-------|--------------|---------------|-----|----------------------|-----------------|----------------------|------------------|---------|-------------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | | (d,p) | (d, τ) | (d, τ) | | μb | rel.u. | (d, ⁶ Li) | [eVb] | | μb | |
| 4190 | 1 ⁺ -3 ⁺ | 527 | 2 | 0.20 | | | | | | | | | | 67Sc12 |
| 4225 | | | | | | | | | | | | | 28.5(6) | 05Gu32 |
| 4230(20) | X ⁺ | | | | | | | | | | | | | 02Ki17 |
| 4235 | | | | | | | | | | | | | 11.6(4) | 05Gu32 |
| 4269 | | | | | | | | | | | | | 3.3(2) | 05Gu32 |
| 4306 | | | | | | | | | | | | | 3.5(2) | 05Gu32 |
| 4318.2(3) | 0 ⁻ ,1 ⁻ | | | | 1 | 0.39 | | | | | | | 2.5(2) | 02Ki17 |
| 4389 | 4 ⁻ | | | | | | | | | | | | 14.7(4) | 78Ba25 |
| 4398 | | | | | | | | | | | | | 7.7(3) | 05Gu32 |
| 4409 | 3 ⁻ | | | | 1 | 0.39 | | | | | | | 4.4(2) | 78Ba25 |
| 4463 | X ⁺ | | | | | | | | | | | | 10.9(4) | 02Ki17 |
| 4495 | 5 ⁺ | | | | | | | | | | | | 15.0(4) | 05Gu32 |
| 4517 | 4 ⁻ | | | | | | | | | | | | 7.8(3) | 05Gu32 |
| 4558 | | | | | | | | | | | | | 1.9(2) | 05Gu32 |
| 4582 | 2 ⁻ | | | | | | | | | | | | 7.3(3) | 05Gu32 |
| 4603 | | | | | | | | | | | | | 4.3(2) | 05Gu32 |
| 4630 | | | | | | | | | | | | | 6.0(3) | 05Gu32 |
| 4654 | X ⁻ | | | | 1 | ≈ 0.3 | | | | | | | 3.2(2) | 02Ki17 |
| 4662 | | | | | | | | | | | | | 8.8(3) | 05Gu32 |
| 4684 | X ⁻ | | | | | | | | | | | | 6.4(3) | 02Ki17 |
| 4713 | | | | | | | | | | | | | 6.2(3) | 05Gu32 |
| 4720(10) | | | | | | 0.74 | | | | | | | | 78Ba25 |
| 4730 | 5 ⁻ | | | | | | | | | | | | 8.1(3) | 05Gu32 |
| 4739 | | | | | | | | | | | | | 4.5(2) | 05Gu32 |
| 4770(20) | X ⁻ | | | | | | | | | | | | | 02Ki17 |
| 4870(10) | | | | | | | | | | | | | | 78Ba25 |
| 4920(20) | X ⁻ | | | | | | | | | | | | | 02Ki17 |
| 4970(10) | | | | | | | | | | | | | | |
| 5030(10) | | | | | | | | | | | | | | |
| 5090(20) | X ⁻ | | | | | | | | | | | | | 02Ki17 |
| 5170(10) | X ⁻ | | | | | | | | | | | | | 02Ki17 |
| 5230(20) | X ⁺ | | | | | | | | | | | | | 02Ki17 |
| 6300(300) | | | | | | | | | | | | | | |
| 6728.6(7) | 1 | | | | | | | | | | | | | |
| 6900(400) | X ⁻ | | | | | | | | | | | | | |
| 7310.1(7) | 1 | | | | | | | | | | | | | |
| 7686.6(7) | 1 ⁻ | | | | | | | | | | | | | 70Sc27 |
| 8400(150) | | | | | | | | | | | | | | |
| 8993.0(4) | 1 | | | | | | | | | | | | | |
| 9900(500) | | | | | | | | | | | | | | |
| 13300(300) | 2 ⁺ | | | | | | | | | | | | | |
| 16900(400) | 0 ⁺ | | | | | | | | | | | | | |
| 19200(200) | $\langle 1^- \rangle$ | | | | | | | | | | | | | |
| 19400(200) | $\langle 1^- \rangle$ | | | | | | | | | | | | | |
| 20600(200) | $\langle 1^- \rangle$ | | | | | | | | | | | | | |

(continued)

¹²⁰Sn
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| E^* | J^π | σ (d,p) | L | S_N | L | C^2S | L | σ_{pt} | S_{pt} | S_α | $I_{s,0}$ | $B(E1)$ | σ (p, α) | Ref. |
|-------------|-----------------------|------------------|-----|--------|--------------|------------------|-----|------------------|----------|----------------------|-----------|---------|-------------------------|------|
| [keV] | | $\mu\text{b/sr}$ | | (d,p) | (d, τ) | (d, τ) | | μb | rel.u. | (d, ⁶ Li) | [eVb] | | μb | |
| 20900(1500) | $3^-, 5^-$ | | | | | | | | | | | | | |
| 25000(1000) | $\langle 3^- \rangle$ | | | | | | | | | | | | | |
| 27900(1500) | $1^-, 3^-$ | | | | | | | | | | | | | |
| | | 67Sc12 | | 67Sc12 | | 78Ba25 02Ki17 | | 99Gu21 70Fl08 | 99Gu21 | 79Ja21 | | | 05Gu32 | Ref. |
| | | | | | | | | | | | 00Br05 | 00Br05 | | Ref. |

Additional data on this isotope can be found in [00Po14, 99Br12, 99Po23, 99Gu21, 96Ca09, 92De32, 91Go07, 91Go24, 81Cr01, 79Ch08, 77Cr04, 75Kn01, 75Ko19, 70Fl08, 67Ja08, 65Ba20].

Abundance: 32.58(9) %.

For seven 2^+ levels parameter $B(E2)$ in units $e^2 fm^4$ is given instead of $B(E1)$ in units $10^{-3} e^2 fm^2$ [00Br05].

Data for this isotope are considered in vol. LB I/18B.

Energy levels and branching ratios [02Ki17, 99Gu21]. Part 2

¹²⁰Sn
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| E^* | J^π | σ (t,p) | β_L | L | C^2S | $d\sigma/d\Omega$ | $\Gamma_{\gamma o}$ | $T_{1/2}$ or | Ref. | Branching ratios in percentage | | | | |
|------------|-----------------------|----------------|-----------|---------------------|----------------|-------------------|---------------------|-----------------------|--------|--------------------------------|--------|---------|---------|--------|
| [keV] | | arb.u | (p,p') | | (t, α) | $\mu\text{b/sr}$ | [meV] | Γ_{cm} | | E_f^* : 0.0 | 1171 | 1875 | 2097 | 2160 |
| | | | | | | | | | | J_f^π : 0^+ | 2^+ | 0^+ | 2^+ | 0^+ |
| 0.0 | 0^+ | 6.4 | | 2 | 0.61 | 2.416(168) | | Stable | 67Sc12 | | | | | |
| 1171.26(2) | 2^+ | 0.9 | 0.129 | 2 | 0.31 | 0.175(45) | 0.9(1) | 0.64(1) ps | 99Gu21 | 100 | | | | |
| 1875.11(3) | 0^+ | 0.1 | | | | 0.373(66) | | 7.4(10) ps | 99Gu21 | | 100 | | | |
| 2097.21(2) | 2^+ | | | 2 | 0.01 | 0.047(23) | | 1.3(4) ps | 99Gu21 | 36(2) | 64(3) | 0.24(4) | | |
| 2159.93(3) | 0^+ | 0.1 | | | | | | >4 ps | 99Gu21 | | 100 | | | |
| 2173 | | | | | | 0.151(41) | | | | | | | | |
| 2194.30(2) | 4^+ | 0.2 | 0.042 | $\langle 2 \rangle$ | 0.05 | incl | | 1.4(2) ps | 99Gu21 | | 100 | | | |
| 2284.27(6) | 5^- | 0.45 | 0.082 | | | 0.18(5) | | 5.55(3) ns | 99Gu21 | | 1.1(1) | | | |
| 2297(15) | $0^+, 1^+$ | | | | | incl | | | 67Sc12 | | | | | |
| 2355.38(2) | 2^+ | 0.1 | 0.032 | | | 0.13(4) | | 0.3(1) ps | 99Gu21 | 29(2) | 71(3) | | | |
| 2400.30(5) | 3^- | 0.9 | 0.161 | | | 0.33(6) | | 0.12(1) ps | 99Gu21 | | 100 | | | |
| 2420.90(3) | 2^+ | incl | | $\langle 2 \rangle$ | 0.05 | incl | | 0.5(1) ps | 99Gu21 | 41(4) | 54(2) | | 3.5(2) | 0.6(1) |
| 2465.63(2) | 4^+ | | | | | 0.09(3) | | 0.32(5) ps | 99Gu21 | | | | 100 | |
| 2481.63(6) | 7^- | 0.45 | | | | incl | | 11.8(5) μs | 99Gu21 | | | | | |
| 2540(10) | $\langle 5^- \rangle$ | | | | | 0.05(2) | | | | | | | | |
| 2587.3(2) | 0^+ | 0.02 | | | | incl | | >0.34 ps | 99Gu21 | | 100 | | | |
| 2643.35(2) | 4^+ | | | | | 0.011(11) | | >1.0 ps | 99Gu21 | | 62(2) | | 23.3(8) | |
| 2685.16(6) | 6^+ | | | | | | | | 05Gu32 | | | | | |
| 2691(3) | $2^+, 6^+$ | 0.1 | | | | | | | 99Gu21 | | | | | |
| 2695.94(6) | 4^- | incl | | | | 0.058(26) | | | | | | | | |
| 2728.12(3) | 2^+ | | | | | incl | 1.3(5) | 0.24(5) ps | 79Ja21 | 44(2) | 56(3) | | | |
| 2749.71(6) | 6^- | | | | | | | | | | | | | |
| 2751(3) | 4^+ | | | | | | | | 99Gu21 | | | | | |
| 2800.05(7) | 5^- | | | | | | | | 99Gu21 | | | | | |
| 2802(10) | $7^-, 8^+$ | | | | | | | | | | | | | |

(continued)

¹²⁰Sn
₅₀

| E^* | J^π | σ (t,p) | β_L | L | C^2S | $d\sigma/d\Omega$ | $\Gamma_{\gamma o}$ | $T_{1/2}$ or | Ref. | Branching ratios in percentage | | | | |
|------------|--------------------------------|----------------|-----------|----------------|------------------|-------------------|----------------------|----------------------|--------|--------------------------------|----------------|----------------|----------------|----------------|
| [keV] | | arb.u | (p,p') | (t, α) | $\mu\text{b/sr}$ | [meV] | Γ_{cm} | | | E_f^* : 0.0 | 1171 | 1875 | 2097 | 2160 |
| | | | | | | | | | | J_f^π : 0 ⁺ | 2 ⁺ | 0 ⁺ | 2 ⁺ | 0 ⁺ |
| 2835.39(3) | 1 ⁺ | | | | | | | 0.13(3) ps | 67Sc12 | 25(1) | 75(4) | | | |
| 2836.52(7) | $\langle 8^+ \rangle$ | | | | | | | 0.09(3) ps | 99Gu21 | | | | | |
| 2844.34(7) | $\langle 6^- \rangle$ | | | | | | | | | | | | | |
| 2857.61(8) | $\langle 0^+ \rangle$ | | | | | | | | | | 100 | | | |
| 2902.2(2) | $\langle 10^+ \rangle$ | | | | | | | 6.3(1) μs | 05Gu32 | | | | | |
| 2930.53(5) | 2 ⁺ | | | | | | 2.7(4) | 0.11(2) ps | 99Gu21 | 65(4) | 35(2) | | | |
| 2975.69(7) | 4 ⁻ | | | | | | | | 99Gu21 | | | | | |
| 2997 | | | | | | | | | | | | | | |
| 3009(9) | 2 ⁺ | | | | | | | | 99Gu21 | | | | | |
| 3034.75(9) | $\langle 0^+ \rangle$ | | | | | | | | | | 100 | | | |
| 3057.95(2) | 4 ⁺ | | 0.044 | | | | | | 99Gu21 | | 9.9(4) | | | |
| 3069.73(8) | $\langle 6^+ \rangle$ | | | | | | | | | | | | | |
| 3077.38(8) | 3 ⁺ | | | | | | | | | | 40(2) | | 19(1) | |
| 3100(3) | $\langle 1^- \rangle$ | | | 1 | 0.02 | | | | 99Gu21 | | | | | |
| 3157.97(9) | 2 ⁺ | | | | | | 5.3(5) | 0.05(1) ps | 99Gu21 | 84(5) | 16(1) | | | |
| 3179.06(3) | 4 ⁺ | 0.3 | 0.074 | | | | | | 99Gu21 | | 35(2) | | 0.5(3) | |
| 3208.5(2) | 0 ⁺ | | | | | | | | 99Gu21 | | 100 | | | |
| 3210(10) | 1 ⁺ -3 ⁺ | | | | | | | | 67Sc12 | | | | | |
| 3231.95(7) | 1 ⁺ -3 ⁺ | | | | | | | | | | 12(1) | | 88(4) | |
| 3236 | | | | | | | | | 05Gu32 | | | | | |
| 3237.33(8) | $\langle 1,2 \rangle$ | | | | | | | | | 9(1) | 91(5) | | | |
| 3252(3) | 5 ⁻ | | | | | | | | 99Gu21 | | | | | |
| 3262.9(1) | | | | | | | | | | | 37(2) | | | |
| 3279.29(9) | $\langle 1^- \rangle$ | | | | | | 94(6) | 0.012(3) ps | 99Gu21 | 100 | | | | |
| 3284.62(9) | 2 ⁺ | | | | | | 0.5(2) | 0.9(3) ps | | 63(3) | 37(2) | | | |
| 3330(10) | $\langle 6^+, 7^- \rangle$ | | | | | | | | | | | | | |
| 3341(3) | | | | | | | | | 99Gu21 | | | | | |
| 3349.92(5) | $\langle 4^+ \rangle$ | | | | | | | | | | 50(3) | | 4.6(10) | |
| 3386.3(2) | 2 ⁺ | | | | | | | | 99Gu21 | 36(2) | 64(5) | | | |
| 3438.23(8) | 4 ⁺ | | | | | | | | 99Gu21 | | 95(6) | | 4.9(18) | |
| 3446.48(7) | $\langle 7^-, 8^- \rangle$ | | | | | | | | 05Gu32 | | | | | |
| 3455(3) | | | 0.04 | | | | | | 99Gu21 | | | | | |
| 3471.5(1) | 3 ⁻ | 0.15 | | | | | | | 99Gu21 | | 13(1) | | 20(2) | |
| 3547.6(2) | 1,2 | | | | | | | | 67Sc12 | 42(3) | 58(3) | | | |
| 3559(10) | | | | | | | | | | | | | | |
| 3581.9(2) | 2 ⁺ | 0.15 | | | | | 0.9(3) | 0.06(3) ps | | 61(4) | 15(2) | | | |
| 3610 | 2 ⁺ | | | | | | | | 05Gu32 | | | | | |
| 3631.1(2) | 2 ⁺ | | | 4 | 0.09 | | | | 78Ba25 | | 61(4) | | | |
| 3644.5(2) | $\langle 6^+, 7^- \rangle$ | | | | | | | | 05Gu32 | | | | | |
| 3670 | 4 ⁺ | | | | | | | | 05Gu32 | | | | | |
| 3695 | 7 ⁺ | | | | | | | | 05Gu32 | | | | | |
| 3711.0(2) | $\langle 1,2 \rangle$ | | | | | | | 0.09(4) ps | 67Sc12 | 53(4) | 47(3) | | | |
| 3733 | | | | | | | | | 05Gu32 | | | | | |
| 3752 | 3 ⁺ | | | | | | | | 05Gu32 | | | | | |
| 3765.3(2) | 1 | | | 4 | 0.11 | | 5.1(10) | 0.09(2) ps | 78Ba25 | 53(4) | | | | |

(continued)

 $^{120}_{50}\text{Sn}$

| E^* | J^π | σ (t,p) | β_L | L | C^2S | $d\sigma/d\Omega$ | Γ_{γ_0} | $T_{1/2}$ or | Ref. | Branching ratios in percentage | | | | |
|------------|--------------------------------|----------------|-----------|-----|----------------|-------------------|---------------------|----------------------|--------|--------------------------------|----------------|----------------|----------------|----------------|
| [keV] | | arb.u | (p,p') | | (t, α) | $\mu\text{b/sr}$ | [meV] | Γ_{cm} | | E_f^* : 0.0 | 1171 | 1875 | 2097 | 2160 |
| | | | | | | | | | | J_f^π : 0 ⁺ | 2 ⁺ | 0 ⁺ | 2 ⁺ | 0 ⁺ |
| 3772.1(2) | X ⁺ | | | | | | | | | | 100 | | | |
| 3777.21(6) | 4 ⁺ | 0.1 | 0.054 | | | | | | 70Be20 | | 43(3) | | 8(2) | |
| 3824 | | 0.1 | | | | | | | 05Gu32 | | | | | |
| 3835.4(2) | 2 ⁺ | | | | | | 1.8(7) | 0.13(6) ps | | 49(4) | 51(4) | | | |
| 3857.6(1) | $\langle 4 \rangle$ | | | | | | | | 05Gu32 | | 37(5) | | 47(13) | |
| 3875.0(2) | 2 ⁺ | | | | | | | | 67Sc12 | | 57(4) | | | |
| 3906.6(3) | 2 ⁻ | | | 1 | 0.07 | | | | 78Ba25 | | 100 | | | |
| 3928(10) | | | | | | | | | | | | | | |
| 3946 | 8 ⁺ | | | | | | | | 05Gu32 | | | | | |
| 3990.1(4) | $\langle 2 \rangle^+$ | | | 4 | 0.74 | | | | 78Ba25 | 57(6) | 43(5) | | | |
| 4006.5(6) | 2 ⁺ | | | | | | 2.7(8) | 0.17(5) ps | 05Gu32 | 100 | | | | |
| 4011.4(6) | $\langle 1,2 \rangle$ | | | | | | | | | 100 | | | | |
| 4055 | 4 ⁻ | | | | | | | | 05Gu32 | | | | | |
| 4079.0(4) | 1 ⁺ -3 ⁺ | | | | | | | | 05Gu32 | 67Sc12 | | 100 | | |
| 4096.5(4) | 1 ⁻ | | | | | | | | 05Gu32 | | 100 | | | |
| 4110.4(7) | 0 ⁻ ,1 ⁻ | | | 1 | 0.09 | | | | 78Ba25 | 100 | | | | |
| 4135 | | | | | | | | | 05Gu32 | | | | | |
| 4146.9(11) | | | | | | | | | | | | | | |
| 4167 | 1 ⁺ | | | | | | | | 05Gu32 | | | | | |
| 4179 | 3 ⁻ | | | 1 | 0.70 | | | | 02Ki17 | | | | | |
| 4190 | 1 ⁺ -3 ⁺ | | | | | | | | 67Sc12 | | | | | |
| 4225 | | | | | | | | | 05Gu32 | | | | | |
| 4230(20) | X ⁺ | | | 4 | 0.65 | | | | 02Ki17 | | | | | |
| 4235 | | | | | | | | | 05Gu32 | | | | | |
| 4269 | | | | | | | | | 05Gu32 | | | | | |
| 4306 | | | | | | | | | 05Gu32 | | | | | |
| 4318.2(3) | 0 ⁻ ,1 ⁻ | | | 1 | 0.69 | | | | 02Ki17 | 22(4) | 78(7) | | | |
| 4389 | 4 ⁻ | | | 1 | 0.35 | | | | 78Ba25 | | | | | |
| 4398 | | | | | | | | | 05Gu32 | | | | | |
| 4409 | 3 ⁻ | | | 1 | 0.65 | | | | 78Ba25 | | | | | |
| 4463 | X ⁺ | | | 1 | 0.44 | | | | 02Ki17 | | | | | |
| 4495 | 5 ⁺ | | | | | | | | 05Gu32 | | | | | |
| 4517 | 4 ⁻ | | | | | | | | 05Gu32 | | | | | |
| 4558 | | | | | | | | | 05Gu32 | | | | | |
| 4582 | 2 ⁻ | | | | | | | | 05Gu32 | | | | | |
| 4603 | | | | | | | | | 05Gu32 | | | | | |
| 4630 | | | | | | | | | 05Gu32 | | | | | |
| 4654 | X ⁻ | | | 1 | ≈ 0.5 | | | | 02Ki17 | | | | | |
| 4662 | | | | | | | | | 05Gu32 | | | | | |
| 4684 | X ⁻ | | | 1 | 0.30 | | | | 02Ki17 | | | | | |
| 4713 | | | | | | | | | 05Gu32 | | | | | |
| 4720(10) | | | | 4,3 | 0.8,1.7 | | | | 78Ba25 | | | | | |
| 4730 | 5 ⁻ | | | | | | | | 05Gu32 | | | | | |
| 4739 | | | | | | | | | 05Gu32 | | | | | |
| 4770(20) | X ⁻ | | | 1 | 0.74 | | | | 02Ki17 | | | | | |

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 $^{120}_{50}\text{Sn}$

| E^* | J^π | σ (t,p) | β_L | L | C^2S | $d\sigma/d\Omega$ | $\Gamma_{\gamma o}$ | $T_{1/2}$ or | Ref. | Branching ratios in percentage | | | | |
|-------------|---------------------------------|----------------|-----------|-----|----------------|-------------------|---------------------|----------------------|--------|--------------------------------|----------------|----------------|----------------|----------------|
| [keV] | | arb.u | (p,p') | | (t, α) | $\mu\text{b/sr}$ | [meV] | Γ_{cm} | | E^*_f : 0.0 | 1171 | 1875 | 2097 | 2160 |
| | | | | | | | | | | J^π_f : 0 ⁺ | 2 ⁺ | 0 ⁺ | 2 ⁺ | 0 ⁺ |
| 4870(10) | | | | 4,1 | 0.6,0.3 | | | | 78Ba25 | | | | | |
| 4920(20) | X ⁻ | | | 1 | 0.21 | | | | 02Ki17 | | | | | |
| 4970(10) | | | | | | | | | | | | | | |
| 5030(10) | | | | | | | | | | | | | | |
| 5090(20) | X ⁻ | | | 1 | 0.22 | | | | 02Ki17 | | | | | |
| 5170(10) | X ⁻ | | | 1 | 0.23 | | | | 02Ki17 | | | | | |
| 5230(20) | X ⁺ | | | 1 | 0.54 | | | | 02Ki17 | | | | | |
| 6300(300) | | | | | | | | | | | | | | |
| 6728.6(7) | 1 | | | | | | | | | 94(6) | 1(3) | | | |
| 6900(400) | X ⁻ | | | | | | | | | | | | | |
| 7310.1(7) | 1 | | | | | | | | | 88 | | | | 12 |
| 7686.6(7) | 1 ⁻ | | | | | | 70(20) | 130(30) meV | 70Sc27 | 68(1) | 5.0(3) | | | |
| 8400(150) | | | | | | | | | | | | | | |
| 8993.0(4) | 1 | | | | | | | | | 14(3) | 7(2) | | 14(4) | 7(5) |
| 9900(500) | | | | | | | | | | | | | | |
| 13300(300) | 2 ⁺ | | | | | | | | | | | | | |
| 16900(400) | 0 ⁺ | | | | | | | | | | | | | |
| 19200(200) | $\langle 1^- \rangle$ | | | | | | | | | | | | | |
| 19400(200) | $\langle 1^- \rangle$ | | | | | | | | | | | | | |
| 20600(200) | $\langle 1^- \rangle$ | | | | | | | | | | | | | |
| 20900(1500) | 3 ⁻ , 5 ⁻ | | | | | | | | | | | | | |
| 25000(1000) | $\langle 3^- \rangle$ | | | | | | | | | | | | | |
| 27900(1500) | 1 ⁻ , 3 ⁻ | | | | | | | | | | | | | |
| | | 68Bj02 | 70Be20 | | 78Ba25 | 79Ja21 | | | Ref. | | | | | |
| | | | | | 02Ki17 | | 00Br05 | | Ref. | | | | | |

Energy levels and branching ratios [02Ki17, 99Gu21]. Part 3

 $^{120}_{50}\text{Sn}$

| E^* | J^π | Branching ratios in percentage | | | | | | | | | | |
|------------|-----------------------|--------------------------------|----------------|----------------|---------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|--|
| [keV] | | E^*_f : 2173 | 2194 | 2284 | 2297 | 2355 | 2400 | 2421 | 2466 | 2482 | 2587 | |
| | | J^π_f : | 4 ⁺ | 5 ⁻ | 0 ⁺ , 1 ⁺ | 2 ⁺ | 3 ⁻ | 2 ⁺ | 4 ⁺ | 7 ⁻ | 0 ⁺ | |
| 2284.27(6) | 5 ⁻ | | 99(5) | | | | | | | | | |
| 2481.63(6) | 7 ⁻ | | | 100 | | | | | | | | |
| 2643.35(2) | 4 ⁺ | | 9.6(4) | | | | | | 4.8(12) | | | |
| 2685.16(6) | 6 ⁺ | | 14.7(9) | 76(4) | | | | | | 9.3(8) | | |
| 2695.94(6) | 4 ⁻ | | | 86(3) | | | 13.9(7) | | | | | |
| 2749.71(6) | 6 ⁻ | | | 38(2) | | | | | | 62(2) | | |
| 2800.05(7) | 5 ⁻ | | | 100 | | | | | | | | |
| 2836.52(7) | $\langle 8^+ \rangle$ | | | | | | | | | 100 | | |
| 2844.34(7) | $\langle 6^- \rangle$ | | | 90(4) | | | | | | 9.7(9) | | |
| 2975.69(7) | 4 ⁻ | | | 57(5) | | | 20.0(11) | | | | | |
| 3057.95(2) | 4 ⁺ | | 72(2) | | | 5.4(2) | | 3.9(3) | 3.1(2) | | | |

(continued)

¹²⁰₅₀Sn

| E^* [keV] | J^π | Branching ratios in percentage | | | | | | | | | | |
|----------------|-----------------------------------|--------------------------------|--------|------------------------|------------------------|--|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| | | $E_f^*:$ $J_f^\pi:$ | 2173 | 2194 4 ⁺ | 2284 5 ⁻ | 2297 0 ⁺ ,1 ⁺ | 2355 2 ⁺ | 2400 3 ⁻ | 2421 2 ⁺ | 2466 4 ⁺ | 2482 7 ⁻ | 2587 0 ⁺ |
| 3069.73(8) | ⟨6 ⁺ ⟩ | | | 69(3) | | | | | | 23.0(15) | | |
| 3077.38(8) | 3 ⁺ | | | 24(2) | | | 17(1) | | | | | |
| 3179.06(3) | 4 ⁺ | | | 16.6(9) | | | 2.7(6) | | | 46(2) | | |
| 3262.9(1) | | | | 9(1) | | | 22(2) | | 32(2) | | | |
| 3349.92(5) | ⟨4 ⁺ ⟩ | | | 10(2) | | | | | 18(3) | | | |
| 3446.48(7) | ⟨7 ⁻ ,8 ⁻ ⟩ | | | | | | | | | | 65(3) | |
| 3471.5(1) | 3 ⁻ | | | | | | 22(2) | 46(4) | | | | |
| 3631.1(2) | 2 ⁺ | | | 22(4) | | | 17(2) | | | | | |
| 3644.5(2) | ⟨6 ⁺ ,7 ⁻ ⟩ | | | | | | | | | | 85(19) | |
| 3765.3(2) | 1 | | | | | | 47(4) | | | | | |
| 3777.21(6) | 4 ⁺ | | | 18(3) | 3(2) | | 3(1) | | | 9(1) | | |
| 3857.6(1) | ⟨4⟩ | | | 17(8) | | | | | | | | |
| 3875.0(2) | 2 ⁺ | | | 43(3) | | | | | | | | |
| 6728.6(7) | 1 | | | | | | | | 5(3) | | | |
| 7686.6(7) | 1 ⁻ | | 1.0(2) | | | | 8.4(5) | | | | | 5(2) |
| 8993.0(4) | 1 | | | | | 12(4) | 20(5) | | | | | |

Energy levels and branching ratios [02Ki17, 99Gu21]. Part 4

¹²⁰₅₀Sn

| E^* | J^π | Branching ratios in percentage | | | | | | | | |
|------------|----------------------------|--------------------------------|---------------|---------------|---------------|---------------|-------------------------------|-------------------------------|-------------|---------------|
| [keV] | | E_f^* : J_f^π : | 2643 4^+ | 2696 4^- | 2728 2^+ | 2750 6^- | 2836 $\langle 8^+ \rangle$ | 3035 $\langle 0^+ \rangle$ | 3548 1,2 | 3631 2^+ |
| 2902.2(2) | $\langle 10^+ \rangle$ | | | | | | 100 | | | |
| 2975.69(7) | 4^- | | | 22.7(11) | | | | | | |
| 3057.95(2) | 4^+ | | 5.3(3) | | | | | | | |
| 3069.73(8) | $\langle 6^+ \rangle$ | | 7.9(10) | | | | | | | |
| 3349.92(5) | $\langle 4 \rangle^+$ | | 18(2) | | | | | | | |
| 3446.48(7) | $\langle 7^-, 8^- \rangle$ | | | | | 20.9(10) | 14.0(8) | | | |
| 3581.9(2) | 2^+ | | | | 24(3) | | | | | |
| 3644.5(2) | $\langle 6^+, 7^- \rangle$ | | | | | | 15(7) | | | |
| 3777.21(6) | 4^+ | | 16(2) | | | | | | | |
| 7686.6(7) | 1^- | | | | | | | | | 12(4) |
| 8993.0(4) | 1 | | | | 6(4) | | | 12(4) | 9(5) | |

Energy levels and branching ratios [00Ta03].

¹²¹Sn
50

| E^* | $2J^\pi$ | L | σ (t,p) | S' | σ (d,p) | σ (d,p) | S_{dp} | L | S_N | L | C^2S | σ (p,d) | L | S_N | σ (d,t) | Ref. |
|------------|----------------------------|---------------------|------------------|----------------|------------------|------------------|----------|---------------------|-------|---------------------|---------------|------------------|---------------------|----------|------------------|--------|
| [keV] | | | $\mu\text{b/sr}$ | (t,d) | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | | | (d,p) | | (p,d) | $\mu\text{b/sr}$ | | (p,d) | $\mu\text{b/sr}$ | |
| 0.0 | 3^+ | 2 | 165 | 2.6 | 3696 | 3170 | 0.43 | $\langle 2 \rangle$ | 0.439 | 2 | 2.6 | 9470 | 2 | 4.5(15) | 1450 | 75Be30 |
| 6.30(6) | 11^- | | | | 864 | 235 | 0.21 | $\langle 5 \rangle$ | 0.488 | | incl | 1970 | 5 | 2.7(4) | 3090 | 75Be30 |
| 60.38(14) | 1^+ | 0 | 815 | 0.63 | 1303 | 1930 | 0.39 | 0 | 0.302 | 0 | 0.63 | 21500 | 0 | 1.9(15) | | 75Be30 |
| 663.62(6) | $\langle 7,9 \rangle^-$ | | | | | | | | | | | | | | | |
| 869.24(5) | $3^+, 5^+$ | 2 | 25 | | | | | | | | | | | | | 72Ca02 |
| 908.6(4) | $3^+, 5^+$ | 2 | 24 | 0.035 | 225 | | | $\langle 2 \rangle$ | 0.014 | 2 | 0.03 | ≈ 200 | | | | 75Be30 |
| 925.59(5) | 7^+ | 4 | | 0.39 | 100 | 276 | 0.19 | $\langle 4 \rangle$ | 0.033 | 4 | 0.39 | 1810 | 4 | 4.6(13) | 381 | 75Be30 |
| 949.2(5) | $\langle 7 \rangle^-$ | 0 | 4 | 0.08 | 264 | | | 3 | 0.024 | 0 | 0.08 | | | | | 75Be30 |
| 1022(10) | | | | | 30 | | | | | | | | | | | 75Be30 |
| 1058(10) | | | | | 20 | | | | | | | | | | | 75Be30 |
| 1101.2(3) | $3^+, 5^+$ | 2 | 28 | 0.045 | 100 | | | | | 2 | 0.04 | | | | | 75Be30 |
| 1121.2(5) | 5^+ | 2 | 35 | 0.34 | 1174 | 1030 | 0.065 | 2 | 0.075 | 2 | 0.34 | 9600 | | | 1470 | 72Ca02 |
| 1147(10) | $\langle 5 \rangle^+$ | | | | 30 | | | | | | | | | | | 75Be30 |
| 1157.5(4) | $\langle 15 \rangle^-$ | | | | | | | | | | | | | | | |
| 1247.1(9) | $\langle 13 \rangle^-$ | | | | | | | | | | | | | | | |
| 1328(10) | | | | | 10 | | | | | | | | | | | 75Be30 |
| 1350.0(38) | $7^+, 9^+$ | | | | 14 | | | $\langle 4 \rangle$ | 0.004 | | | | | | | 75Be30 |
| 1403.5(5) | $\langle 5 \rangle^+$ | $\langle 2 \rangle$ | 5 | 0.12 | 416 | | | 2 | 0.023 | $\langle 2 \rangle$ | 0.11 | | | | 802 | 75Be30 |
| 1432(8) | 5^+ | | 6 | | 150 | 477 | 0.029 | | | | | 5900 | 2 | 2.80(38) | | 82Fl02 |
| 1441(10) | | | | | incl | | | | | | | | | | | 75Be30 |
| 1489(10) | | | | | 130 | | | | | | | | | | | 75Be30 |
| 1528(10) | | | | | 70 | | | | | | | | | | | 75Be30 |
| 1562(10) | | | | | 30 | | | | | | | | | | | 75Be30 |
| 1653.1(5) | $1^+ - 5^+$ | | | | | | | | | | | | | | | |
| 1710.0(16) | $\langle 3 \rangle^+$ | | | | 110 | 82 | 0.004 | 2 | 0.006 | | | 190 | 2 | | | 75Be30 |
| 1758.0(9) | $X^{(+)}$ | | | | | | | | | | | | | | | |
| 1864(4) | | | | | | | | | | | | | | | | |
| 1876(10) | $9^-, 11^-$ | 5 | 8 | weak | | | | | | | | | | | | 75Be30 |
| 1877.0(10) | $1^-, 3^-$ | | | | 157 | | | 1 | 0.067 | | | | | | | 75Be30 |
| 1901(10) | $1^-, 3^-$ | | | | 131 | 125 | 0.007 | 1 | 0.006 | | | | 0 | | | 75Be30 |
| 1912.2(4) | 1^+ | | 6 | weak | | incl | | | | | | 180 | | | | 70Ca01 |
| 1940.0(26) | $\langle 3 \rangle^+$ | | | ≈ 0.15 | | incl | | | | $\langle 2 \rangle$ | 0.15 | 170 | 2 | | | 72Ca02 |
| 1950(10) | $1^-, 3^-$ | | | | 39 | incl | | $\langle 1 \rangle$ | 0.002 | $\langle 3 \rangle$ | incl | | | | | 75Be30 |
| 1960.4(5) | 1^+ | 0 | 22 | | | | | | | | | | | | | |
| 1974.5(10) | | | | | | | | | | | | | | | | |
| 1986(10) | $\langle 1^+ \rangle$ | | 9.5 | | | | | | | | | 130 | $\langle 0 \rangle$ | | | 82Fl02 |
| 1998.8(9) | $\langle 19^+ \rangle$ | | | | | | | | | | | | | | | |
| 2067.2(11) | $3^+, 5^+$ | $\langle 2 \rangle$ | 21 | | 19 | 503 | 0.027 | | | | | | | | | 72Ca02 |
| 2095(15) | $\langle 3^+, 5^+ \rangle$ | $\langle 2 \rangle$ | 7.8 | ≈ 0.15 | | | | | | $\langle 2 \rangle$ | ≈ 0.2 | | | | | 72Ca02 |
| 2113.6(10) | $\langle 3^+, 5^+ \rangle$ | | | | | | | | | | | | | | | |
| 2156(15) | | | | | 20 | | | | | | | | | | | 75Be30 |
| 2163.6(7) | $\langle 1, 3 \rangle$ | | | | | | | | | | | | | | | |
| 2170(10) | $7^+, 9^+$ | 4 | 16 | | 10 | | | | | | | | | | | 72Ca02 |
| 2187.6(11) | $\langle 19 \rangle^-$ | | | | | | | | | | | | | | | |
| 2220(25) | $\langle 3^+, 5^+ \rangle$ | | 11 | | | | | | | | | 190 | $\langle 2 \rangle$ | | | 82Fl02 |

(continued)

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| E^* | $2J^\pi$ | L | σ (t,p) | S' | σ (d,p) | σ (d,p) | S_{dp} | L | S_N | L | C^2S | σ (p,d) | L | S_N | σ (d,t) | Ref. |
|------------|----------------------------|---------------------|------------------|-------|------------------|------------------|----------|---------------------|-------|---------------------|--------|------------------|-----|-------|------------------|--------|
| [keV] | | | $\mu\text{b/sr}$ | (t,d) | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | | | (d,p) | | (p,d) | $\mu\text{b/sr}$ | | (p,d) | $\mu\text{b/sr}$ | |
| 2225(10) | $\langle 5^-, 7^- \rangle$ | $\langle 3 \rangle$ | | 0.21 | 60 | | | | | $\langle 3 \rangle$ | 0.21 | | | | | 72Ca02 |
| 2242.8(5) | $\langle 3^+, 5^+ \rangle$ | | | | 70 | | | $\langle 2 \rangle$ | | | | | | | | 67Sc12 |
| 2280(25) | 1^+ | | | | | | | | | | | 600 | 0 | | | 82Fl02 |
| 2285.2(5) | $3^+, 5^+$ | 2 | 1.5 | | 30 | | | | | | | | | | | 72Ca02 |
| 2330(2) | $9^-, 11^-$ | 5 | 7.2 | | | | | | | | | 200 | | | | 70Ca01 |
| 2361.0(12) | | | | | 50 | | | | | | | | | | | |
| 2376(3) | $5^-, 7^-$ | 3 | 6.4 | | incl | 234 | 0.021 | | | | | | | | | 72Ca02 |
| 2415 | | | 7.5 | | 30 | | | | | | | | | | | 72Ca02 |
| 2440(3) | $\langle 7^+, 9^+ \rangle$ | $\langle 4 \rangle$ | 7.8 | | | | | | | | | | | | | 72Ca02 |
| 2457(10) | $\langle 1^+ \rangle$ | $\langle 0 \rangle$ | | 0.05 | 110 | | | | | $\langle 0 \rangle$ | 0.05 | | | | | 72Ca02 |
| 2498.7(8) | | | | | | | | | | | | | | | | |
| 2514.0(14) | $9^-, 11^-$ | 5 | 5.6 | | | | | | | | | 80 | 5 | | | 82Fl02 |
| 2524.0(20) | | | | | | | | | | | | | | | | |
| 2558.0(12) | | | | | | | | | | | | | | | | |
| 2589.0(23) | 7^- | 3 | 8.3 | 0.42 | 864 | 405 | 0.035 | 3 | 0.045 | 3 | 0.42 | | | | | 75Be30 |
| 2652.0(12) | | | | | | | | | | | | | | | | |
| 2658.6(15) | $\langle 23^- \rangle$ | | | | | | | | | | | | | | | |
| 2666(2) | $5^-, 7^-$ | 3 | 33 | 0.95 | 1436 | 2240 | 0.185 | 3 | 0.079 | 3 | 0.95 | 140 | | | | 75Be30 |
| 2700(10) | 7^- | 3 | 37 | 0.83 | 1880 | incl | | 3 | 0.092 | 3 | 0.83 | | | | | 75Be30 |
| 2713.0(16) | $7^+, 9^+$ | | | | | | | | | | | 50 | 4 | | | 82Fl02 |
| 2742(15) | | | 3.2 | | 90 | | | | | | | | | | | 72Ca02 |
| 2768(15) | | | incl | | 20 | | | | | | | | | | | 75Be30 |
| 2804.0(25) | $\langle 3 \rangle^+$ | | | | 200 | | | | | | | 100 | 2 | | | 82Fl02 |
| 2811(15) | | | 6.4 | | | | | | | | | | | | | 72Ca02 |
| 2834.6(18) | $\langle 27^- \rangle$ | | | | | | | | | | | | | | | |
| 2849.0(14) | $\langle 5^-, 7^- \rangle$ | | | | | | | | | | | 100 | | | | 70Ca01 |
| 2864.3(5) | $\langle 1, 3 \rangle$ | 3.9 | | | | | | | | | | | | | | 72Ca02 |
| 2908(15) | | 17 | | | 429 | | | $\langle 3 \rangle$ | 0.023 | | | | | | | 75Be30 |
| 2927(15) | $\langle 7^- \rangle$ | incl | | | 250 | | | | | | | | | | | 75Be30 |
| 2951(4) | $1^-, 3^-$ | | | | 200 | 432 | | | | | | 150 | 1 | | | 82Fl02 |
| 2961(1) | | | 6.7 | | | | | | | | | | | | | 72Ca02 |
| 2999(1) | $\langle 3 \rangle^+$ | | | | 100 | | | | | | | 180 | | | | |
| 3019(25) | $\langle 7^- \rangle$ | | | | 928 | | | $\langle 3 \rangle$ | 0.41 | | | | | | | 75Be30 |
| 3020(15) | | 12 | | | | | | | | | | | 2 | | | 82Fl02 |
| 3060(25) | | | | | 150 | | | | | | | | | | | 75Be30 |
| 3076(1) | | | | | | | | | | | | | | | | |
| 3087(25) | | | | | 500 | | | | | | | | | | | 75Be30 |
| 3098(25) | $1^-, 3^-$ | | | | 500 | 2010 | 0.13 | | | | | | | | | 75Be30 |
| 3118(15) | | 22 | | | | | | | | | | | | | | 72Ca02 |
| 3120.1(14) | | | | | | | | | | | | | | | | |
| 3138(2) | $\langle 7^- \rangle$ | | 7.8 | | 90 | | | | | | | | | | | 72Ca02 |
| 3154(1) | $\langle 3 \rangle^+$ | | | | | | | | | | | 270 | 2 | | | 82Fl02 |
| 3159(25) | | | | | 50 | | | | | | | | | | | 75Be30 |
| 3172(4) | | | | | 50 | | | | | | | | | | | 75Be30 |
| 3214(25) | | | | | 30 | | | | | | | | | | | 75Be30 |

(continued)

¹²¹₅₀Sn

| E^* | $2J^\pi$ | L | σ (t,p) | S' | σ (d,p) | σ (d,p) | S_{dp} | L | S_N | L | C^2S | σ (p,d) | L | S_N | σ (d,t) | Ref. |
|----------|----------------------------|-----|------------------|-------|------------------|------------------|----------|---------------------|----------|---------------------|--------|------------------|-----|-------|------------------|--------|
| [keV] | | | $\mu\text{b/sr}$ | (t,d) | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | | | (d,p) | | (p,d) | $\mu\text{b/sr}$ | | (p,d) | $\mu\text{b/sr}$ | |
| 3228(2) | | | | | | | | | | | | 80 | | | | |
| 3312(25) | $1^-, 3^-$ | | | 0.09 | 567 | 1320 | 0.077 | $\langle 1 \rangle$ | 0.031 | 1=4 | 0.09 | | | | | 75Be30 |
| 3326(20) | 7^- | 3 | 13 | 0.17 | 100 | | | | | $\langle 3 \rangle$ | 0.17 | | | | | 72Ca02 |
| 3382(1) | $\langle 7^+, 9^+ \rangle$ | 4 | 11 | 0.20 | 656 | | | | | [4] | 0.20 | | | | | 72Ca02 |
| 3396(1) | $\langle 3^- \rangle$ | | | | 300 | | | | | | | | | | | 75Be30 |
| 3425(25) | $\langle 1^+ \rangle$ | | | | 89 | | | $\langle 0 \rangle$ | 0.014 | | | | | | | 75Be30 |
| 3450(25) | | | | | 247 | | | | | | | | | | | 75Be30 |
| 3488(20) | $5^-, 7, 9^+$ | 17 | | 0.18 | 656 | | | 3,4 | 0.02,0.1 | | 0.18 | | | | | 75Be30 |
| 3510(1) | $\langle 3^- \rangle$ | | | | 1683 | 2440 | 0.15 | $\langle 1 \rangle$ | 0.086 | | 0.20 | | | | | 75Be30 |
| 3518(1) | $\langle 5^-, 9^+ \rangle$ | | | | | | | | | | | | | | | |
| 3532(15) | | 18 | | 0.20 | | | | | | | | | | | | 72Ca02 |
| 3571(15) | | 11 | | | 479 | | | | | | | | | | | 72Ca02 |
| 3611(25) | $\langle 5^-, 7^- \rangle$ | | | | 321 | | | $\langle 3 \rangle$ | 0.013 | | | | | | | 75Be30 |
| 3613(15) | | | | | | | | | | | | | | | | |
| 3658(15) | | | | | | | | | | | | | | | | |
| 3680(1) | 3^- | | | | 1168 | 2240 | 0.14 | 1 | 0.059 | | | | | | | 75Be30 |
| 3721(15) | $1^-, 3^-$ | | | | 1179 | | | 1 | 0.059 | | | | | | | 75Be30 |
| 3762(2) | $1^-, 3^-$ | | | | 447 | | | 1 | 0.023 | | | | | | | 75Be30 |
| 3789(25) | $1^-, 3^-$ | | | | 79 | | | 1 | 0.004 | | | | | | | 75Be30 |
| 3805(25) | $1^-, 3^-$ | | | | 227 | | | 1 | 0.011 | | | | | | | 75Be30 |
| 3848(25) | $1^-, 3^-$ | | | | 488 | 600 | 0.037 | 1 | 0.024 | | | | | | | 75Be30 |
| 3866(25) | $1^-, 3^-$ | | | | 582 | incl | | 1 | 0.027 | | | | | | | 75Be30 |
| 3932(2) | $1^-, 3^-$ | | | | 862 | 1530 | 0.095 | 1 | 0.044 | | | | | | | 75Be30 |
| 3951(25) | $1^-, 3^-$ | | | | 410 | incl | | 1 | 0.022 | | | | | | | 75Be30 |
| 3975(25) | $1^-, 3^-$ | | | | 513 | incl | | 1 | 0.025 | | | | | | | 75Be30 |
| 4011(25) | | | | | 400 | | | | | | | | | | | 75Be30 |
| 4059(2) | | | | | 300 | | | | | | | | | | | 75Be30 |
| 4064(25) | | | | | 400 | | | | | | | | | | | 75Be30 |
| 4085(25) | | | | | 400 | | | | | | | | | | | 75Be30 |
| 4102(25) | | | | | 300 | | | | | | | | | | | 75Be30 |
| 4135(25) | | | | | 200 | | | | | | | | | | | 75Be30 |
| 4162(25) | $1^-, 3^-$ | | | | 1110 | 1140 | 0.073 | 1 | 0.044 | | | | | | | 75Be30 |
| 4190(25) | | | | | 893 | | | | | | | | | | | 75Be30 |
| 4255(25) | $\langle 1^-, 3^- \rangle$ | | | | 1180 | 830 | 0.053 | $\langle 1 \rangle$ | | | | | | | | 75Be30 |
| 4274(3) | | | | | incl | | | | | | | | | | | 75Be30 |
| 4321(25) | | | | | 1000 | | | | | | | | | | | 75Be30 |
| 4392(25) | | | | | 291 | | | | | | | | | | | 75Be30 |
| 4444(25) | | | | | 300 | | | | | | | | | | | 75Be30 |
| 4459(25) | | | | | 300 | | | | | | | | | | | 75Be30 |
| 4519(1) | | | | | 200 | | | | | | | | | | | 75Be30 |
| 4540(1) | | | | | 400 | | | | | | | | | | | 75Be30 |
| 4646(25) | | | | | 700 | | | | | | | | | | | 75Be30 |
| 4680(25) | $\langle 1^-, 3^- \rangle$ | | | | 434 | | | $\langle 1 \rangle$ | 0.029 | | | | | | | 75Be30 |
| 4736(25) | $5^-, 7, 9^+$ | | | | 558 | | | 3,4 | [0.02] | | | | | | | 75Be30 |
| 4773(25) | | | | | 400 | | | | | | | | | | | 75Be30 |

(continued)

¹²¹₅₀Sn

| E^* | $2J^\pi$ | σ (t,p) | S' | σ (d,p) | σ (d,p) | S_{dp} | L | S_N | L | C^2S | σ (p,d) | L | S_N | σ (d,t) | Ref. |
|------------|---------------|------------------|--------|------------------|------------------|----------|-----|--------|--------|--------|------------------|--------|--------|------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | (t,d) | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | | | (d,p) | | (p,d) | $\mu\text{b/sr}$ | | (p,d) | $\mu\text{b/sr}$ | |
| 4826(25) | $5^-, 7, 9^+$ | | | 508 | | | 3,4 | [0.02] | | | | | | | 75Be30 |
| 4905(25) | | | | 700 | | | | | | | | | | | 75Be30 |
| 5051(2) | | | | | | | | | | | | | | | |
| 15953(50)* | 9^+ | | | | | | | | | | | | | | 80Ta04 |
| 16304(50)* | 1^- | | | | | | | | | | | | | | 80Ta04 |
| 16610(50)* | 3^- | | | | | | | | | | | | | | 80Ta04 |
| | | 72Ca02 | 72Ca02 | 75Be30 | 67Sc12 | 67Sc12 | | 75Be30 | 72Ca02 | 70Ca01 | | 82Fl02 | 67Sc12 | Ref. | |

Additional data on this isotope can be found in [02Re18, 95Fo16, 80Ta04, 74De10].

* Cross section of the (p,d), (τ , α) reactions and spectroscopic factors of these IAS states are considered in [77Se01].

Data for this isotope are considered in vol. LB I/18B.

Energy levels and branching ratios [00Ta03]. Part 2

¹²¹₅₀Sn

| E^* | $2J^\pi$ | $T_{1/2}$ or | Ref. | Branching ratios in percentage | | | | | | | | | | | |
|------------|--------------------------|----------------------|--------|--------------------------------|-------|--------|-------|--------|------------|------------|------------|------------------------|--|--|--|
| [keV] | | Γ_{cm} | | E_f^* : | 0.0 | 6.3 | 60.4 | 664 | 869 | 909 | 1101 | 1157.5 | | | |
| | | | | $2J_f^\pi$: | 3^+ | 11^- | 1^+ | X^- | $3^+, 5^+$ | $3^+, 5^+$ | $3^+, 5^+$ | $\langle 15^- \rangle$ | | | |
| 0.0 | 3^+ | 27.03(4) h | 75Be30 | | | | | | | | | | | | |
| 6.30(6) | 11^- | 55(5) yr | 75Be30 | | 100 | | | | | | | | | | |
| 60.38(14) | 1^+ | | 75Be30 | | 100 | | | | | | | | | | |
| 663.62(6) | $\langle 7, 9 \rangle^-$ | | | | | 100 | | | | | | | | | |
| 869.24(5) | $3^+, 5^+$ | | 72Ca02 | | 83(8) | | 17(3) | | | | | | | | |
| 908.6(4) | $3^+, 5^+$ | | 75Be30 | | 60 | | 40 | | | | | | | | |
| 925.59(5) | 7^+ | 0.25(6) ns | 75Be30 | | 88(6) | 4.2(3) | | 8.0(5) | 0.19(2) | | | | | | |
| 949.2(5) | $\langle 7 \rangle^-$ | | 75Be30 | | | 100 | | | | | | | | | |
| 1022(10) | | | 75Be30 | | | | | | | | | | | | |
| 1058(10) | | | 75Be30 | | | | | | | | | | | | |
| 1101.2(3) | $3^+, 5^+$ | | 75Be30 | | 63 | | 37 | | | | | | | | |
| 1121.2(5) | 5^+ | | 72Ca02 | | 90 | | 10 | | | | | | | | |
| 1147(10) | $\langle 5 \rangle^+$ | | 75Be30 | | | | | | | | | | | | |
| 1157.5(4) | $\langle 15^- \rangle$ | | | | | 100 | | | | | | | | | |
| 1247.1(9) | $\langle 13^- \rangle$ | | | | | x | | | | | | | | | |
| 1328(10) | | | 75Be30 | | | | | | | | | | | | |
| 1350.0(38) | $7^+, 9^+$ | | 75Be30 | | | | | | | | | | | | |
| 1403.5(5) | $\langle 5 \rangle^+$ | | 75Be30 | | 100 | | | | | | | | | | |
| 1432(8) | 5^+ | | 82Fl02 | | | | | | | | | | | | |
| 1441(10) | | | 75Be30 | | | | | | | | | | | | |
| 1489(10) | | | 75Be30 | | | | | | | | | | | | |
| 1528(10) | | | 75Be30 | | | | | | | | | | | | |
| 1562(10) | | | 75Be30 | | | | | | | | | | | | |
| 1653.1(5) | $1^+ - 5^+$ | | | | 38 | | | | 41 | | 21 | | | | |
| 1710.0(16) | $\langle 3 \rangle^+$ | | 75Be30 | | | | | | | | | | | | |

(continued)

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| E^* [keV] | $2J^\pi$ | $T_{1/2}$ or Γ_{cm} | Ref. | Branching ratios in percentage | | | | | | | | 1101 3 ⁺ ,5 ⁺ | 1157.5 ⟨15 ⁻ ⟩ |
|----------------|-----------------------------------|--------------------------------------|--------|--------------------------------|-----------------------|------------------------|------------------------|-----------------------|---------------------------------------|---------------------------------------|--|--|------------------------------|
| | | | | $E_f^*:$ $2J_f^\pi:$ | 0.0 3 ⁺ | 6.3 11 ⁻ | 60.4 1 ⁺ | 664 X ⁻ | 869 3 ⁺ ,5 ⁺ | 909 3 ⁺ ,5 ⁺ | | | |
| 1758.0(9) | X ⁽⁺⁾ | | | | | | | | | | | 100 | |
| 1864(4) | | | | | | | | | | | | | |
| 1876(10) | 9 ⁻ ,11 ⁻ | | 75Be30 | | | | | | | | | | |
| 1877.0(10) | 1 ⁻ ,3 ⁻ | | 75Be30 | | | | 100 | | | | | | |
| 1901(10) | 1 ⁻ ,3 ⁻ | | 75Be30 | | | | | | | | | | |
| 1912.2(4) | 1 ⁺ | | 70Ca01 | | | | 50 | | | | | 50 | |
| 1940.0(26) | ⟨3 ⁺ ⟩ | | 72Ca02 | | | | | | | | | | |
| 1950(10) | 1 ⁻ ,3 ⁻ | | 75Be30 | | | | | | | | | | |
| 1960.4(5) | 1 ⁺ | | | | | | 29 | | 52 | 19 | | | |
| 1974.5(10) | | | | | | | | | | | | | |
| 1986(10) | ⟨1 ⁺ ⟩ | | 82Fl02 | | | | | | | | | | |
| 1998.8(9) | ⟨19 ⁺ ⟩ | 5.3(5) μs | | | | | | | | | | | 100 |
| 2067.2(11) | 3 ⁺ ,5 ⁺ | | 72Ca02 | | | | | | | | | 100 | |
| 2095(15) | ⟨3 ⁺ ,5 ⁺ ⟩ | | 72Ca02 | | | | | | | | | | |
| 2113.6(10) | ⟨3 ⁺ ,5 ⁺ ⟩ | | | | 100 | | | | | | | | |
| 2156(15) | | | 75Be30 | | | | | | | | | | |
| 2163.6(7) | ⟨1,3⟩ | | | | 17 | | 56 | | | 27 | | | |
| 2170(10) | 7 ⁺ ,9 ⁺ | | 72Ca02 | | | | | | | | | | |
| 2187.6(11) | ⟨19 ⁻ ⟩ | | | | | | | | | | | | x |
| 2220(25) | ⟨3 ⁺ ,5 ⁺ ⟩ | | 82Fl02 | | | | | | | | | | |
| 2225(10) | ⟨5 ⁻ ,7 ⁻ ⟩ | | 72Ca02 | | | | | | | | | | |
| 2242.8(5) | ⟨3 ⁺ ,5 ⁺ ⟩ | | 67Sc12 | | 83 | | | | | | | 17 | |
| 2280(25) | 1 ⁺ | | 82Fl02 | | | | | | | | | | |
| 2285.2(5) | 3 ⁺ ,5 ⁺ | | 72Ca02 | | 100 | | | | | | | | |
| 2330(2) | 9 ⁻ ,11 ⁻ | | 70Ca01 | | | | | | | | | | |
| 2361.0(12) | | | | | | | | | | | | | |
| 2376(3) | 5 ⁻ ,7 ⁻ | | 72Ca02 | | | | | | | | | | |
| 2415 | | | 72Ca02 | | | | | | | | | | |
| 2440(3) | ⟨7 ⁺ ,9 ⁺ ⟩ | | 72Ca02 | | | | | | | | | | |
| 2457(10) | ⟨1 ⁺ ⟩ | | 72Ca02 | | | | | | | | | | |
| 2498.7(8) | | | | | | | | | | | | | |
| 2514.0(14) | 9 ⁻ ,11 ⁻ | | 82Fl02 | | | | | | | | | | |
| 2524.0(20) | | | | | 100 | | | | | | | | |
| 2558.0(12) | | | | | | | | | | | | | |
| 2589.0(23) | 7 ⁻ | | 75Be30 | | | | | | | | | | |
| 2652.0(12) | | | | | | | | | | | | | |
| 2658.6(15) | ⟨23 ⁻ ⟩ | | | | | | | | | | | | |
| 2666(2) | 5 ⁻ ,7 ⁻ | | 75Be30 | | | | | | | | | | |
| 2700(10) | 7 ⁻ | | 75Be30 | | | | | | | | | | |
| 2713.0(16) | 7 ⁺ ,9 ⁺ | | 82Fl02 | | | | | | | | | | |
| 2742(15) | | | 72Ca02 | | | | | | | | | | |
| 2768(15) | | | 75Be30 | | | | | | | | | | |
| 2804.0(25) | ⟨3 ⁺ ⟩ | | 82Fl02 | | | | | | | | | | |
| 2811(15) | | | 72Ca02 | | | | | | | | | | |
| 2834.6(18) | ⟨27 ⁻ ⟩ | 0.167(25) μs | | | | | | | | | | | |

(continued)

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| E^* | $2J^\pi$ | $T_{1/2}$ or | Ref. | Branching ratios in percentage | | | | | | | | |
|------------|----------------------------|----------------------|--------|---|--------------|---------------|---------------|--------------|-------------------|-------------------|--------------------|----------------------------------|
| [keV] | | Γ_{cm} | | E^*_f : $2J^\pi_\text{f}$: | 0.0 3^+ | 6.3 11^- | 60.4 1^+ | 664 X^- | 869 $3^+, 5^+$ | 909 $3^+, 5^+$ | 1101 $3^+, 5^+$ | 1157.5 $\langle 15^- \rangle$ |
| 2849.0(14) | $\langle 5^-, 7^- \rangle$ | | 70Ca01 | | | | | | | | | |
| 2864.3(5) | $\langle 1, 3 \rangle$ | | 72Ca02 | | 48(17) | | 52 | | | | | |
| 2908(15) | | | 75Be30 | | | | | | | | | |
| 2927(15) | $\langle 7^- \rangle$ | | 75Be30 | | | | | | | | | |
| 2951(4) | $1^-, 3^-$ | | 82F102 | | | | | | | | | |
| 2961(1) | | | 72Ca02 | | | | | | | | | |
| 2999(1) | $\langle 3 \rangle^+$ | | | | | | | | | | | |
| 3019(25) | $\langle 7^- \rangle$ | | 75Be30 | | | | | | | | | |
| 3020(15) | | | 82F102 | | | | | | | | | |
| 3060(25) | | | 75Be30 | | | | | | | | | |
| 3076(1) | | | | | | | | | | | | |
| 3087(25) | | | 75Be30 | | | | | | | | | |
| 3098(25) | $1^-, 3^-$ | | 75Be30 | | | | | | | | | |
| 3118(15) | | | 72Ca02 | | | | | | | | | |
| 3120.1(14) | | | | | | | 100 | | | | | |
| 3138(2) | $\langle 7^- \rangle$ | | 72Ca02 | | | | | | | | | |
| 3154(1) | $\langle 3 \rangle^+$ | | 82F102 | | | | | | | | | |
| 3159(25) | | | 75Be30 | | | | | | | | | |
| 3172(4) | | | 75Be30 | | | | | | | | | |
| 3214(25) | | | 75Be30 | | | | | | | | | |
| 3228(2) | | | | | | | | | | | | |
| 3312(25) | $1^-, 3^-$ | | 75Be30 | | | | | | | | | |
| 3326(20) | 7^- | | 72Ca02 | | | | | | | | | |
| 3382(1) | $\langle 7^+, 9^+ \rangle$ | | 72Ca02 | | | | | | | | | |
| 3396(1) | $\langle 3^- \rangle$ | | 75Be30 | | | | | | | | | |
| 3425(25) | $\langle 1^+ \rangle$ | | 75Be30 | | | | | | | | | |
| 3450(25) | | | 75Be30 | | | | | | | | | |
| 3488(20) | $5^-, 7, 9^+$ | | 75Be30 | | | | | | | | | |
| 3510(1) | $\langle 3^- \rangle$ | | 75Be30 | | | | | | | | | |
| 3518(1) | $\langle 5^--9^+ \rangle$ | | | | | | | | | | | |
| 3532(15) | | | 72Ca02 | | | | | | | | | |
| 3571(15) | | | 72Ca02 | | | | | | | | | |
| 3611(25) | $\langle 5^-, 7^- \rangle$ | | 75Be30 | | | | | | | | | |
| 3613(15) | | | | | | | | | | | | |
| 3658(15) | | | | | | | | | | | | |
| 3680(1) | 3^- | | 75Be30 | | | | | | | | | |
| 3721(15) | $1^-, 3^-$ | | 75Be30 | | | | | | | | | |
| 3762(2) | $1^-, 3^-$ | | 75Be30 | | | | | | | | | |
| 3789(25) | $1^-, 3^-$ | | 75Be30 | | | | | | | | | |
| 3805(25) | $1^-, 3^-$ | | 75Be30 | | | | | | | | | |
| 3848(25) | $1^-, 3^-$ | | 75Be30 | | | | | | | | | |
| 3866(25) | $1^-, 3^-$ | | 75Be30 | | | | | | | | | |
| 3932(2) | $1^-, 3^-$ | | 75Be30 | | | | | | | | | |
| 3951(25) | $1^-, 3^-$ | | 75Be30 | | | | | | | | | |
| 3975(25) | $1^-, 3^-$ | | 75Be30 | | | | | | | | | |

(continued)

¹²¹₅₀Sn

| <i>E</i> [*] | 2 <i>J</i> ^π | <i>T</i> _{1/2} or | Ref. | Branching ratios in percentage | | | | | | | | |
|-----------------------|-----------------------------------|----------------------------|--------|--|-----------------------|------------------------|------------------------|-----------------------|---------------------------------------|---------------------------------------|--|------------------------------|
| [keV] | | <i>Γ</i> _{cm} | | <i>E</i> _f [*] : 2 <i>J</i> _f ^π : | 0.0 3 ⁺ | 6.3 11 [−] | 60.4 1 ⁺ | 664 X [−] | 869 3 ⁺ ,5 ⁺ | 909 3 ⁺ ,5 ⁺ | 1101 3 ⁺ ,5 ⁺ | 1157.5 ⟨15 [−] ⟩ |
| 4011(25) | | | 75Be30 | | | | | | | | | |
| 4059(2) | | | 75Be30 | | | | | | | | | |
| 4064(25) | | | 75Be30 | | | | | | | | | |
| 4085(25) | | | 75Be30 | | | | | | | | | |
| 4102(25) | | | 75Be30 | | | | | | | | | |
| 4135(25) | | | 75Be30 | | | | | | | | | |
| 4162(25) | 1 [−] ,3 [−] | | 75Be30 | | | | | | | | | |
| 4190(25) | | | 75Be30 | | | | | | | | | |
| 4255(25) | ⟨1 [−] ,3 [−] ⟩ | | 75Be30 | | | | | | | | | |
| 4274(3) | | | 75Be30 | | | | | | | | | |
| 4321(25) | | | 75Be30 | | | | | | | | | |
| 4392(25) | | | 75Be30 | | | | | | | | | |
| 4444(25) | | | 75Be30 | | | | | | | | | |
| 4459(25) | | | 75Be30 | | | | | | | | | |
| 4519(1) | | | 75Be30 | | | | | | | | | |
| 4540(1) | | | 75Be30 | | | | | | | | | |
| 4646(25) | | | 75Be30 | | | | | | | | | |
| 4680(25) | ⟨1 [−] ,3 [−] ⟩ | | 75Be30 | | | | | | | | | |
| 4736(25) | 5 [−] ,7,9 ⁺ | | 75Be30 | | | | | | | | | |
| 4773(25) | | | 75Be30 | | | | | | | | | |
| 4826(25) | 5 [−] ,7,9 ⁺ | | 75Be30 | | | | | | | | | |
| 4905(25) | | | 75Be30 | | | | | | | | | |
| 5051(2) | | | | | | | | | | | | |
| 15953(50)* | 9 ⁺ | 40(8) keV | 80Ta04 | | | | | | | | | |
| 16304(50)* | 1 [−] | 36(7) keV | 80Ta04 | | | | | | | | | |
| 16610(50)* | 3 [−] | 37(4) keV | 80Ta04 | | | | | | | | | |
| | | 80Ta04 | Ref. | | | | | | | | | |

Energy levels and branching ratios [00Ta03]. Part 3

| <div>¹²¹₅₀Sn</div> | | | | | |
|--|-------------------------|--|------------------------------|------------------------------|------------------------------|
| <i>E</i> [*] [keV] | 2 <i>J</i> ^π | Branching ratios in percentage | | | |
| | | <i>E</i> _f [*] : 2 <i>J</i> _f ^π : | 1247.1 ⟨13 [−] ⟩ | 2187.6 ⟨19 [−] ⟩ | 2658.6 ⟨23 [−] ⟩ |
| 1998.8(9) | ⟨19 ⁺ ⟩ | | x | | |
| 2658.6(15) | ⟨23 [−] ⟩ | | | x | |
| 2834.6(18) | ⟨27 [−] ⟩ | | | | 100 |

Energy levels and branching ratios [94Ta10].

 $^{122}_{50}\text{Sn}$

| E^* | J^π | L | C^2S | L | ε | σ (p,t) | L | S_α | $d\sigma/d\Omega$ | $I_{s,0}$ | $\Gamma_{\gamma o}$ | $B(E1)$ | Ref. |
|-------------|-------------------------|---------------------|----------------|---------------------|---------------|------------------|-----|---------------------|-------------------|-----------|---------------------|--------------------|--------|
| [keV] | | | (t, α) | (p,t) | (p,t) | $\mu\text{b/sr}$ | | (d, ^6Li) | $\mu\text{b/sr}$ | [eVb] | [meV] | $[10^{-3}e^2fm^2]$ | |
| 0.0 | 0^+ | 4 | 0.49(15) | 0 | | 4000 | | 0.015 | 1.557(88) | | | | 78Ba25 |
| 1140.55(3) | 2^+ | 4 | 0.38(11) | 2 | | 1400 | | 0.015 | 0.194(31) | 10.7(15) | 0.7(1) | 2328(333) | 78Ba25 |
| 2088.27(21) | 0^+ | | | 0 | | 150 | 0 | 0.003 | 0.114(19) | | | | 83Ma22 |
| 2142.12(4) | 4^+ | $\langle 4 \rangle$ | 0.15 | 4 | 7.9,0.7 | 180 | 4 | 0.007 | 0.058(12) | | | | 78Ba25 |
| 2153.89(5) | 2^+ | | | | | incl | | | | | | | |
| 2245.86(4) | 5^- | | | 5 | 0.59 | 415 | 5 | 0.019 | 0.105(15) | | | | 83Ma22 |
| 2260(10) | | | | | | | | | | | | | |
| 2331.15(4) | 4^+ | | | 4 | 0.8,0.25 | 220 | | 0.006 | 0.043(11) | | | | 83Ma22 |
| 2409.21(9) | 7^- | | | 7 | 0.73 | | 7 | 0.038 | 0.113(15) | | | | 83Ma22 |
| 2415.62(5) | 2^+ | | | | | 730 | | 0.006 | incl | 1.7(4) | 0.7(2) | 54(12) | 79Ja21 |
| 2492.72(5) | 3^- | | | 3 | 0.77 | 650 | | 0.025 | 0.311(26) | | | | 83Ma22 |
| 2530.26(11) | 0^+-2^+ | | | | | | | | | | | | |
| 2555.56(6) | 6^+ | | | 6 | 2.01 | | | | 0.035(10) | | | | 83Ma22 |
| 2651.38(5) | 4^- | | | | | | | | | | | | 91De38 |
| 2653.09(8) | $6,7^-$ | | | | | | | | 0.070(14) | | | | 79Ja21 |
| 2657(10) | $\langle 4^+ \rangle$ | | | $\langle 4 \rangle$ | | | | | incl | | | | 83Ma22 |
| 2674.4(5) | $\langle 0^+ \rangle$ | | | 0 | | 300 | | | incl | | | | 83Ma22 |
| 2690.26(12) | 8^+ | | | 8 | 0.69 | | | ≤ 0.002 | | | | | 83Ma22 |
| 2734.55(13) | $1,2^+$ | | | | | | | | | | | | |
| 2750(10) | 5^- | | | 5,6 | | | | | 0.083(15) | | | | 83Ma22 |
| 2775.55(8) | 2^+ | | | | | | | | | | | | |
| 2780(10) | 10^+ | | | 10 | 0.78 | | | | | | | | 83Ma22 |
| 2837.80(9) | $6,7^-$ | | | | | | | | | | | | |
| 2855.49(4) | 4^- | | | | | | | | | | | | 91De38 |
| 2868.2(6) | | | | | | | | | | | | | |
| 2879.80(4) | $1^{\langle + \rangle}$ | | | | | | | | | | | | 91De38 |
| 2944.93(6) | 3^+ | | | | | | | | | | | | 91De38 |
| 2959.5(4) | | | | | | | | | | | | | |
| 2971.2(4) | 0^+-2 | | | | | | | | | | | | |
| 2973.45(4) | 4^+ | | | | | | | | | | | | |
| 3036.1(6) | | | | | | | | | | | | | |
| 3041.4(8) | | | | | | | | | | | | | |
| 3082.18(6) | $\langle 4^+ \rangle$ | | | | | | | | | | | | |
| 3127.53(8) | 2^+ | | | | | | | | | 11.2(10) | 5.7(5) | 118(11) | |
| 3130.52(16) | $\langle 7-9^- \rangle$ | | | | | | | | | | | | 91De38 |
| 3206.19(16) | 0^+-2^+ | | | | | | | | | | | | |
| 3233.79(4) | 4^+ | | | | | | | | | | | | |
| 3235.7(10) | | | | | | | | | | | | | |
| 3281.44(8) | 2^+ | | | | | | | | | | | | 91De38 |
| 3305.75(4) | 4^+ | | | | | | | | 0.103(30) | | | | 79Ja21 |
| 3330(30) | | | | | | | | | | | | | |
| 3358.3(9) | 1^- | | | | | | | | | 97(7) | 95(7) | 7.2(5) | |
| 3364.3(4) | 3^- | | | | | | | | | | | | |
| 3371.46(25) | 2^+ | | | | | | | | | | | | 91De38 |
| 3416.7(4) | $7,8,9^-$ | | | | | | | | | | | | |

(continued)

¹²²Sn
50

| E^* | J^π | L | C^2S | L | ε | σ (p,t) | L | S_α | $d\sigma/d\Omega$ | $I_{s,0}$ | $\Gamma_{\gamma o}$ | $B(E1)$ | Ref. |
|-------------|-----------------------|---------------------|----------------|-------|---------------|------------------|-----|----------------------|-------------------|-----------|---------------------|--------------------|--------|
| [keV] | | | (t, α) | (p,t) | (p,t) | $\mu\text{b/sr}$ | | (d, ⁶ Li) | $\mu\text{b/sr}$ | [eVb] | [meV] | $[10^{-3}e^2fm^2]$ | |
| 3455.9(14) | $\langle 3^- \rangle$ | | | | | | | | | | | | |
| 3477.01(13) | | | | | | | | | | | | | |
| 3478.6(2) | $\langle 7^- \rangle$ | | | | | | | | | | | | 91De38 |
| 3530.88(9) | $7^- - 9^-$ | | | | | | | | | | | | |
| 3548.81(16) | $0^+ - 2^+$ | | | | | | | | | | | | |
| 3568.1(2) | $2, 3^+$ | | | | | | | | | | | | 91De38 |
| 3582.9(4) | 2^+ | | | | | | | | | 4.3(6) | 3.6(5) | 30(4) | |
| 3627.08(14) | 4^+ | | | | | | | | | | | | |
| 3670.36(7) | 4^+ | | | | | | | | | | | | |
| 3675.5(9) | $\langle 4^+ \rangle$ | $\langle 4 \rangle$ | 0.19 | | | | | | | | | | 78Ba25 |
| 3703.57(13) | $7^- - 9^-$ | | | | | | | | | | | | |
| 3704.9(8) | 2^+ | | | | | | | | | | | | 91De38 |
| 3710.32(16) | $7^- - 9^-$ | | | 9 | | | | | | | | | 83Ma22 |
| 3730.0(2) | | | | | | | | | | | | | 91De38 |
| 3751.2(6) | 2^+ | 4 | 0.59(18) | | | | | | 0.076(26) | 1.6(4) | 1.2(3) | 10(2) | 91De38 |
| 3758.5(2) | 1 | | | | | | | | | 2.4(5) | 8.4(18) | 0.5(1) | 91De38 |
| 3777.1(3) | $2, 3^+$ | | | | | | | | | | | | 91De38 |
| 3782.88(18) | $\langle 4^+ \rangle$ | | | | | | | | | | | | 91De38 |
| 3810(10) | X^+ | 4 | 0.20(6) | | | | | | | | | | 78Ba25 |
| 3818(10) | $\langle 6^+ \rangle$ | | | | | | | | | | | | |
| 3819.8(2) | 2^+ | | | | | | | | | 1.0(3) | 1.6(5) | 12(4) | 91De38 |
| 3840.75(9) | 4^+ | | | | | | | | | | | | |
| 3871.0(9) | 1 | | | | | | | | | 2.1(5) | 2.7(6) | 0.13(3) | |
| 3876.53(16) | 4,5,6 | | | | | | | | | | | | |
| 3882.15(6) | 4^+ | | | | | | | | | | | | |
| 3899.72(16) | $\langle 2 \rangle^+$ | | | | | | | | | | | | |
| 3900(10) | $\langle 4^+ \rangle$ | 4 | 0.36(11) | | | | | | | | | | 78Ba25 |
| 3929.9(7) | $[2^+]$ | | | | | | | | | 1.9(6) | 1.9(6) | 12(4) | 91De38 |
| 3948.6(5) | $4^+ - 6^+$ | 4 | 0.15(5) | | | | | | | | | | 78Ba25 |
| 3974(7) | | | | | | | | | | | | | |
| 4004.1(7) | 2^+ | | | | | | | | | | | | 91De38 |
| 4040(10) | X^- | 1 | 0.26(8) | | | | | | | | | | 78Ba25 |
| 4104(10) | $\langle 5^- \rangle$ | | | | | | | | | | | | |
| 4106.7(4) | $1^+, 2^+$ | | | | | | | | | | | | |
| 4116.3(4) | $0^+ - 2^+$ | | | | | | | | | | | | |
| 4120(10) | X^- | 1 | 0.13(4) | | | | | | | | | | 78Ba25 |
| 4179.6(4) | 0,1,2 | | | | | | | | | | | | |
| 4220(10) | X^- | 1 | 0.56(17) | | | | | | | | | | 78Ba25 |
| 4283.7(9) | 2^+ | | | | | | | | | | | | 91De38 |
| 4360(10) | X^- | 1 | 0.06(2) | | | | | | | | | | 78Ba25 |
| 4470(10) | X^+ | 4 | 0.31(9) | | | | | | | | | | 78Ba25 |
| 4510(10) | X^+ | 4 | 0.52(16) | | | | | | | | | | 78Ba25 |
| 4560(10) | X^+ | 4 | 0.18(5) | | | | | | | | | | 78Ba25 |
| 4680(10) | X^+ | 4 | 0.31(9) | | | | | | | | | | 78Ba25 |
| 4750(10) | X^+ | 4 | 0.40(12) | | | | | | | | | | 78Ba25 |

(continued)

¹²²Sn
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| E^* | J^π | L | C^2S | L | ε | σ (p,t) | L | S_α | $d\sigma/d\Omega$ | $I_{s,0}$ | $\Gamma_{\gamma o}$ | $B(E1)$ | Ref. |
|----------|----------------|-----|----------------|--------|---------------|------------------|-----|----------------------|-------------------|-----------|---------------------|--------------------|--------|
| [keV] | | | (t, α) | (p,t) | (p,t) | $\mu\text{b/sr}$ | | (d, ⁶ Li) | $\mu\text{b/sr}$ | [eVb] | [meV] | $[10^{-3}e^2fm^2]$ | |
| 4930(10) | X ⁺ | 4 | 0.40(12) | | | | | | | | | | 78Ba25 |
| 5000(90) | | | | | | | | | | | | | |
| 5300(90) | | | | | | | | | | | | | |
| | | | 78Ba25 | 83Ma22 | | 70Fl08 | | 79Ja21 | 79Ja21 | 00Br05 | 00Br05 | 00Br05 | Ref. |
| | | | | | 83Ma22 | | | | | | | | Ref. |

Additional data on this isotope can be found in [96Ca09, 95Fo16, 81Cr01, 77Cr04, 70Fl08].

Abundance: 4.63(3) %.For seven 2⁺ levels parameter $B(E2)$ in units e^2fm^4 is given instead of $B(E1)$ in units $10^{-3}e^2fm^2$ [00Br05].

Data for this isotope are considered in vol. LB I/18B.

Energy levels and branching ratios [94Ta10]. Part 2

¹²²Sn
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| E^* | J^π | $T_{1/2}$ or | Ref. | Branching ratios in percentage | | | | | | |
|-------------|--------------------------------|----------------------|--------|--------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | | | | E_f^* : | 0.0 | 1141 | 2142 | 2154 | 2246 | 2331 |
| [keV] | | Γ_{cm} | | J_f^π : | 0 ⁺ | 2 ⁺ | 4 ⁺ | 2 ⁺ | 5 ⁻ | 4 ⁺ |
| 0.0 | 0 ⁺ | Stable | 78Ba25 | | | | | | | |
| 1140.55(3) | 2 ⁺ | 0.76(4) ps | 78Ba25 | | 100 | | | | | |
| 2088.27(21) | 0 ⁺ | >0.277 ps | 83Ma22 | | | 100 | | | | |
| 2142.12(4) | 4 ⁺ | 1.56(21) ps | 78Ba25 | | | 100 | | | | |
| 2153.89(5) | 2 ⁺ | 0.69(55) ps | | | 2.7 | 97 | | | | |
| 2245.86(4) | 5 ⁻ | 7.9(9) ns | 83Ma22 | | | 1.1 | 99 | | | |
| 2260(10) | | | | | | | | | | |
| 2331.15(4) | 4 ⁺ | 0.83(69) ps | 83Ma22 | | | 100 | | | | |
| 2409.21(9) | 7 ⁻ | 7.5(9) μs | 83Ma22 | | | | | | 100 | |
| 2415.62(5) | 2 ⁺ | 0.33(10) ps | 79Ja21 | | 45 | 20 | | 35 | | |
| 2492.72(5) | 3 ⁻ | 0.079(5) ps | 83Ma22 | | | 81 | | | 19 | |
| 2530.26(11) | 0 ⁺ -2 ⁺ | | | | | 100 | | | | |
| 2555.56(6) | 6 ⁺ | | 83Ma22 | | | | | | 100 | |
| 2651.38(5) | 4 ⁻ | | 91De38 | | | | | | | |
| 2653.09(8) | 6,7 ⁻ | | 79Ja21 | | | | | | 58 | |
| 2657(10) | (4 ⁺) | | 83Ma22 | | | | | | | |
| 2674.4(5) | (0 ⁺) | >0.2 ps | 83Ma22 | | | 100 | | | | |
| 2690.26(12) | 8 ⁺ | | 83Ma22 | | | | | | | |
| 2734.55(13) | 1,2 ⁺ | 0.49(69) ps | | | 47 | 53 | | | | |
| 2750(10) | 5 ⁻ | | 83Ma22 | | | | | | | |
| 2775.55(8) | 2 ⁺ | 0.62(83) ps | | | 20 | 66 | | | | |
| 2780(10) | 10 ⁺ | | 83Ma22 | | | | | | | |
| 2837.80(9) | 6,7 ⁻ | | | | | | | | 100 | |
| 2855.49(4) | 4 ⁻ | | 91De38 | | | | | | | |
| 2868.2(6) | | 0.13(20) ps | | | | 100 | | | | |
| 2879.80(4) | 1 ⁽⁺⁾ | 0.111(55) ps | 91De38 | | | x | | | | |

(continued)

 $^{122}_{50}\text{Sn}$

| E^* [keV] | J^π | $T_{1/2}$ or Γ_{cm} | Ref. | Branching ratios in percentage | | | | | | |
|----------------|---------------------------|--------------------------------------|--------|--------------------------------|--------------|---------------|---------------|---------------|---------------|---------------|
| | | | | E_f^* : J_f^π : | 0.0 0^+ | 1141 2^+ | 2142 4^+ | 2154 2^+ | 2246 5^- | 2331 4^+ |
| 2944.93(6) | 3^+ | | 91De38 | | | 100 | | | | |
| 2959.5(4) | | | | | | 100 | | | | |
| 2971.2(4) | 0^+_{-2} | | | | | 100 | | | | |
| 2973.45(4) | 4^+ | | | | | | 40 | 56 | | 3.5(11) |
| 3036.1(6) | | | | | | 35 | | 65 | | |
| 3041.4(8) | | | | | | 100 | | | | |
| 3082.18(6) | $\langle 4^+ \rangle$ | 0.19(15) ps | | | | 79 | | | | 21(3) |
| 3127.53(8) | 2^+ | 0.043(7) ps | | | 73 | | | 27 | | |
| 3130.52(16) | $\langle 7^- 9^- \rangle$ | | 91De38 | | | | | | | |
| 3206.19(16) | $0^+_{-2^+}$ | | | | | 100 | | | | |
| 3233.79(4) | 4^+ | | | | | 19 | 46 | 5.0 | 4.8 | 21(1) |
| 3235.7(10) | | | | | | 100 | | | | |
| 3281.44(8) | 2^+ | 0.10(10) ps | 91De38 | | | 100 | | | | |
| 3305.75(4) | 4^+ | | 79Ja21 | | | 1.2 | 44 | | 7.7 | 37(1) |
| 3330(30) | | | | | | | | | | |
| 3358.3(9) | 1^- | 0.006(3) ps | | | 68 | 32 | | | | |
| 3364.3(4) | 3^- | | | | | | | 100 | | |
| 3371.46(25) | 2^+ | | 91De38 | | | 71 | | | | |
| 3416.7(4) | $7, 8, 9^-$ | | | | | | | | | |
| 3455.9(14) | $\langle 3^- \rangle$ | | | | | 100 | | | | |
| 3477.01(13) | | | | | | 100 | | | | |
| 3478.6(2) | $\langle 7^- \rangle$ | | 91De38 | | | | | | | |
| 3530.88(9) | $7^- 9^-$ | | | | | | | | | |
| 3548.81(16) | $0^+_{-2^+}$ | 0.062(9) ps | | | | 100 | | | | |
| 3568.1(2) | $2, 3^+$ | | 91De38 | | | | | | | |
| 3582.9(4) | 2^+ | 0.028(16) ps | | | 100 | | | | | |
| 3627.08(14) | 4^+ | | | | | 18 | 16 | | | 29(7) |
| 3670.36(7) | 4^+ | | | | | 17 | 11 | 40 | | 10(4) |
| 3675.5(9) | $\langle 4^+ \rangle$ | | 78Ba25 | | | | | | | |
| 3703.57(13) | $7^- 9^-$ | | | | | | | | | |
| 3704.9(8) | 2^+ | | 91De38 | | | | | | | |
| 3710.32(16) | $7^- 9^-$ | | 83Ma22 | | | | | | | |
| 3730.0(2) | | | 91De38 | | | | | | | |
| 3751.2(6) | 2^+ | 0.055(69) ps | 91De38 | | x | | | | | |
| 3758.5(2) | 1 | 0.028(41) ps | 91De38 | | x | | | | | |
| 3777.1(3) | $2, 3^+$ | | 91De38 | | | | | | | |
| 3782.88(18) | $\langle 4^+ \rangle$ | | 91De38 | | | 86 | | | | |
| 3810(10) | X^+ | | 78Ba25 | | | | | | | |
| 3818(10) | $\langle 6^+ \rangle$ | | | | | | | | | |
| 3819.8(2) | 2^+ | 0.049(62) ps | 91De38 | | 100 | | | | | |
| 3840.75(9) | 4^+ | | | | | 20 | 80 | | | |
| 3871.0(9) | 1 | | | | | | | | | |
| 3876.53(16) | 4, 5, 6 | | | | | | | | 29 | 7(4) |
| 3882.15(6) | 4^+ | | | | | 39 | 37 | | | 12(2) |
| 3899.72(16) | $\langle 2^+ \rangle$ | | | | | 100 | | | | |

(continued)

¹²²₅₀Sn

| <i>E</i> [*] | <i>J</i> ^π | <i>T</i> _{1/2} or | Ref. | <i>E</i> _f [*] : | 0.0 | Branching ratios in percentage | | | | |
|-----------------------|--------------------------------|----------------------------|--------|--------------------------------------|----------------|--------------------------------|----------------|----------------|----------------|----------------|
| [keV] | | <i>Γ</i> _{cm} | | <i>J</i> _f ^π : | 0 ⁺ | 1141 | 2142 | 2154 | 2246 | 2331 |
| | | | | | | 2 ⁺ | 4 ⁺ | 2 ⁺ | 5 [−] | 4 ⁺ |
| 3900(10) | ⟨4 ⁺ ⟩ | | 78Ba25 | | | | | | | |
| 3929.9(7) | [2 ⁺] | | 91De38 | | | | | | | |
| 3948.6(5) | 4 ⁺ −6 ⁺ | | 78Ba25 | | | | 29 | | | |
| 3974(7) | | | | | | | | | | |
| 4004.1(7) | 2 ⁺ | | 91De38 | | 100 | | | | | |
| 4040(10) | X [−] | | 78Ba25 | | | | | | | |
| 4104(10) | ⟨5 [−] ⟩ | | | | | | | | | |
| 4106.7(4) | 1 ⁺ ,2 ⁺ | | | | 53 | 47 | | | | |
| 4116.3(4) | 0 ⁺ −2 ⁺ | | | | | 100 | | | | |
| 4120(10) | X [−] | | 78Ba25 | | | | | | | |
| 4179.6(4) | 0,1,2 | | | | | 100 | | | | |
| 4220(10) | X [−] | | 78Ba25 | | | | | | | |
| 4283.7(9) | 2 ⁺ | | 91De38 | | | | | | | |
| 4360(10) | X [−] | | 78Ba25 | | | | | | | |
| 4470(10) | X ⁺ | | 78Ba25 | | | | | | | |
| 4510(10) | X ⁺ | | 78Ba25 | | | | | | | |
| 4560(10) | X ⁺ | | 78Ba25 | | | | | | | |
| 4680(10) | X ⁺ | | 78Ba25 | | | | | | | |
| 4750(10) | X ⁺ | | 78Ba25 | | | | | | | |
| 4930(10) | X ⁺ | | 78Ba25 | | | | | | | |
| 5000(90) | | | | | | | | | | |
| 5300(90) | | | | | | | | | | |
| | | | Ref. | | | | | | | |
| | | | Ref. | | | | | | | |

Energy levels and branching ratios [94Ta10]. Part 3

¹²²₅₀Sn

| <i>E</i> [*] | <i>J</i> ^π | Branching ratios in percentage | | | | | | | | | | |
|-----------------------|--------------------------------|--------------------------------------|----------------|----------------|----------------|----------------|------------------|----------------|----------------|------------------|----------------|-------------------|
| [keV] | | <i>E</i> _f [*] : | 2409 | 2416 | 2492.72 | 2555.56 | 2653.09 | 2690.26 | 2775.55 | 2837.80 | 2973.45 | 3082.18 |
| | | <i>J</i> _f ^π : | 7 [−] | 2 ⁺ | 3 [−] | 6 ⁺ | 6,7 [−] | 8 ⁺ | 2 ⁺ | 6,7 [−] | 4 ⁺ | ⟨4 ⁺ ⟩ |
| 2653.09(8) | 6,7 [−] | | 42(6) | | | | | | | | | |
| 2690.26(12) | 8 ⁺ | | 100 | | | | | | | | | |
| 2775.55(8) | 2 ⁺ | | | 14(7) | | | | | | | | |
| 3233.79(4) | 4 ⁺ | | | | | 2.3(8) | | | 2.2(6) | | | |
| 3305.75(4) | 4 ⁺ | | | | 3.9(4) | | | | 1.4(3) | | 5.0(4) | |
| 3371.46(25) | 2 ⁺ | | | | | | | | 29(10) | | | |
| 3416.7(4) | 7,8,9 [−] | | 100 | | | | | | | | | |
| 3530.88(9) | 7 [−] −9 [−] | | 42(2) | | | | 42(4) | 5(3) | | 11(3) | | |
| 3627.08(14) | 4 ⁺ | | | | | 20(6) | | | | | | 18(8) |
| 3670.36(7) | 4 ⁺ | | | 22(2) | | | | | | | | |
| 3675.5(9) | ⟨4 ⁺ ⟩ | | | 100 | | | | | | | | |
| 3703.57(13) | 7 [−] −9 [−] | | 85(12) | | | | | 15(3) | | | | |

(continued)

¹²²Sn₅₀

| E^* [keV] | J^π | Branching ratios in percentage | | | | | | | | | | |
|----------------|--------------------------------|--------------------------------|------------------------|------------------------|---------------------------|---------------------------|-----------------------------|---------------------------|---------------------------|-----------------------------|---------------------------|------------------------------|
| | | E_f^* : J_f^π : | 2409 7 ⁻ | 2416 2 ⁺ | 2492.72 3 ⁻ | 2555.56 6 ⁺ | 2653.09 6,7 ⁻ | 2690.26 8 ⁺ | 2775.55 2 ⁺ | 2837.80 6,7 ⁻ | 2973.45 4 ⁺ | 3082.18 <4 ⁺ > |
| 3710.32(16) | 7 ⁻ –9 ⁻ | | 65(9) | | | | 35(11) | | | | | |
| 3782.88(18) | <4 ⁺ > | | | 14(4) | | | | | | | | |
| 3876.53(16) | 4,5,6 | | 10(5) | | | | | | | | | 53(14) |
| 3882.15(6) | 4 ⁺ | | | | 12(3) | | | | | | | |
| 3948.6(5) | 4 ⁺ –6 ⁺ | | 35(2) | | | 35(2) | | | | | | |

Energy levels and branching ratios [93Oh12, 04Oh11].

¹²³Sn₅₀

| E^* [keV] | $2J^\pi$ | σ (d,p) $\mu\text{b/sr}$ | S_{dp} | σ (d,p) $\mu\text{b/sr}$ | L | C^2S (d,p) | L | C^2S (p,d) | σ (p,d) $\mu\text{b/sr}$ | σ (d,t) $\mu\text{b/sr}$ | C^2S (d,t) | $T_{1/2}$ or Γ_{cm} | Ref. |
|----------------|-----------------------------------|------------------------------------|-----------------|------------------------------------|-----|-----------------|-----|-----------------|------------------------------------|------------------------------------|-----------------|--------------------------------------|--------|
| 0.0 | 11 ⁻ | | | 11(8) | 5 | 0.38 | 5 | 4.5(15) | 2390 | | 9.3(15) | 129.2(4) d | 71Di11 |
| 24.6(4) | 3 ⁺ | 3320 | 0.43 | 94(8) | 2 | 0.39 | 2 | 3.0(4) | 10100 | 2210 | 2.8(5) | 40.06(1) m | 71Di11 |
| 150.4(4) | 1 ⁺ | 1910 | 0.36 | 73(2) | 0 | 0.19 | 0 | 1.9(2) | 20800 | 3790 | 1.6(2) | | 71Di11 |
| 618.8(2) | (9) ⁻ | | | | | | | | | | | | |
| 870.2(4) | <3 ⁺ ,5 ⁺ > | | | | | | | | | | | | |
| 919.8(6) | <3 ⁺ > | 226 | | 9.9(11) | | | 2 | | 140 | 48 | 0.07(3) | | 72Ca33 |
| 931.4(5) | 7 ⁻ | incl | | | 3 | 0.020 | | | | incl | incl | | 71Di11 |
| 1044.3(4) | <7 ⁺ > | | | | | | (4) | 2.8(14) | 290 | | 1.4(2) | <0.1 ns | 82Fl02 |
| 1072.1(6) | <1,3 ⁺ > | | | | | | | | | | | | |
| 1107(1) | <15 ⁻ > | | | | | | | | | | | | |
| 1109(3) | | | | | | | | | | | | | |
| 1136.3(8) | <1–7 ⁺ > | | | | | | | | | | | | |
| 1155.0(35) | 7 ⁺ | | | | 4 | 0.043 | | | 1600 | | 9.0(31) | <0.1 ns | 71Di11 |
| 1194.4(6) | 5 ⁺ | 1020 | 0.062 | 32(2) | 2 | 0.086 | 2 | 3.2(5) | 8000 | 1930 | 2.9(5) | | 71Di11 |
| 1217.0(9) | <13 ⁻ > | | | | | | | | | | | | 04Oh11 |
| 1301(3) | | | | | | | | | | | | | |
| 1440(3) | | | | | | | | | | | | | |
| 1466(3) | | | | | | | | | | | | | |
| 1488.8(11) | 5 ⁺ | 467 | 0.024 | 17.1(13) | 2 | 0.029 | 2 | 2.8(4) | 70900 | 1006 | 2.8(2) | | 71Di11 |
| 1714(6) | | | | | | | | | | | | | |
| 1729(6) | | | | | | | | | | | | | |
| 1784(6) | 3 ⁺ ,5 ⁺ | | | | | | | | 190 | | 0.08(4) | | 90Bo25 |
| 1829(6) | | 34 | 0.003 | | | | | | | | | | |
| 1902(6) | 3 ⁺ ,5 ⁺ | 37 | 0.002 | | | | | | 80 | | | | 70Ca01 |
| 1926(1) | <17 ⁻ > | | | | | | | | | | | | 04Oh11 |
| 1945(2) | <19 ⁺ > | | | | | | | | | | | 7.4(26) μs | |
| 2001.2(3) | (9) ⁺ | | | | | | | | | | | | |
| 2026(6) | 3 ⁺ ,5 ⁺ | | | | | | | | 220 | | 0.22(10) | | 90Bo25 |
| 2080(25) | 3 ⁺ ,5 ⁺ | | | | | | | | 380 | | 0.20(10) | | 90Bo25 |
| 2114(6) | | | | | | | | | | | | | |
| 2153(1) | <23 ⁺ > | | | | | | | | | | | | 04Oh11 |

(continued)

¹²³Sn
50

| E^* | $2J^\pi$ | σ (d,p) | S_{dp} | σ (d,p) | L | C^2S | L | C^2S | σ (p,d) | σ (d,t) | C^2S | $T_{1/2}$ or | Ref. |
|------------|----------------------------|------------------|-----------------|------------------|-----------------------|-------------|-----|--------|------------------|------------------|----------|----------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | | $\mu\text{b/sr}$ | | (d,p) | | (p,d) | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | (d,t) | Γ_{cm} | |
| 2155.8(13) | | ≈ 30 | ≈ 0.00 | 1.5(6) | $\langle 1+2 \rangle$ | | | | 290 | | | | 70Ca01 |
| 2162(6) | | ≈ 50 | ≈ 0.005 | | incl | | | | incl | | | | |
| 2263(1) | $\langle 19^- \rangle$ | | | | | | | | | | | | 04Oh11 |
| 2270(25) | $3^+, 5^+$ | | | | | | | | | | | | 04Oh11 |
| 2271(6) | $1^-, 3^-$ | 58 | 0.005 | 7.5(10) | 1 | 0.004 | | | 130 | | | | 71Di11 |
| 2365(6) | $7^+, 9^+$ | | | 2.0(8) | | | | | 60 | | | | 70Ca01 |
| 2396(1) | $\langle 25^+ \rangle$ | | | | | | | | | | | | 04Oh11 |
| 2425(6) | 1^+ | 72 | 0.012 | | | | | | 800 | | 0.25(10) | | 90Bo25 |
| 2446(6) | | | | | | | | | | | | | |
| 2543(1) | $\langle 23^- \rangle$ | | | | | | | | | | | | 04Oh11 |
| 2601(6) | | | | | | | | | | | | | |
| 2621.0(22) | 1^+ | | | 5.2(13) | | | | | 120 | | | | 70Ca01 |
| 2676(6) | $5^-, 7^-$ | | | 55(8) | 3 | 0.056 | | | | | 0.45(20) | | 71Di11 |
| 2713(1) | $\langle 27^- \rangle$ | | | | | | | | | | | | 04Oh11 |
| 2726(6) | 7^- | 3780 | | 257(18) | 3 | 0.224 | | | | | | | 71Di11 |
| 2730(25) | $7^+, 9^+$ | | | | | | | | 100 | | | | 70Ca01 |
| 2757(6) | $5^-, 7^-$ | | | 80(13) | 3 | 0.054 | | | | | | | 71Di11 |
| 2828(6) | $5^-, 7^-$ | 282 | 0.023 | 18(2) | 3 | 0.017 | | | | | | | 71Di11 |
| 2850(25) | $\langle 3^+, 5^+ \rangle$ | | | | | | | | 150 | | 0.90(20) | | 90Bo25 |
| 3020(25) | | | | | | | | | 150 | | | | 70Ca01 |
| 3049(6) | $5^-, 7^-$ | 503 | 0.023 | 16(4) | 3 | 0.021 | | | | | | | 71Di11 |
| 3073(6) | | | | | | | | | | | | | |
| 3113(6) | $5^-, 7^-$ | 1610 | 0.12 | 46(11) | 3 | 0.027 | | | | | | | 71Di11 |
| 3151(3) | $1, 3$ | | | incl | 3 | 0.048 | | | 100 | | | | 71Di11 |
| 3151.6(21) | 7^- | incl | incl | incl | | | | | incl | | | | |
| 3188(6) | $1^-, 3, 5^+$ | | | 15(3) | 1,2 | 0.049,0.065 | | | | | | | 71Di11 |
| 3217(6) | $5^-, 7^-$ | | | incl | 3 | 0.026 | | | | | | | 71Di11 |
| 3259(3) | $3^+, 5^+$ | | | 50(4) | 1,2 | 0.021,0.028 | | | 400 | | | | 71Di11 |
| 3306(3) | | | | | | | | | 180 | | | | 70Ca01 |
| 3320(6) | $\langle 3^- \rangle$ | | | | 1,2 | 0.011,0.016 | | | | | | | 71Di11 |
| 3358(6) | $1^-, 3, 5^+$ | | | 61(17) | 1,2 | 0.052,0.062 | | | | | | | 71Di11 |
| 3395(6) | $1^-, 3, 5^+$ | 3200 | 0.23 | 363(7) | 1,2 | 0.088,0.099 | | | | | | | 71Di11 |
| 3435(6) | $1^-, 3, 5^+$ | incl | | 91(4) | 1,2 | 0.015,0.017 | | | | | | | 71Di11 |
| 3456(6) | $1^-, 3, 5^+$ | incl | | incl | 1,2 | 0.039,0.043 | | | | | | | 71Di11 |
| 3514(6) | | | | | | | | | | | | | |
| 3534(6) | $1^-, 3, 5^+$ | 595 | | 77(4) | 1,2 | 0.014,0.016 | | | | | | | 71Di11 |
| 3551(6) | $1^-, 3, 5^+$ | incl | | | 1,2 | 0.007,0.008 | | | | | | | 71Di11 |
| 3632(6) | $1^-, 3, 5^+$ | | | | 1,2 | 0.004,0.004 | | | | | | | 71Di11 |
| 3650(6) | $1^-, 3, 5^+$ | | | | 1,2 | 0.002,0.002 | | | | | | | 71Di11 |
| 3677(6) | | | | | | | | | | | | | |
| 3694(6) | | | | | | | | | | | | | |
| 3720(6) | $1^-, 3, 5^+$ | 1200 | | | 1,2 | 0.025,0.024 | | | | | | | 71Di11 |
| 3735(6) | | | | | | | | | | | | | |
| 3773(6) | $1^-, 3, 5^+$ | | | | 1,2 | 0.015,0.016 | | | | | | | 71Di11 |
| 3809(6) | $1^-, 3, 5^+$ | 2060 | 0.14 | | 1,2 | 0.052,0.058 | | | | | | | 71Di11 |

(continued)

¹²³Sn
50

| E^* | $2J^\pi$ | σ (d,p) | S_{dp} | σ (d,p) | L | C^2S | L | C^2S | σ (p,d) | σ (d,t) | C^2S | $T_{1/2}$ or | Ref. |
|-------------|-----------------------|------------------|----------|------------------|-----|-------------|-----|--------|------------------|------------------|--------|----------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | | $\mu\text{b/sr}$ | | (d,p) | | (p,d) | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | (d,t) | Γ_{cm} | |
| 3827(6) | $1^-, 3, 5^+$ | | | | 1,2 | 0.011,0.013 | | | | | | | 71Di11 |
| 3849(6) | $1^-, 3, 5^+$ | | | | 1,2 | 0.031,0.033 | | | | | | | 71Di11 |
| 3868(6) | | | | | | | | | | | | | |
| 3910(6) | $5^-, 7^-$ | | | | 3 | 0.007 | | | | | | | 71Di11 |
| 3966(6) | $5^-, 7^-$ | | | | 3 | 0.019 | | | | | | | 71Di11 |
| 4008(6) | | | | | | | | | | | | | |
| 4057(6) | $5^-, 7^-$ | 1620 | | 121(8) | 3 | 0.059 | | | | | | | 71Di11 |
| 4075(6) | $5^-, 7^-$ | | | 127(7) | 3 | 0.017 | | | | | | | 71Di11 |
| 4105(6) | | | | | | | | | | | | | |
| 4240* | | | | 87(8) | | | | | | | | | 86Ma37 |
| 4267(6) | $1^-, 3, 5^+$ | 1750 | | incl | 1,2 | 0.036,0.042 | | | | | | | 71Di11 |
| 4358(6)* | $5^-, 7^-$ | | | | 3 | 0.007 | | | | | | | 71Di11 |
| 4423(6) | $5^-, 7^-$ | 913 | | 56(6) | 3 | 0.009 | | | | | | | 71Di11 |
| 4464(6) | | | | | | | | | | | | | |
| 4480* | | | | | | | | | | | | | 86Ma37 |
| 4680* | | | | 63(5) | | | | | | | | | 86Ma37 |
| 4736(6) | | | | | | | | | | | | | |
| 4780* | | | | 137(7) | | | | | | | | | 86Ma37 |
| 4845 | | | | 29(4) | | | | | | | | | 72Ca33 |
| 4890* | | | | 37(5) | | | | | | | | | 86Ma37 |
| 4923 | | | | 22(4) | | | | | | | | | 72Ca33 |
| 4964 | | | | 16(4) | | | | | | | | | 72Ca33 |
| 5019* | | | | 12(4) | | | | | | | | | 86Ma37 |
| 5050* | | | | | | | | | | | | | 86Ma37 |
| 5127 | | | | 37(5) | | | | | | | | | 72Ca33 |
| 5200* | | | | | | | | | | | | | 86Ma37 |
| 5290* | | | | | | | | | | | | | 86Ma37 |
| 5410* | | | | | | | | | | | | | 86Ma37 |
| 5580* | | | | | | | | | | | | | 86Ma37 |
| 5740* | | | | | | | | | | | | | 86Ma37 |
| 5880* | | | | | | | | | | | | | 86Ma37 |
| 5980* | | | | | | | | | | | | | 86Ma37 |
| 6090* | | | | | | | | | | | | | 86Ma37 |
| 6190* | | | | | | | | | | | | | 86Ma37 |
| 6330* | | | | | | | | | | | | | 86Ma37 |
| 6480* | | | | | | | | | | | | | 86Ma37 |
| 6510* | | | | | | | | | | | | | 86Ma37 |
| 6720* | | | | | | | | | | | | | 86Ma37 |
| 6770* | | | | | | | | | | | | | 86Ma37 |
| 6950* | | | | | | | | | | | | | 86Ma37 |
| 16943(50)** | $\langle 9 \rangle^+$ | | | | | | | | | | | 39(8) keV | 80Ta04 |
| 17306(50)** | $\langle 1 \rangle^-$ | | | | | | | | | | | 45(7) keV | 80Ta04 |

(continued)

 $^{123}_{50}\text{Sn}$

| E^* | $2J^\pi$ | σ (d,p) | S_{dp} | σ (d,p) | L | C^2S | L | C^2S | σ (p,d) | σ (d,t) | C^2S | $T_{1/2}$ or | Ref. |
|-------------|-----------------------|------------------|-----------------|------------------|-------|--------|-------|--------|------------------|------------------|--------|----------------------|--------|
| [keV] | | $\mu\text{b/sr}$ | | $\mu\text{b/sr}$ | (d,p) | | (p,d) | | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | (d,t) | Γ_{cm} | |
| 17656(50)** | $\langle 3 \rangle^-$ | | | | | | | | | | | 39(15) keV | 80Ta04 |
| | | 67Sc12 | 67Sc12 | 72Ca33 | | 71Di11 | | 82Fl02 | 70Ca01 | 67Sc12 | 90Bo25 | 80Ta04 | Ref. |

Additional data on this isotope can be found in [00Pi03, 95Fo16, 90Bo25, 80Ta04, 75Ge09, 74De10].

* Observed as maxima in the deuteron yield (counts/MeV/ μC) in the (p,d) reaction [86Ma37].** Cross section of the (p,d), (τ, α) reactions and spectroscopic factors of these IAS states are considered in [77Se01].

Data for this isotope are considered in vol. LB I/18B.

Energy levels and branching ratios [93Oh12, 04Oh11]. Part 2

 $^{123}_{50}\text{Sn}$

| E^* | $2J^\pi$ | Branching ratios in percentage | | | | | | | | | |
|------------|----------------------------|--------------------------------|---------|--------|--------|-----------------------|----------------------------|--------|-----------------------|------------------------|--------|
| | | E_f^* : | 0.0 | 24.6 | 150 | 619 | 870 | 931 | 1044 | 1107 | 1136.3 |
| [keV] | | $2J_f^\pi$: | 11^- | 3^+ | 1^+ | $\langle 9 \rangle^-$ | $\langle 3^+, 5^+ \rangle$ | 7^- | $\langle 7 \rangle^+$ | $\langle 15^- \rangle$ | |
| 150.4(4) | 1^+ | | | 100 | | | | | | | |
| 618.8(2) | $\langle 9 \rangle^-$ | | 100 | | | | | | | | |
| 870.2(4) | $\langle 3^+, 5^+ \rangle$ | | | 89(9) | 11(1) | | | | | | |
| 919.8(6) | $\langle 3 \rangle^+$ | | | 74(7) | 26(3) | | | | | | |
| 931.4(5) | 7^- | | 100 | | | | | | | | |
| 1044.3(4) | $\langle 7 \rangle^+$ | | | 99(6) | | 0.5(3) | 0.6(1) | | | | |
| 1072.1(6) | $\langle 1, 3 \rangle^+$ | | | 43(12) | 57(5) | | | | | | |
| 1107(1) | $\langle 15^- \rangle$ | x | | | | | | | | | |
| 1136.3(8) | $\langle 1-7 \rangle^+$ | | | 60(9) | 40(12) | | | | | | |
| 1155.0(35) | 7^+ | | 0.06(3) | 98(6) | | 1.4(2) | 0.3(1) | 0.2(1) | | | |
| 1194.4(6) | 5^+ | | | 100 | | | | | | | |
| 1488.8(11) | 5^+ | | | 100 | | | | | | | |
| 1945(2) | $\langle 19^+ \rangle$ | | | | | | | | | 100 | |
| 2001.2(3) | $\langle 9 \rangle^+$ | | 13(3) | | | 56(3) | ≈ 10 | | 20(5) | | |
| 2155.8(13) | | | | | | | | | | | 100 |
| 2621.0(22) | 1^+ | | | 69(27) | 31(19) | | | | | | |
| 3151.6(21) | 7^- | | | 100 | | | | | | | |
| 3259(3) | $3^+, 5^+$ | | | 76(19) | 24(8) | | | | | | |
| 3306(3) | | | | | 100 | | | | | | |

Energy levels and branching ratios [97Ii01].

¹²⁴Sn
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| E^* | J^π | L | $d\sigma/d\Omega$ | $I_{s,0}$ | Γ_{γ_0} | $B(E1)$ | L | S_α | $d\sigma/d\Omega$ | $T_{1/2}$ or | Ref. |
|-------------|-----------------------------------|-------|-------------------|-----------|---------------------|-----------|----------------------|----------------------|-------------------|-----------------------|--------|
| [keV] | | (t,p) | $\mu\text{b/sr}$ | [eVb] | [meV] | | (d, ⁶ Li) | (d, ⁶ Li) | $\mu\text{b/sr}$ | Γ_{cm} | |
| 0.0 | 0 ⁺ | 0 | 238 | | | | 0 | 0.011 | 0.987(49) | Stable | 79Ja21 |
| 1131.74(2) | 2 ⁺ | 2 | 5.8 | 7.3(10) | 0.49(7) | 1629(224) | 2 | 0.015 | 0.156(20) | 0.92(3) ps | 79Ja21 |
| 2101.71(2) | 4 ⁺ | | 206 | | | | 4 | ≈0.01 | | 3.7(4) ps | 79Ja21 |
| 2109(5) | 5 ⁻ | 5 | | | | | | | 0.088(15) | | 70Fl05 |
| 2129.3 | ⟨0 ⁺ ⟩ | | | | | | | | incl | ≥1 ps | |
| 2129.60(3) | 2 ⁺ | | | | | | | | | 0.8(5) ps | |
| 2192.16(3) | ⟨0 ⁺ -4⟩ | | | | | | | | | >0.55 ps | |
| 2204.62(2) | 5 ⁻ | | 34 | | | | 5 | 0.024 | 0.103(16) | 0.27(6) μs | 79Ja21 |
| 2221.76(5) | 4 ⁺ | | | | | | | | | 0.9(9) ps | |
| 2325.01(4) | 7 ⁻ | 7 | 24.5 | | | | 7 | 0.087 | 0.102(16) | 3.1(5) μs | 79Ja21 |
| 2366.5(5) | | | | | | | | | | | |
| 2426.32(2) | 2 ⁺ | 2 | 11.5 | 1.3(3) | 0.6(2) | 46(12) | 2 | <0.01 | | 0.35(20) ps | 79Ja21 |
| 2448(10) | ⟨8 ⁺ ⟩ | | | | | | | | 0.061(13) | | 79Ja21 |
| 2454.34(3) | 6 ⁺ | | | | | | | | incl | | |
| 2568.15(4) | 6 ⁻ | | | | | | | | | | |
| 2578.44(5) | 8 ⁽⁺⁾ | | | | | | | | | | |
| 2602.49(3) | 3 ⁻ | ⟨3⟩ | 26 | | | | 3 | 0.023 | 0.227(24) | 0.068(6) ps | 79Ja21 |
| 2614.45(3) | 4 ⁻ | | | | | | | | | | |
| 2656.6(5) | ⟨10 ⁺ ⟩ | | | | | | | | | 45(5) μs | |
| 2688.52(6) | ⟨0 ⁺ ⟩ | | | | | | | | 0.039(10) | >0.28 ps | 79Ja21 |
| 2701.78(3) | 5 ⁻ | | | | | | | | incl | | |
| 2703.19(3) | 2 ⁺ | | | | | | | | incl | 0.4(4) ps | |
| 2706(10) | ⟨4 ⁺ ⟩ | | | | | | | | incl | | |
| 2753.05(3) | 4 ⁻ | | | | | | | | | | 90De50 |
| 2836.58(4) | 3 ⁺ | | | | | | | | | >0.28 ps | |
| 2855.13(5) | 6 ⁻ | | | | | | | | | | 90De50 |
| 2875.37(5) | 2 ⁺ | | | | | | | | | 0.13(7) ps | |
| 2878.67(6) | 2 ⁺ ,3 ⁺ | | | | | | | | 0.048(11) | 0.07(2) ps | 79Ja21 |
| 2958.10(7) | ⟨3 ⁺ ,4 ⁺ ⟩ | | | | | | | | | | |
| 2988.03(3) | 3 ⁻ | | | | | | | | | >0.55 ps | |
| 3011.1(3) | ⟨7,8,9⟩ | | | | | | | | | | |
| 3109.5(5) | ⟨1 ⁻ ,2 ⁺ ⟩ | | | | | | | | | | |
| 3130(20) | ⟨3 ⁻ ,5 ⁻ ⟩ | | | | | | | | | | |
| 3143.86(6) | 4 ⁺ | | | | | | | | | 0.11(9) ps | |
| 3214.36(10) | 2 ⁺ | | | 16.5(18) | 10(1) | 188(21) | | | | 0.025(6) ps | 98Go07 |
| 3227.95(11) | ⟨0 ⁺ ⟩ | | | | | | | | | 0.07(23) ps | 90De50 |
| 3240.37(21) | ⟨7,8,9⟩ | | | | | | | | | | |
| 3264.49(11) | 2 ⁺ | | | | | | | | | 0.19(22) ps | |
| 3267.13(9) | 1,2,3 | | | | | | | | | >0.14 ps | |
| 3293.42(9) | 2,3 | | | | | | | | | | |
| 3312.99(7) | 2,3,4 | | | | | | | | | | |
| 3330.41(10) | 2,3 | | | | | | | | | 0.07(9) ps | |
| 3333.54(9) | 2 ⁽⁺⁾ | | | | | | | | | | |
| 3346.46(7) | ⟨3,4⟩ | | | | | | | | | | 90De50 |
| 3360(5) | 4 ⁺ | | 21.5 | | | | | | | | 70Fl05 |

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¹²⁴Sn
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| E^* | J^π | L | $d\sigma/d\Omega$ | $I_{s,0}$ | $\Gamma_{\gamma o}$ | $B(E1)$ | L | S_α | $d\sigma/d\Omega$ | $T_{1/2}$ or | Ref. |
|-------------|---------------------------|-------|-------------------|-----------|---------------------|---------|----------------------|----------------------|-------------------|----------------------|--------|
| [keV] | | (t,p) | $\mu\text{b/sr}$ | [eVb] | [meV] | | (d, ⁶ Li) | (d, ⁶ Li) | $\mu\text{b/sr}$ | Γ_{cm} | |
| 3362.3(3) | $\langle 7,8,9 \rangle$ | | | | | | | | | | |
| 3363.59(8) | $3^{(+)}$ | | | | | | | | | | 90De50 |
| 3396.5(8) | $\langle 1^-,2^+ \rangle$ | | | | | | | | | | |
| 3410.14(13) | 1 | | | | | | | | | | |
| 3414(5) | 4^+ | | | | | | | | | | 70Fl05 |
| 3490.18(14) | $\langle 1^- \rangle$ | | 15.2 | 85(9) | 90(10) | 6.1(7) | | | | 0.006(3) ps | 98Go07 |
| 3498.58(15) | 1,2,3 | | | | | | | | | | |
| 3509.15(9) | $3^{(+)}$ | | | | | | | | | | 90De50 |
| 3524.02(8) | $\langle 7^-,8^- \rangle$ | | | | | | | | | | |
| 3551.53(12) | $\langle 3^- \rangle$ | | | | | | | | | | |
| 3583.65(13) | 2^+ | | | | | | | | | | 90De50 |
| 3603.86(17) | 2,3 | | | | | | | | | | |
| 3643.4(3) | $\langle 7,8,9 \rangle$ | | | | | | | | | | |
| 3655.20(15) | 2,3 | | | | | | | | | | |
| 3684.91(8) | $\langle 7^- \rangle$ | | | | | | | | | | |
| 3697.3(4) | 1 | | | 9.5(14) | 13(2) | 0.7(1) | | | | 0.03(1) ps | 98Go07 |
| 3710.39(19) | 2^+ | | | 9.2(14) | 8.6(14) | 75(12) | | | | 0.03(1) ps | 98Go07 |
| 3724.7(3) | $2,3^-$ | | | | | | | | | | |
| 3741.62(10) | 2^+-4^+ | | | | | | | | | | |
| 3760.27(20) | 2,3,4 | | | | | | | | | | |
| 3761.83(21) | 2^+ | | | | | | | | | 0.05(7) ps | 90De50 |
| 3765.15(11) | $\langle 7^--9^- \rangle$ | | | | | | | | | | |
| 3787(10) | | | | | | | | | | | |
| 3802.53(17) | 2,3 | | | | | | | | | | 90De50 |
| 3809.71(21) | $\langle 7,8,9 \rangle$ | | | | | | | | | | |
| 3820(10) | $\langle 3^-,5^- \rangle$ | | | | | | | | | | |
| 3831.4(3) | 2^+-4^+ | | | | | | | | | | 90De50 |
| 3834.3(7) | $\langle 1^-,2^+ \rangle$ | | | | | | | | | | |
| 3864.26(13) | $2,3^-$ | | | | | | | | | | |
| 3872(10) | $\langle 6^+ \rangle$ | | | | | | | | | | |
| 3888.0(8) | $\langle 1^-,2^+ \rangle$ | | | | | | | | | | |
| 3910.7(9) | 2^+ | | | | | | | | | | |
| 3917.27(5) | 2^+ | | | | | | | | | | |
| 3923(5) | 4^+ | | 92 | | | | | | | | 70Fl05 |
| 3931.5(3) | $\langle 7,8,9 \rangle$ | | | | | | | | | | |
| 3963.6(3) | 1,2 | | | | | | | | | | |
| 4043.8(5) | $\langle 2^+ \rangle$ | | | | | | | | | | |
| 4074.4(4) | 2^+ | | | | | | | | | | 90De50 |
| 4094.2(3) | 2,3 | | | | | | | | | | |
| 4120(20) | | | | | | | | | | | |
| 4156.1(3) | 2^+ | | | | | | | | | | |
| 4208.1(3) | 2,3 | | | | | | | | | | |
| 4219.1(6)* | 1 | | | 22.6(24) | 35(4) | | | | | | 98Go07 |
| 4227.56(16) | $2,3^-$ | | | | | | | | | | |
| 4263.4(6) | 1 | | | 12.4(18) | 20(3) | | | | | | 98Go07 |

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¹²⁴Sn
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| E^* | J^π | L | $d\sigma/d\Omega$ | $I_{s,0}$ | $\Gamma_{\gamma o}$ | $B(E1)$ | L | S_α | $d\sigma/d\Omega$ | $T_{1/2}$ or | Ref. |
|-------------|----------------------------|-------|-------------------|-----------|---------------------|---------|----------------------|----------------------|-------------------|----------------------|--------|
| [keV] | | (t,p) | $\mu\text{b/sr}$ | [eVb] | [meV] | | (d, ⁶ Li) | (d, ⁶ Li) | $\mu\text{b/sr}$ | Γ_{cm} | |
| 4269.82(22) | $\langle 4 \rangle$ | | | | | | | | | | |
| 4331.4(4) | $\langle 2^+ \rangle$ | | | | | | | | | | |
| 4359.58(20) | 1,2,3 | | | | | | | | | | |
| 4400(20) | | | | | | | | | | | |
| 4470.3(4) | $\langle 2^+ \rangle$ | | | | | | | | | | |
| 4528.8(4) | $\langle 2^+ \rangle$ | | 8.2 | | | | | | | | 70F105 |
| 4560(20) | | | | | | | | | | | |
| 4570(20) | | | | | | | | | | | |
| 4605.7(6) | $\langle 2^+ \rangle$ | | | 25(6) | 45(11) | | | | | | 98Go07 |
| 4620(5) | 4^+ | | 10.5 | | | | | | | | 70F105 |
| 4620(20) | $\langle 3^-, 5^- \rangle$ | | | | | | | | | | |
| 4672(5) | 3^- | | 5.7 | | | | | | | | 70F105 |
| 4707(5) | 3^- | | 28 | | | | | | | | 70F105 |
| 4770(20) | $\langle 3^-, 4^- \rangle$ | | | | | | | | | | |
| 4818(5) | 5^- | | 16 | | | | | | | | 70F105 |
| 4880(10) | 3^- | | 11.5 | | | | | | | | 70F105 |
| 4916(10) | 3^- | | 10.8 | | | | | | | | 70F105 |
| 4948(5) | 5^- | | 18.5 | | | | | | | | 70F105 |
| 4953.7(7) | 1 | | | 15.5(31) | 33(7) | | | | | | 98Go07 |
| 4970(5) | $\langle 2^+, 3^- \rangle$ | | 21 | | | | | | | | 70F105 |
| 5014(5) | 3^- | | 41 | | | | | | | | 70F105 |
| 5064.7(7) | | | | 29(6) | 65(14) | | | | | | 98Go07 |
| 5100(20) | | | | | | | | | | | |
| 5131(5) | $\langle 4^+ \rangle$ | | 15.8 | | | | | | | | 70F105 |
| 5166(5) | 3^- | | 17.8 | | | | | | | | 70F105 |
| 5196(5) | 3^- | | 28.5 | | | | | | | | 70F105 |
| 5267(5) | 7^- | | 22.0 | | | | | | | | 70F105 |
| 5290(20) | | | | | | | | | | | |
| 5313(5) | 5^- | | 41.5 | | | | | | | | 70F105 |
| 5345(5) | 5^- | | 22.5 | | | | | | | | 70F105 |
| 5379(5) | 5^- | | 125 | | | | | | | | 70F105 |
| 5430(5) | 5^- | | 98 | | | | | | | | 70F105 |
| 5459(10) | 5^- | | 51 | | | | | | | | 70F105 |
| 5520(20) | | | | | | | | | | | |
| 5552(10) | | | 24.5 | | | | | | | | 70F105 |
| 5614(10) | | | 16 | | | | | | | | 70F105 |
| 5640(20) | | | | | | | | | | | |
| 5710(20) | | | | | | | | | | | |
| 5760(20) | | | | | | | | | | | |
| 5842.5(7) | 1^- | | | 151(12) | 446(36) | 6.4(5) | | | | | 98Go07 |
| 5869.7(8) | $\langle 1 \rangle$ | | 22.6 | 30(6) | 90(18) | | | | | | 70F105 |
| 5902.5(7) | 1 | | | 28(10) | 85(31) | | | | | | 98Go07 |
| 5951.7(7) | 1 | | | 108(15) | 331(46) | | | | | | 98Go07 |
| 5968.4(7) | 1 | | | 68(12) | 210(37) | | | | | | 98Go07 |
| 6002.0(7) | 1 | | | 86(13) | 268(41) | | | | | | 98Go07 |

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¹²⁴Sn
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| E^* | J^π | L | $d\sigma/d\Omega$ | $I_{s,0}$ | $\Gamma_{\gamma o}$ | $B(E1)$ | L | S_α | $d\sigma/d\Omega$ | $T_{1/2}$ or | Ref. |
|------------|------------------|-------|-------------------|-----------|---------------------|----------|----------------------|----------------------|-------------------|----------------------|--------|
| [keV] | | (t,p) | $\mu\text{b/sr}$ | [eVb] | [meV] | | (d, ⁶ Li) | (d, ⁶ Li) | $\mu\text{b/sr}$ | Γ_{cm} | |
| 6129.0(7) | 1 | | | 171(18) | 557(59) | | | | | | 98Go07 |
| 6170.8(12) | 1 | | | 133(13) | 439(43) | | | | | | 98Go07 |
| 6184.0(6) | 1 ⁻ | | | 147(17) | 487(57) | 5.9(7) | | | | | 98Go07 |
| 6236.5(7) | 1 | | | 211(19) | 711(65) | | | | | | 98Go07 |
| 6287.1(7) | 1 | | | 88(14) | 301(48) | | | | | | 98Go07 |
| 6321.6(7) | 1 ⁻ | | | 189(17) | 654(59) | 7.4(7) | | | | | 98Go07 |
| 6369.1(7) | 1 ⁻ | | | 469(27) | 1650(95) | 18(1) | | | | | 98Go07 |
| 6453.1(7) | 1 | | | 98(12) | 350(44) | | | | | | 98Go07 |
| 6467.5(6) | 1 | | | 132(12) | 478(44) | | | | | | 98Go07 |
| 6503.2(6) | 1 | | | 99(16) | 363(59) | | | | | | 98Go07 |
| 6524.0(5) | 1 ⁻ | | | 219(25) | 808(92) | 8.3(9) | | | | | 98Go07 |
| 6548.5(5) | 1 | | | 188(20) | 699(74) | | | | | | 98Go07 |
| 6560.8(7) | 1 ⁻ | | | 348(31) | 1299(116) | 13(1) | | | | | 98Go07 |
| 6565.8(8) | 1 | | | 143(18) | 534(67) | | | | | | 98Go07 |
| 6584.1(6) | 1 ⁻ | | | 161(17) | 605(64) | | | | | | 98Go07 |
| 6599.8(7) | 1 | | | 94(20) | 335(76) | | | | | | 98Go07 |
| 6635.6(6) | 1 ⁻ | | | 307(23) | 1171(88) | 11(1) | | | | | 98Go07 |
| 6677.9(7) | 1 ⁻ | | | 280(23) | 1083(89) | 10(1) | | | | | 98Go07 |
| 6683.3(8) | 1 ⁻ | | | 165(21) | 639(85) | 6.1(8) | | | | | 98Go07 |
| 6705.4(8) | 1 ⁻ | | | 121(17) | 471(66) | 4.5(6) | | | | | 98Go07 |
| 6713.6(7) | 1 ⁻ | | | 227(21) | 883(86) | 8.3(8) | | | | | 98Go07 |
| 6722.3(6) | 1 | | | 177(18) | 693(75) | | | | | | 98Go07 |
| 6764.2(8) | 1 ⁻ | | | 197(25) | 781(99) | 7.2(9) | | | | | 98Go07 |
| 6775.6(8) | 1 | | | 136(24) | 541(96) | | | | | | 98Go07 |
| 6790.6(8) | 1 ⁻ | | | 160(19) | 639(76) | 5.8(7) | | | | | 98Go07 |
| 6808.0(6) | 1 ⁽⁺⁾ | | | 105(14) | 422(56) | 0.4(1)** | | | | | 98Go07 |
| 6847.1(8) | 1 ⁻ | | | 125(14) | 508(57) | 4.5(5) | | | | | 98Go07 |
| 6902.1(8) | 1 ⁻ | | | 98(12) | 404(50) | 3.5(4) | | | | | 98Go07 |
| 6928.2(8) | 1 | | | 77(20) | 320(83) | | | | | | 98Go07 |
| 6938.9(8) | 1 | | | 68(13) | 283(54) | | | | | | 98Go07 |
| 6947.5(8) | 1 | | | 69(13) | 288(55) | | | | | | 98Go07 |
| 7018.0(8) | 1 | | | 100(12) | 427(52) | | | | | | 98Go07 |
| 7032.5(7) | 1 ⁻ | | | 111(12) | 472(52) | 3.9(4) | | | | | 98Go07 |
| 7062.2(9) | 1 | | | 41(10) | 176(43) | | | | | | 98Go07 |
| 7071.1(8) | 1 | | | 80(11) | 347(48) | | | | | | 98Go07 |
| 7086.5(7) | 1 | | | 72(12) | 313(53) | | | | | | 98Go07 |
| 7125.7(7) | 1 | | | 85(12) | 374(53) | | | | | | 98Go07 |
| 7233.8(8) | 1 | | | 55(15) | 249(68) | | | | | | 98Go07 |
| 7258.6(10) | 1 | | | 59(19) | 270(85) | | | | | | 98Go07 |
| 7295.5(7) | 1 ⁻ | | | 156(12) | 720(55) | 5.3(4) | | | | | 98Go07 |
| 7308.5(9) | 1 | | | 58(14) | 268(65) | | | | | | 98Go07 |
| 7326.2(7) | 1 | | | 58(14) | 269(66) | | | | | | 98Go07 |
| 7337.5(7) | 1 ⁻ | | | 128(19) | 597(89) | 4.3(6) | | | | | 98Go07 |
| 7344.4(7) | 1 | | | 92(18) | 430(84) | | | | | | 98Go07 |
| 7394.5(4) | 1 ⁻ | | | 103(17) | 488(79) | 3.5(6) | | | | | 98Go07 |

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¹²⁴Sn
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| E^* | J^π | L | $d\sigma/d\Omega$ | $I_{s,0}$ | $\Gamma_{\gamma o}$ | $B(E1)$ | L | S_α | $d\sigma/d\Omega$ | $T_{1/2}$ or | Ref. |
|------------|------------------|-------|-------------------|-----------|---------------------|-----------|----------------------|----------------------|-------------------|----------------------|--------|
| [keV] | | (t,p) | $\mu\text{b/sr}$ | [eVb] | [meV] | | (d, ⁶ Li) | (d, ⁶ Li) | $\mu\text{b/sr}$ | Γ_{cm} | |
| 7487.6(7) | 1 ⁻ | | | 130(17) | 633(82) | 4.3(6) | | | | | 98Go07 |
| 7536.5(7) | 1 ⁻ | | | 133(21) | 655(104) | 4.4(7) | | | | | 98Go07 |
| 7550.9(6) | 1 ⁻ | | | 111(16) | 548(81) | 3.6(5) | | | | | 98Go07 |
| 7566.9(10) | 1 | | | 69(9) | 342(45) | | | | | | 98Go07 |
| 7575.9(7) | 1 ⁻ | | | 96(12) | 476(60) | 3.1(4) | | | | | 98Go07 |
| 7596.4(10) | 1 ⁻ | | | 143(13) | 715(66) | 4.7(4) | | | | | 98Go07 |
| 7603.7(8) | 1 ⁻ | | | 153(21) | 768(104) | 5.0(7) | | | | | 98Go07 |
| 7642.6(8) | 1 ⁻ | | | 74(14) | 374(73) | 2.4(5) | | | | | 98Go07 |
| 7666.0(7) | 1 | | | 47(8) | 241(41) | | | | | | 98Go07 |
| 7678.8(14) | 1 | | | 54(11) | 274(58) | | | | | | 98Go07 |
| 7683.9(11) | 1 ⁻ | | | 97(18) | 496(91) | 3.1(6) | | | | | 98Go07 |
| 7691.2(7) | 1 | | | 83(14) | 424(72) | | | | | | 98Go07 |
| 7702.6(9) | 1 | | | 41(10) | 212(50) | | | | | | 98Go07 |
| 7747.4(7) | 1 ⁻ | | | 115(12) | 598(63) | 3.7(4) | | | | | 98Go07 |
| 7759.1(4) | 1 ⁻ | | | 142(13) | 741(68) | 4.5(4) | | | | | 98Go07 |
| 7770.6(6) | 1 | | | 80(15) | 420(79) | | | | | | 98Go07 |
| 7778.1(9) | 1 | | | 56(12) | 294(63) | | | | | | 98Go07 |
| 7788.3(5) | 1 | | | 111(13) | 582(66) | | | | | | 98Go07 |
| 7815.3(5) | 1 ⁻ | | | 249(18) | 1321(95) | 7.9(6) | | | | | 98Go07 |
| 7863.4(8) | 1 ⁻ | | | 94(12) | 506(64) | 3.0(4) | | | | | 98Go07 |
| 7872.1(6) | 1 | | | 108(17) | 582(89) | | | | | | 98Go07 |
| 7880.2(5) | 1 ⁻ | | | 219(15) | 1181(80) | 6.9(5) | | | | | 98Go07 |
| 7905.1(12) | 1 | | | 54(12) | 294(62) | | | | | | 98Go07 |
| 7913.1(8) | 1 | | | 81(16) | 442(89) | | | | | | 98Go07 |
| 7939.0(12) | 1 | | | 52(8) | 282(46) | | | | | | 98Go07 |
| 7957.1(9) | 1 | | | 156(10) | 857(56) | | | | | | 98Go07 |
| 7998.9(9) | 1 ⁻ | | | 91(12) | 506(68) | 2.8(4) | | | | | 98Go07 |
| 8111.8(16) | 1 | | | 66(10) | 375(56) | | | | | | 98Go07 |
| 8118.8(8) | 1 | | | 145(11) | 827(65) | | | | | | 98Go07 |
| 8131.7(15) | 1 | | | 125(12) | 716(67) | | | | | | 98Go07 |
| 8162.2(8) | 1 | | | 67(9) | 390(54) | | | | | | 98Go07 |
| 8214.3(12) | 1 | | | 50(11) | 291(63) | | | | | | 98Go07 |
| 8228.9(6) | 1 | | | 108(12) | 632(72) | | | | | | 98Go07 |
| 8256.9(9) | 1 | | | 54(7) | 319(40) | | | | | | 98Go07 |
| 8269.8(7) | 1 ⁽⁺⁾ | | | 95(8) | 564(45) | 0.26(2)** | | | | | 98Go07 |
| 8350.1(13) | 1 | | | 52(7) | 316(42) | | | | | | 98Go07 |
| 8376.2(11) | 1 ⁻ | | | 96(8) | 586(51) | 2.9(2) | | | | | 98Go07 |
| 8422.8(7) | 1 | | | 80(8) | 495(51) | | | | | | 98Go07 |
| 8433.2(10) | 1 | | | 69(9) | 424(53) | | | | | | 98Go07 |

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¹²⁴Sn
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| E^* | J^π | L | $d\sigma/d\Omega$ | $I_{s,0}$ | $\Gamma_{\gamma o}$ | $B(E1)$ | L | S_α | $d\sigma/d\Omega$ | $T_{1/2}$ or | Ref. |
|-------|---------|-------|-------------------|------------------|---------------------|------------------|----------------------|----------------------|-------------------|----------------------|--------------|
| [keV] | | (t,p) | $\mu\text{b/sr}$ | [eVb] | [meV] | | (d, ⁶ Li) | (d, ⁶ Li) | $\mu\text{b/sr}$ | Γ_{cm} | |
| | | | 70F105 | 98Go07 00Br05 | 98Go07 00Br05 | 98Go07 00Br05 | 79Ja21 | 79Ja21 | 79Ja21 | | Ref. Ref. |

Additional data on this isotope can be found in [99Br12, 97GoZX, 96Ca09, 95Fo16, 94Go25, 92Br06, 91Go07, 91Go24, 90De50].

Abundance: 5.79(5) %.

* E^* of this level and all other levels with $J=1$ from [98Go07] were not included in [97Ii01].

** $B(M1)$ in units $[\mu_N^2]$ [98Go07].

For four low-lying 2^+ levels parameter $B(E2)$ in units $e^2 fm^4$ is given instead of $B(E1)$ in units $10^{-3} e^2 fm^2$ [00Br05].

Data for this isotope are considered in vol. LB I/18B.

Energy levels and branching ratios [97Ii01]. Part 2

¹²⁴Sn
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| E^* | J^π | Branching ratios in percentage | | | | | | | | | | |
|------------|---------------------------------|--------------------------------|----------------|----------------|----------------|-----------------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | | E_f^* : | 0.0 | 1132 | 2102 | 2129 | 2130 | 2205 | 2222 | 2325 | 2426.3 | 2568.1 |
| [keV] | | J_f^π : | 0 ⁺ | 2 ⁺ | 4 ⁺ | $\langle 0^+ \rangle$ | 2 ⁺ | 5 ⁻ | 4 ⁺ | 7 ⁻ | 2 ⁺ | 6 ⁻ |
| 1131.74(2) | 2 ⁺ | | 100 | | | | | | | | | |
| 2101.71(2) | 4 ⁺ | | | 100 | | | | | | | | |
| 2129.3 | $\langle 0^+ \rangle$ | | | 100 | | | | | | | | |
| 2129.60(3) | 2 ⁺ | | 2.6(2) | 97(8) | | | | | | | | |
| 2192.16(3) | $\langle 0^+ - 4 \rangle$ | | | 100 | | | | | | | | |
| 2204.62(2) | 5 ⁻ | | | 48(5) | 52(3) | | | | | | | |
| 2221.76(5) | 4 ⁺ | | | 100 | | | | | | | | |
| 2325.01(4) | 7 ⁻ | | | | | | | 100 | | | | |
| 2366.5(5) | | | | 100 | | | | | | | | |
| 2426.32(2) | 2 ⁺ | | 65(5) | 35(4) | | | | | | | | |
| 2454.34(3) | 6 ⁺ | | | | | | | 92(5) | | 7.6(11) | | |
| 2568.15(4) | 6 ⁻ | | | | | | | 67(5) | | 33(4) | | |
| 2578.44(5) | 8 ⁽⁺⁾ | | | | | | | | | 100 | | |
| 2602.49(3) | 3 ⁻ | | | 100 | | | | | | | | |
| 2614.45(3) | 4 ⁻ | | | | | | | 100 | | | | |
| 2688.52(6) | $\langle 0^+ \rangle$ | | | 100 | | | | | | | | |
| 2701.78(3) | 5 ⁻ | | | | | | | 91(7) | | | | 8.7(7) |
| 2703.19(3) | 2 ⁺ | | 17(2) | 79(6) | 3.5(4) | | | | | | | |
| 2753.05(3) | 4 ⁻ | | | | | | | 97(8) | | | | |
| 2836.58(4) | 3 ⁺ | | | 19(2) | 11(1) | | 56(4) | | 14(1) | | | |
| 2855.13(5) | 6 ⁻ | | | | | | | 100 | | | | |
| 2875.37(5) | 2 ⁺ | | 12(1) | 88(7) | | | | | | | | |
| 2878.67(6) | 2 ⁺ , 3 ⁺ | | | 74(7) | 9(1) | | 17(2) | | | | | |
| 2958.10(7) | $\langle 3^+, 4^+ \rangle$ | | | 58(5) | 27(2) | | | | | | 15(2) | |
| 2988.03(3) | 3 ⁻ | | | 56(4) | | | | | | | | |
| 3109.5(5) | $\langle 1^-, 2^+ \rangle$ | | 100 | | | | | | | | | |

(continued)

 $^{124}_{50}\text{Sn}$

| E^* [keV] | J^π | Branching ratios in percentage | | | | | | | | | | |
|----------------|--------------------------------|--|-----------------------|------------------------|------------------------|-------------------------------|------------------------|------------------------|------------------------|------------------------|--------------------------|--------------------------|
| | | $\begin{smallmatrix} E^*_f: \\ J^\pi_f: \end{smallmatrix}$ | 0.0 0 ⁺ | 1132 2 ⁺ | 2102 4 ⁺ | 2129 $\langle 0^+ \rangle$ | 2130 2 ⁺ | 2205 5 ⁻ | 2222 4 ⁺ | 2325 7 ⁻ | 2426.3 2 ⁺ | 2568.1 6 ⁻ |
| 3143.86(6) | 4 ⁺ | | | 50(4) | | | | | | | 50(4) | |
| 3214.36(10) | 2 ⁺ | | 85(7) | 15(1) | | | | | | | | |
| 3227.95(11) | $\langle 0^+ \rangle$ | | | 60(5) | | | 40(10) | | | | | |
| 3240.37(21) | $\langle 7,8,9 \rangle$ | | | | | | | | | 100 | | |
| 3264.49(11) | 2 ⁺ | | 100 | | | | | | | | | |
| 3267.13(9) | 1,2,3 | | | 100 | | | | | | | | |
| 3293.42(9) | 2,3 | | | 28(3) | | | 72(9) | | | | | |
| 3312.99(7) | 2,3,4 | | | | | | 100 | | | | | |
| 3330.41(10) | 2,3 | | | 100 | | | | | | | | |
| 3333.54(9) | 2 ⁽⁺⁾ | | 24(2) | 22(3) | | 7(2) | | | | | | |
| 3346.46(7) | $\langle 3,4 \rangle$ | | | 22(2) | 78(6) | | | | | | | |
| 3362.3(3) | $\langle 7,8,9 \rangle$ | | | | | | | | | 59(6) | | |
| 3363.59(8) | 3 ⁽⁺⁾ | | | 73(6) | 27(3) | | | | | | | |
| 3396.5(8) | $\langle 1^-, 2^+ \rangle$ | | 100 | | | | | | | | | |
| 3410.14(13) | 1 | | 62(6) | | | | 38(4) | | | | | |
| 3490.18(14) | $\langle 1^- \rangle$ | | 100 | | | | | | | | | |
| 3498.58(15) | 1,2,3 | | | 62(6) | | 38(4) | | | | | | |
| 3509.15(9) | 3 ⁽⁺⁾ | | | 35(3) | | | 65(5) | | | | | |
| 3524.02(8) | $\langle 7^-, 8^- \rangle$ | | | | | | | | | 42(4) | | 58(5) |
| 3551.53(12) | $\langle 3^- \rangle$ | | | 48(4) | 19(2) | | 12(1) | | 22(2) | | | |
| 3583.65(13) | 2 ⁺ | | 24(2) | 18(2) | | | 34(3) | | | | | |
| 3603.86(17) | 2,3 | | | 79(6) | | | | | | | 21(3) | |
| 3655.20(15) | 2,3 | | | | 21(4) | | 44(6) | | 35(5) | | | |
| 3684.91(8) | $\langle 7^- \rangle$ | | | | | | | | | 70(6) | | 28(3) |
| 3697.3(4) | 1 | | 85(8) | 15(3) | | | | | | | | |
| 3710.39(19) | 2 ⁺ | | 78(7) | 22(3) | | | | | | | | |
| 3724.7(3) | 2,3 ⁻ | | 49(11) | 51(11) | | | | | | | | |
| 3741.62(10) | 2 ⁺ -4 ⁺ | | | 15(1) | 40(4) | | 9(1) | | 25(3) | | | |
| 3760.27(20) | 2,3,4 | | | 100 | | | | | | | | |
| 3761.83(21) | 2 ⁺ | | 71(6) | 29(4) | | | | | | | | |
| 3765.15(11) | $\langle 7^-, 9^- \rangle$ | | | | | | | | | 92(8) | | |
| 3802.53(17) | 2,3 | | | 85(8) | | 15(3) | | | | | | |
| 3809.71(21) | $\langle 7,8,9 \rangle$ | | | | | | | | | 100 | | |
| 3831.4(3) | 2 ⁺ -4 ⁺ | | | 67(6) | | 33(3) | | | | | | |
| 3834.3(7) | $\langle 1^-, 2^+ \rangle$ | | 100 | | | | | | | | | |
| 3864.26(13) | 2,3 ⁻ | | 41(4) | 31(3) | | | 28(3) | | | | | |
| 3888.0(8) | $\langle 1^-, 2^+ \rangle$ | | 100 | | | | | | | | | |
| 3910.7(9) | 2 ⁺ | | 100 | | | | | | | | | |
| 3917.27(5) | 2 ⁺ | | 20(2) | | 2.0(4) | | 4.7(4) | | 4.0(4) | | 2.0(2) | |
| 3963.6(3) | 1,2 | | 48(5) | 52(6) | | | | | | | | |
| 4043.8(5) | $\langle 2^+ \rangle$ | | 100 | | | | | | | | | |
| 4074.4(4) | 2 ⁺ | | 46(5) | 54(5) | | | | | | | | |
| 4094.2(3) | 2,3 | | | 100 | | | | | | | | |
| 4156.1(3) | 2 ⁺ | | 75(8) | 25(5) | | | | | | | | |
| 4208.1(3) | 2,3 | | | 100 | | | | | | | | |

(continued)

 $^{124}_{50}\text{Sn}$

| E^* [keV] | J^π | Branching ratios in percentage | | | | | | | | | | |
|----------------|-------------------|--------------------------------|-----------------------|------------------------|------------------------|---------------------------|------------------------|------------------------|------------------------|------------------------|--------------------------|--------------------------|
| | | $E_f^*:$ $J_f^\pi:$ | 0.0 0 ⁺ | 1132 2 ⁺ | 2102 4 ⁺ | 2129 ⟨0 ⁺ ⟩ | 2130 2 ⁺ | 2205 5 ⁻ | 2222 4 ⁺ | 2325 7 ⁻ | 2426.3 2 ⁺ | 2568.1 6 ⁻ |
| 4227.56(16) | 2,3 ⁻ | | 42(9) | | | | | | | | | |
| 4263.4(6) | 1 | | 100 | | | | | | | | | |
| 4269.82(22) | ⟨4⟩ | | | 34(4) | | | | | | | | |
| 4331.4(4) | ⟨2 ⁺ ⟩ | | 100 | | | | | | | | | |
| 4359.58(20) | 1,2,3 | | | 100 | | | | | | | | |
| 4470.3(4) | ⟨2 ⁺ ⟩ | | 100 | | | | | | | | | |
| 4528.8(4) | ⟨2 ⁺ ⟩ | | 100 | | | | | | | | | |
| 4605.7(6) | ⟨2 ⁺ ⟩ | | 100 | | | | | | | | | |

Energy levels and branching ratios [97Ii01]. Part 3

 $^{124}_{50}\text{Sn}$

| E^* [keV] | J^π | Branching ratios in percentage | | | | | | | | | | |
|----------------|-----------------------------------|--------------------------------|----------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------|-------------------|-------------------|--------------------------|
| | | $E_f^*:$ $J_f^\pi:$ | 2578.4 8 ⁽⁺⁾ | 2602.5 3 ⁻ | 2614.4 4 ⁻ | 2703.2 2 ⁺ | 2753.0 4 ⁻ | 2875.4 2 ⁺ | 3227.9 | 3240.4 ⟨7,8,9⟩ | 3362.3 ⟨7,8,9⟩ | 3583.6 2 ⁺ |
| 2656.6(5) | ⟨10 ⁺ ⟩ | | 100 | | | | | | | | | |
| 2753.05(3) | 4 ⁻ | | | 2.5(3) | | | | | | | | |
| 2988.03(3) | 3 ⁻ | | | 29(2) | 5.8(6) | | 9.2(6) | | | | | |
| 3011.1(3) | ⟨7,8,9⟩ | | 100 | | | | | | | | | |
| 3333.54(9) | 2 ⁽⁺⁾ | | | | | 46(5) | | | | | | |
| 3362.3(3) | ⟨7,8,9⟩ | | 41(6) | | | | | | | | | |
| 3583.65(13) | 2 ⁺ | | | | | | | | 24(2) | | | |
| 3643.4(3) | ⟨7,8,9⟩ | | | | | | | | | 100 | | |
| 3655.20(15) | 2,3 | | | | | x | | | | | | |
| 3684.91(8) | ⟨7 ⁻ ⟩ | | 1.8(4) | | | | | | | | | |
| 3741.62(10) | 2 ⁺ -4 ⁺ | | | 12(4) | | | | | | | | |
| 3765.15(11) | ⟨7 ⁻ -9 ⁻ ⟩ | | 8.0(20) | | | | | | | | | |
| 3917.27(5) | 2 ⁺ | | | 48(4) | | 7 | | 13(1) | | | | |
| 3931.5(3) | ⟨7,8,9⟩ | | | | | | | | | | 100 | |
| 4227.56(16) | 2,3 ⁻ | | | | | | | 58(7) | | | | |
| 4269.82(22) | ⟨4⟩ | | | | | | | | | | | 66(7) |

Energy levels and branching ratios [99Ka26].

 $^{125}_{50}\text{Sn}$

| E^* [keV] | $2J^\pi$ | L | C^2S (d,p) | σ (d,p) $\mu\text{b/sr}$ | σ (d,p) $\mu\text{b/sr}$ | S_{dp} | L | C^2S (α, τ) | $T_{1/2}$ or Γ_{cm} | Ref. |
|----------------|-----------------|-----|-----------------|------------------------------------|------------------------------------|-----------------|-----|------------------------------|--------------------------------------|--------|
| 0.0 | 11 ⁻ | 5 | 0.42 | 26(4) | | | 5 | 0.41 | 9.64(3) d | 73Bi09 |
| 27.50(14) | 3 ⁺ | 2 | 0.44 | 143(6) | 2690 | 0.34 | | | 9.52(5) m | 73Bi09 |
| 215.13(14) | 1 ⁺ | 0 | 0.33 | 112(5) | 1440 | 0.25 | | | | 73Bi09 |

(continued)

¹²⁵Sn
50

| E^* | $2J^\pi$ | L | C^2S | σ (d,p) | σ (d,p) | S_{dp} | L | C^2S | $T_{1/2}$ or | Ref. |
|-------------|-----------------------------|---------------------|--------|------------------|------------------|----------|---------------------|------------------|----------------------|--------|
| [keV] | | | (d,p) | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | | | (α, τ) | Γ_{cm} | |
| 617.89(9) | $\langle 9^- \rangle$ | | | | | | | | | |
| 854.69(15) | $\langle 7^+ \rangle$ | | | 2.1(6) | | | | | | |
| 930.39(23) | 1,3 | [1] | 0.015 | | 145 | | | | | 73Bi09 |
| 936.50(9) | $\langle 7^- \rangle$ | | | 13.1(15) | incl | | | | | |
| 1059.26(17) | $7^{(+)}$ | | | | | | | | | |
| 1072.0(4) | 1,3 | | | 2.4(7) | | | | | | |
| 1087* | [15 ⁻] | | | | | | | | | 04Br19 |
| 1187.5(7) | $\langle 1^+-5^+ \rangle$ | | | | | | | | | |
| 1258.9(6) | $\langle 5^+ \rangle$ | 2 | 0.07 | 47(3) | 621 | 0.039 | | | | 73Bi09 |
| 1362.52(10) | 7^+ | 4 | 0.04 | 2.9(7) | | | 4 | 0.056 | | 73Bi09 |
| 1540.3(9) | $\langle 5^+ \rangle$ | 2 | 0.04 | 29(2) | 400 | 0.023 | | | | 73Bi09 |
| 1757.0(10) | 1,3 | | | 2.2(7) | 30 | | | | | 67Sc12 |
| 1803(10) | | | | 6.1(11) | | | | | | |
| 1875.3(12) | | | | | | | | | | |
| 1892(10) | | | | 5.9(11) | | | | | | |
| 2076* | [19 ⁻] | | | | | | | | | 04Br19 |
| 2135* | [19 ⁻] | | | | | | | | | 04Br19 |
| 2176.1(4) | 7,9,11 | | | | | | | | | |
| 2249.5(9) | | | | 7.9(14) | | | | | | |
| 2264(15) | $\langle 3^+, 5^+ \rangle$ | $\langle 2 \rangle$ | 0.02 | incl | 54 | 0.009 | | | | 73Bi09 |
| 2284.2(10) | | | | | | | | | | |
| 2331.5(16) | | | | | | | | | | |
| 2347.2(11) | | | | | | | | | | |
| 2355(15) | $\langle 1^-, 3^- \rangle$ | $\langle 1 \rangle$ | 0.007 | 16(2) | 81 | 0.007 | | | | 73Bi09 |
| 2460(15) | | | | 2.8(7) | | | | | | |
| 2461* | [23 ⁻] | | | | | | | | | 04Br19 |
| 2519(4) | | | | | | | | | | |
| 2532.6(16) | | | | | | | | | | |
| 2600(15) | $\langle 5^-, 7^- \rangle$ | $\langle 3 \rangle$ | 0.010 | 13(2) | 136 | 0.011 | | | | 73Bi09 |
| 2622* | [27 ⁻] | | | | | | | | | 04Br19 |
| 2767(15) | 7^- | 3 | 0.54 | 954(38) | 7200 | | 3 | 0.54 | | 73Bi09 |
| 2800(10) | | | | 106(15) | | | | | | 72Ca33 |
| 2890(15) | $\langle 5^-, 7^- \rangle$ | $\langle 3 \rangle$ | 0.032 | 56(3) | | | | | | 73Bi09 |
| 2995 | | | | 15(4) | | | | | | 72Ca33 |
| 3016(15) | $5^-, 7^-$ | 3 | 0.04 | 30(5) | 400 | | | | | 73Bi09 |
| 3085(15) | $5^-, 7^-$ | 3 | 0.04 | 70(5) | 496 | 0.036 | | | | 73Bi09 |
| 3109(15) | | | | | incl | | | | | |
| 3150(15) | | | | | | | | | | |
| 3193(15) | $5^-, 7^-$ | 3 | 0.067 | 110(6) | 880 | 0.058 | 3 | 0.059 | | 73Bi09 |
| 3247(20) | | | | 30(4) | | | | | | 72Ca33 |
| 3349(15) | $\langle 3^- \rangle$ | $\langle 1 \rangle$ | 0.14 | 432(9) | 988 | 0.062 | | | | 73Bi09 |
| 3421(15) | $\langle 3^- \rangle$ | 1 | 0.36 | | 4790 | 0.34 | | | | 73Bi09 |
| 3482(20) | $1^-, 3^-$ | 1 | 0.08 | | 608 | 0.042 | | | | 73Bi09 |
| 3530(20) | $\langle 9^-, 11^- \rangle$ | $\langle 5 \rangle$ | 0.04 | | incl | | $\langle 5 \rangle$ | 0.04 | | 73Bi09 |
| 3610(20) | $\langle 5^-, 7^- \rangle$ | $\langle 3 \rangle$ | 0.02 | | 382 | 0.021 | | | | 73Bi09 |

(continued)

¹²⁵Sn
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| E^* | $2J^\pi$ | L | C^2S | σ (d,p) | σ (d,p) | S_{dp} | L | C^2S | $T_{1/2}$ or | Ref. |
|----------|-----------------------------|---------------------|--------|------------------|------------------|----------|---------------------|--------------------|----------------------|--------|
| [keV] | | | (d,p) | $\mu\text{b/sr}$ | $\mu\text{b/sr}$ | | | (α, τ) | Γ_{cm} | |
| 3730(20) | $\langle 9^-, 11^- \rangle$ | | | | | | $\langle 5 \rangle$ | 0.05 | | 73Bi09 |
| 3774(20) | | | | | | | | | | |
| 3830(20) | $\langle 1 \rangle^-$ | $\langle 1 \rangle$ | 0.10 | 184(9) | 1500 | | [1] | 0.10 | | 73Bi09 |
| 3870(20) | | | | 276(9) | | | | | | 72Ca33 |
| 3940(20) | $X \langle - \rangle$ | 3,5 | 0.15 | 18(4) | | | 3,5 | 0.01 | | 73Bi09 |
| 4010(20) | $\langle 9^-, 11^- \rangle$ | | | 26(6) | | | $\langle 5 \rangle$ | 0.06 | | 73Bi09 |
| 4060(20) | $\langle 1^-, 3^- \rangle$ | $\langle 1 \rangle$ | 0.14 | 1509(46) | 3600 | 0.24 | | | | 73Bi09 |
| 4100 | | | | 130(19) | | | | | | 72Ca33 |
| 4180(20) | $\langle 5^-, 7^- \rangle$ | $\langle 3 \rangle$ | 0.04 | 175(8) | | | $\langle 3 \rangle$ | 0.06 | | 73Bi09 |
| 4240(20) | $\langle 5^-, 7^- \rangle$ | $\langle 3 \rangle$ | 0.04 | 219(9) | 1570 | 0.071 | | | | 73Bi09 |
| 4290(20) | | | | | | | | | | |
| 4320(20) | | | | 275(10) | | | | | | 72Ca33 |
| 4420(20) | | | | 61(7) | | | | | | 72Ca33 |
| 4510(20) | | | | 62(7) | | | | | | 72Ca33 |
| 4580(20) | $\langle 9^-, 11^- \rangle$ | $\langle 5 \rangle$ | 0.08 | 118(7) | 699 | | $\langle 5 \rangle$ | 0.11 | | 73Bi09 |
| 4640(20) | $\langle 5^-, 7^- \rangle$ | $\langle 3 \rangle$ | 0.09 | 70(10) | 1160 | | | | | 73Bi09 |
| 4710(20) | $\langle 5^-, 7^- \rangle$ | $\langle 3 \rangle$ | 0.08 | | 2500 | | | | | 73Bi09 |
| 4780(20) | | | | 333(11) | | | | | | 72Ca33 |
| 4810(20) | $\langle 5^-, 7^- \rangle$ | $\langle 3 \rangle$ | 0.10 | 88(7) | 1770 | 0.059 | | | | 73Bi09 |
| 4880 | | | | 25(5) | | | | | | 72Ca33 |
| 4930(20) | $\langle 9^-, 11^- \rangle$ | | | 48(5) | | | $\langle 5 \rangle$ | 0.11 | | 73Bi09 |
| 4980(20) | | | | 80(6) | | | | | | |
| 5020(20) | $\langle 9^-, 11^- \rangle$ | $\langle 5 \rangle$ | 0.13 | | | | $\langle 5 \rangle$ | 0.15 | | 73Bi09 |
| 5060(20) | | | | 66(7) | | | | | | |
| 5120(20) | $\langle 9^-, 11^- \rangle$ | | | | | | $\langle 5 \rangle$ | 0.15 | | 73Bi09 |
| 5230(20) | $\langle 9^-, 11^- \rangle$ | | | | | | $\langle 5 \rangle$ | 0.11 | | 73Bi09 |
| | | | 73Bi09 | 72Ca33 | 67Sc12 | 67Sc12 | | 73Bi09 | | Ref. |

Additional data on this isotope can be found in [04Le13, 04Jo19, 03ToZX, 00Pi03, 00Zh47, 77St33, 74De10].

* Isomeric decay schemes for ¹²⁵Sn and ¹²⁶Sn are compared in [04Br19].

Data for this isotope are considered in vol. LB I/18B.

Energy levels and branching ratios [99Ka26]. Part 2

¹²⁵Sn
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| E^* | $2J^\pi$ | Branching ratios in percentage | | | | | | | | |
|------------|-----------------------|--------------------------------|------------------------|------------------------|-----------------------|------------------------------|------------------------------|------------------------------|-------------|-------------------------------|
| [keV] | | E_f^* : $2J_f^\pi$: | 0.0 11 ⁻ | 27.5 3 ⁺ | 215 1 ⁺ | 618 $\langle 9^- \rangle$ | 855 $\langle 7^+ \rangle$ | 936 $\langle 7^- \rangle$ | 1072 1,3 | 1259 $\langle 5 \rangle^+$ |
| 215.13(14) | 1 ⁺ | | | 100 | | | | | | |
| 617.89(9) | $\langle 9^- \rangle$ | | 100 | | | | | | | |
| 854.69(15) | $\langle 7^+ \rangle$ | | | 100 | | | | | | |
| 930.39(23) | 1,3 | | | 78 | 22 | | | | | |
| 936.50(9) | $\langle 7^- \rangle$ | | 100 | | | | | | | |

(continued)

¹²⁵Sn
50

| E^* [keV] | $2J^\pi$ | Branching ratios in percentage | | | | | | | | |
|----------------|---------------------------|--------------------------------|------------------------|------------------------|-----------------------|------------------------------|------------------------------|------------------------------|-------------|-------------------------------|
| | | $E_f^*:$ $2J_f^\pi:$ | 0.0 11 ⁻ | 27.5 3 ⁺ | 215 1 ⁺ | 618 $\langle 9^- \rangle$ | 855 $\langle 7^+ \rangle$ | 936 $\langle 7^- \rangle$ | 1072 1,3 | 1259 $\langle 5 \rangle^+$ |
| 1059.26(17) | 7 ⁽⁺⁾ | | | 100 | | | | | | |
| 1072.0(4) | 1,3 | | | 50 | 50 | | | | | |
| 1187.5(7) | $\langle 1^+-5^+ \rangle$ | | | 65 | 35 | | | | | |
| 1258.9(6) | $\langle 5 \rangle^+$ | | | 77 | 23 | | | | | |
| 1362.52(10) | 7 ⁺ | | 0.30(6) | 90(4) | | 6.6(6) | 0.6(1) | 3.0(3) | | |
| 1540.3(9) | $\langle 5 \rangle^+$ | | | 100 | | | | | | |
| 1757.0(10) | 1,3 | | | | 100 | | | | | |
| 1875.3(12) | | | | | | | | | | 100 |
| 2176.1(4) | 7,9,11 | | | | | 100 | | | | |
| 2249.5(9) | | | | 17 | 83 | | | | | |
| 2284.2(10) | | | | 100 | | | | | | |
| 2331.5(16) | | | | | | | | | 100 | |
| 2347.2(11) | | | | | | | | | 100 | |
| 2532.6(16) | | | | | | | | | 100 | |

Energy levels and branching ratios [02Ka66, 93Mi12].

¹²⁶Sn
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| E^* | J^π | L | $d\sigma/d\Omega$ | I_p | L | $d\sigma/d\Omega$ | S_α | $T_{1/2}$ or | Ref. | Branching ratios in percentage | | | | | |
|-----------|------------------------|-------|-------------------|-------|---------------------|-------------------|---------------------|-----------------------|--------|--------------------------------|---------------|----------------|----------------|--------------------|----------------|
| [keV] | | (t,p) | $\mu\text{b/sr}$ | (t,p) | (d, ^6Li) | $\mu\text{b/sr}$ | (d, ^6Li) | Γ_{cm} | | E_f^* : J_f^π : | 0.0 0 $^+$ | 1141 2 $^+$ | 2050 4 $^+$ | 2111 2 $^{(+)}$ | 2162 5 $^-$ |
| 0.0 | 0 $^+$ | 0 | 273 | 100 | | 0.406(49) | 0.006 | 23(1)·10 4 yr | 79Ja21 | | | | | | |
| 1141.1(1) | 2 $^+$ | 2 | 10.5 | 5 | 2 | 0.135(28) | 0.015 | | 79Ja21 | 100 | | | | | |
| 2049.7(1) | 4 $^+$ | | 17.8 | 3 | $\langle 4 \rangle$ | 0.032(9) | 0.007 | | 79Ja21 | | 100 | | | | |
| 2110.8(1) | 2 $^{(+)}$ | | | | | | | | | 17(2) | 83(6) | | | | |
| 2130.1(1) | | | | | | | | | | | 100 | | | | |
| 2161.5(1) | 5 $^-$ | | 19.2 | | 5 | 0.074(13) | 0.022 | 10.8(7) ns | 79Ja21 | | 0.66(17) | 99(9) | | | |
| 2194.2(1) | | | | 4 | | | | | 69Bj01 | | 100 | | | | |
| 2219.0(1) | 7 $^-$ | 7 | 23.5 | 7 | 7 | 0.079(13) | 0.076 | 6.6(14) μs | 79Ja21 | | | | | | 100 |
| 2256.5(2) | | | | | | | | | | | 100 | | | | |
| 2276.8(1) | | | | | | | | | | | 100 | | | | |
| 2298(25) | | | | | | 0.016(6) | | | 79Ja21 | | | | | | |
| 2370.5(1) | 2 $^{(+)}$ | 2 | 6.9 | 5 | | 0.039(10) | 0.006 | | 79Ja21 | 53(6) | 47(3) | | | | |
| 2471.9(2) | | | | | | | | | | | 100 | | | | |
| 2477.5(1) | 6 $^-$ | | | | | | | | | | | | | | 56(4) |
| 2488.2(1) | $\langle 8^+ \rangle$ | | | | | | | | 04Br19 | | | | | | |
| 2550(25) | | | | | | 0.023(7) | | | 79Ja21 | | | | | | |
| 2564.5(5) | $\langle 10^+ \rangle$ | | | | | | | 7.7(5) μs | 04Br19 | | | | | | |
| 2631.0(1) | | | | | | | | | | | 100 | | | | |
| 2636.6(1) | 2 $^{(+)}$ | | | | | | | | | 50(5) | 50(9) | | | | |
| 2663.0(1) | | | | 2 | | 0.016(6) | | | 79Ja21 | | | | | | 76(6) |
| 2712.1(1) | 2,3,4 $^+$ | | | | | | | | | | 100 | | | | |
| 2720(5) | 3 $^-$ | 3 | 10.0 | 6 | 3 | 0.053(12) | 0.007 | | 79Ja21 | | | | | | |

(continued)

¹²⁶Sn
50

| E^* [keV] | J^π | L (t,p) | $d\sigma/d\Omega$ $\mu\text{b/sr}$ | I_p (t,p) | L (d, ⁶ Li) | $d\sigma/d\Omega$ $\mu\text{b/sr}$ | S_α (d, ⁶ Li) | $T_{1/2}$ or Γ_{cm} | Ref. | Branching ratios in percentage | | | | |
|----------------|----------------------------|---------------------|---------------------------------------|----------------|-----------------------------|---------------------------------------|------------------------------------|--------------------------------------|--------|--------------------------------|----------------|----------------|------------------|----------------|
| | | | | | | | | | | E_f^* : 0.0 | 1141 | 2050 | 2111 | 2162 |
| | | | | | | | | | | J_f^π : 0 ⁺ | 2 ⁺ | 4 ⁺ | 2 ⁽⁺⁾ | 5 ⁻ |
| 2742.6(1) | | | | | | | | | | | 47(3) | | 53(3) | |
| 2795(25) | | | | | | 0.027(10) | | | 79Ja21 | | | | | |
| 2840.2(1) | | | | | | | | | | | | | | |
| 2886.4(1) | | | | | | | | | | | 100 | | | |
| 2892(5) | $\langle 5^- \rangle$ | $\langle 5 \rangle$ | 12.5 | 3 | | 0.034(11) | | | 79Ja21 | | | | | |
| 2971(25) | | | 6 | | | 0.027(10) | | | 79Ja21 | | | | | |
| 3067.3(1) | | | | | | | | | | | | | | 93(8) |
| 3246.55(10) | $2^{(+)}$ | | | | | | | | | 59(5) | 37(4) | | | |
| 3283.83(9) | | | | | | 0.015(8) | | | 79Ja21 | | | | | |
| 3300.3(3) | | | | | | | | | | | | 100 | | |
| 3344.83(9) | $2^{(+)}$ | | | | | | | | | 89(9) | 9(1) | | | |
| 3385(25) | | | | | | 0.030(11) | | | 79Ja21 | | | | | |
| 3424(5) | 4^+ | 4 | 25 | | | 0.080(17) | 0.031 | | 79Ja21 | | | | | |
| 3435.0(6) | $2^{(+)}$ | | | 4 | | | | | 69Bj01 | 100 | | | | |
| 3454.9(1) | | | | | | | | | | | | | | |
| 3504.5(3) | $2^{(+)}$ | | | | | | | | | 100 | | | | |
| 3625.8(1) | | | | | | | | | | | | | | |
| 3783.4(1) | | | 5.8 | | | 0.050(14) | | | 79Ja21 | | | | | |
| 3809.2(2) | | | | | | | | | | | | | | |
| 3818.0(4) | $2^{(+)}$ | | | | | | | | | 100 | | | | |
| 3830.7(1) | | | | | | | | | | | | | | |
| 3855.5(1) | | | | | | | | | | | | | | |
| 3860.3(3) | $2,3,4^+$ | | | | | | | | | | 100 | | | |
| 3886.5(1) | $2^{(+)}$ | | | | | | | | | 79(8) | 16(2) | | | |
| 3917.3(5) | $2,3,4^+$ | | | | | | | | | | 100 | | | |
| 3950.3(5) | | | | | | | | | | | | | | |
| 3964.2(1) | $2^{(+)}$ | | | | | | | | | 26(3) | 11(1) | | | |
| 3977.4(2) | | | | | | | | | | | | | | |
| 3985(25) | | | | | | 0.046(13) | | | 79Ja21 | | | | | |
| 4014.0(2) | $2,3,4^{(+)}$ | | | | | | | | | | | | | |
| 4184(10) | | | | | | | | | | | | | | |
| 4241.0(2) | $2^{(+)}$ | | | | | | | | | 100 | | | | |
| 4257.1(3) | $2^{(+)}$ | | | | | | | | | 100 | | | | |
| 4303.3(2) | $2^{(+)}$ | | | | | | | | | 100 | | | | |
| 4330.9(6) | $2^{(+)}$ | | | | | | | | | 100 | | | | |
| 4447(10) | | | 7 | | | | | | 70F105 | | | | | |
| 4556(5) | $\langle 4^+, 5^- \rangle$ | 4,5 | 21.5 | | | | | | 70F105 | | | | | |
| 4656.5(5) | $2^{(+)}$ | | | | | | | | | 100 | | | | |
| 4699.5(6) | $2^{(+)}$ | | | | | | | | | 100 | | | | |
| 4734(5) | | | 6 | | | | | | 70F105 | | | | | |
| 4767(5) | 3^- | 3 | 25.5 | | | | | | 70F105 | | | | | |
| 4779.2(2) | | | | | | | | | | | | | | |
| 4797.1(6) | $2^{(+)}$ | | | | | | | | | 100 | | | | |
| 4807(5) | 3^- | 3 | 27.5 | | | | | | 70F105 | | | | | |
| 4838(5) | 3^- | 3 | 23.5 | | | | | | 70F105 | | | | | |

(continued)

¹²⁶Sn
50

| E^* [keV] | J^π | L (t,p) | $d\sigma/d\Omega$ $\mu\text{b/sr}$ | I_p (t,p) | L (d, ⁶ Li) | $d\sigma/d\Omega$ $\mu\text{b/sr}$ | S_α (d, ⁶ Li) | $T_{1/2}$ or Γ_{cm} | Ref. | Branching ratios in percentage | | | | | |
|----------------|-----------------------|---------------------|---------------------------------------|----------------|-----------------------------|---------------------------------------|------------------------------------|--------------------------------------|--------|--------------------------------|-----------------------|------------------------|------------------------|--------------------------|------------------------|
| | | | | | | | | | | E_f^* : J_f^π : | 0.0 0 ⁺ | 1141 2 ⁺ | 2050 4 ⁺ | 2111 2 ⁽⁺⁾ | 2162 5 ⁻ |
| 4869(5) | 3 ⁻ | 3 | 27.5 | | | | | | 70F105 | | | | | | |
| 4935(5) | 5 ⁻ | 5 | 35.5 | | | | | | 70F105 | | | | | | |
| 4974(5) | 5 ⁻ | 5 | 31.5 | | | | | | 70F105 | | | | | | |
| 4990.2(3) | $\langle 7^- \rangle$ | | | | | | | | | | | | | | 100 |
| 5009(5) | 5 ⁻ | 5 | 13.0 | | | | | | 70F105 | | | | | | |
| 5041(5) | 5 ⁻ | 5 | 34.0 | | | | | | 70F105 | | | | | | |
| 5092(5) | 5 ⁻ | 5 | 16.5 | | | | | | 70F105 | | | | | | |
| 5160(5) | 7 ⁻ | 7 | 35.0 | | | | | | 70F105 | | | | | | |
| 5188(5) | | | 20 | | | | | | 70F105 | | | | | | |
| 5214(5) | 3 ⁻ | 3 | 42.5 | 4 | | | | | 70F105 | | | | | | |
| 5257(5) | 5 ⁻ | 5 | 135 | | | | | | 70F105 | | | | | | |
| 5297(5) | 5 ⁻ | 5 | 185 | 9 | | | | | 70F105 | | | | | | |
| 5339(10) | $\langle 4^+ \rangle$ | $\langle 4 \rangle$ | 69.0 | 11 | | | | | 70F105 | | | | | | |
| 5367(10) | $\langle 4^+ \rangle$ | $\langle 4 \rangle$ | | | | | | | 70F105 | | | | | | |
| 5397(10) | | | 50.5 | | | | | | 70F105 | | | | | | |
| 5436(10) | | | 24.5 | | | | | | 70F105 | | | | | | |
| 5528(10) | | | | | | | | | | | | | | | |
| 5587(10) | | | | | | | | | | | | | | | |
| 5762 | | | | 10 | | | | | 69Bj01 | | | | | | |
| | | | 70F105 | 69Bj01 | | 79Ja21 | 79Ja21 | | Ref. | | | | | | |

Additional data on this isotope can be found in [00Zh47, 83Vo12].

Data for this isotope are considered in vol. LB I/18B.

Energy levels and branching ratios [02Ka66, 93Mi12]. Part 2

¹²⁶Sn
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| E^* [keV] | J^π | Branching ratios in percentage | | | | | | | | | | |
|----------------|------------------------|--------------------------------|------------------------|--------|--------------------------|---------------------------|----------------------------------|-----------------------------|---------|-------------------------------|---------|---------|
| | | E_f^* : J_f^π : | 2219 7 ⁻ | 2277 | 2370 2 ⁽⁺⁾ | 2477.51 6 ⁻ | 2488.24 $\langle 8^+ \rangle$ | 2636.64 2 ⁽⁺⁾ | 2662.98 | 2712.06 2,3,4 ⁺ | 2742.57 | 2886.41 |
| 2477.5(1) | 6 ⁻ | | 44(3) | | | | | | | | | |
| 2488.2(1) | $\langle 8^+ \rangle$ | | 100 | | | | | | | | | |
| 2564.5(5) | $\langle 10^+ \rangle$ | | | | | | x | | | | | |
| 2663.0(1) | | | 24(2) | | | | | | | | | |
| 2840.2(1) | | | | | | 100 | | | | | | |
| 3067.3(1) | | | 6.8(8) | | | | | | | | | |
| 3246.55(10) | 2 ⁽⁺⁾ | | | | | | | | | 3.8(7) | | |
| 3283.83(9) | | | 100 | | | | | | | | | |
| 3344.83(9) | 2 ⁽⁺⁾ | | | 1.8(2) | | | | | | | | |
| 3454.9(1) | | | 38(3) | | | 41(5) | | | | | | |
| 3625.8(1) | | | 64(5) | | | | | | 36(5) | | | |
| 3783.4(1) | | | 100 | | | | | | | | | |
| 3809.2(2) | | | 100 | | | | | | | | | |

(continued)

¹²⁶Sn
50

| E^* [keV] | J^π | Branching ratios in percentage | | | | | | | | | | |
|----------------|----------------------|--------------------------------|------------------------|-------|--------------------------|---------------------------|------------------------------|-----------------------------|---------|-------------------------------|---------|---------|
| | | E_f^* : J_f^π : | 2219 7 ⁻ | 2277 | 2370 2 ⁽⁺⁾ | 2477.51 6 ⁻ | 2488.24 <8 ⁺ > | 2636.64 2 ⁽⁺⁾ | 2662.98 | 2712.06 2,3,4 ⁺ | 2742.57 | 2886.41 |
| 3830.7(1) | | 100 | | | | | | | | | | |
| 3855.5(1) | | 42(3) | | | | 33(3) | 4.0(3) | | 6(4) | | | |
| 3886.5(1) | 2 ⁽⁺⁾ | | | | | | | | | 5.2(7) | | |
| 3950.3(5) | | 100 | | | | | | | | | | |
| 3964.2(1) | 2 ⁽⁺⁾ | | | 24(2) | 12(1) | | | 6(1) | | 18(1) | | 3(1) |
| 3977.4(2) | | 75(6) | | | | | | | 25(3) | | | |
| 4014.0(2) | 2,3,4 ⁽⁺⁾ | | | | 100 | | | | | | | |
| 4779.2(2) | | 67(5) | | | | | | | | | | |

Energy levels and branching ratios [02Ka66, 93Mi12]. Part 3

¹²⁶Sn
50

| E^* [keV] | J^π | Branching ratios in percentage | | | | | | | | | | |
|----------------|---------|--------------------------------|--|--|--|--|--|---------|-------|--|--|---------|
| | | E_f^* : J_f^π : | | | | | | | | | | |
| | | | | | | | | 3067.29 | | | | 3283.83 |
| 3454.9(1) | | | | | | | | | 18(6) | | | 3.0(6) |
| 3855.5(1) | | | | | | | | | 11(1) | | | 4(3) |
| 4779.2(2) | | | | | | | | | | | | 33(11) |

Energy levels and branching ratios [96Ki01].

¹²⁷Sn
50

| E^* [keV] | $2J^\pi$ | $T_{1/2}$ or Γ_{cm} | Ref. | Branching ratios in percentage | | | | | | | |
|----------------|-----------------------------------|--------------------------------------|--------|--------------------------------|---------------------------|--------------------------|----------------------------|--------------------------------|-----------------------------|----------------------------|--------|
| | | | | E_f^* : $2J_f^\pi$: | 0.0 <11 ⁻ > | 4.7 <3 ⁺ > | 257.0 <1 ⁺ > | 646.10 <9,11 ⁺ > | 809.79 <7 ⁺ > | 953.1 <3 ⁺ > | 963.72 |
| 0.0 | 11 ⁻ | 2.10(4) h | | | | | | | | | |
| 5.1(1) | 3 ⁺ | 4.13(3) m | 04Ga24 | | | | | | | | |
| 257.8(1) | 1 ⁺ | | 04Ga24 | | | 100 | | | | | |
| 646.3(1) | 9 ⁻ | | 04Ga24 | | 100 | | | | | | |
| 810.1(1) | <5 ⁺ > | | 04Ga24 | | | 100 | | | | | |
| 954.0(1) | 3 ⁺ | | 04Ga24 | | | 88(8) | 12(4) | | | | |
| 963.7(1) | 7 ⁻ | | 04Ga24 | | 97(10) | | | 3(1) | | | |
| 1053.7(1) | 7 ⁺ | | 04Ga24 | | | 94(9) | | | 6.1(8) | | |
| 1090.7(1) | 1,3 | | 04Ga24 | | | 45(3) | 55(7) | | | x | |
| 1094.7(2) | 15 ⁻ | | 04Ga24 | | | | | | | | |
| 1233.5(3) | 3 ⁺ | | 04Ga24 | | | | | | | | |
| 1242.7(2) | 13 ⁻ | | 04Ga24 | | | | | | | | |
| 1331.6(1) | 5 ⁺ | | 04Ga24 | | | | | | | | |
| 1501.6(6) | | | | | | | | | | | |
| 1556.0(1) | <7 ⁻ ,9 ⁺ > | | 04Ga24 | | 56(7) | | | 18(2) | 26(2) | | |
| 1602.5(1) | 7 ⁺ | | 04Ga24 | | | 85 | | 8.0(8) | 2.7(3) | | 4.3(4) |

(continued)

 $^{127}_{50}\text{Sn}$

| E^* [keV] | $2J^\pi$ | $T_{1/2}$ or Γ_{cm} | Ref. | Branching ratios in percentage | | | | | | | |
|----------------|----------------------|--------------------------------------|--------|--------------------------------|-------------------------------|------------------------------|--------------------------------|-------------------------------------|---------------------------------|--------------------------------|--------|
| | | | | $E^*_f:$ $2J^\pi_f:$ | 0.0 $\langle 11^- \rangle$ | 4.7 $\langle 3^+ \rangle$ | 257.0 $\langle 1^+ \rangle$ | 646.10 $\langle 9, 11^+ \rangle$ | 809.79 $\langle 7^+ \rangle$ | 953.1 $\langle 3^+ \rangle$ | 963.72 |
| 1618.9(3) | $7^-, 9^+$ | | 04Ga24 | | | | | | | | |
| 1625.4(5) | | | | | | | | | | | |
| 1702.5(2) | 7^+ | | 04Ga24 | | | 22(5) | | | 78(9) | | |
| 1810.2(1) | 15^+ | | 04Ga24 | | | | | | | | |
| 1819.9(3) | $1-5$ | | 04Ga24 | | | | | | | | |
| 1826.7(1) | 19^+ | $4.8(3) \mu\text{s}$ | 04Ga24 | | | | | | | | |
| 1909.3(1) | 7^+ | | 04Ga24 | | | | | | 22(2) | | 17(2) |
| 1916.6(1) | $\langle 19 \rangle$ | | 04Ga24 | | | | | | | | |
| 1931.0(1) | 23^+ | $1.26(15) \mu\text{s}$ | 04Ga24 | | | | | | | | |
| 2024.3(2) | 7^+ | | 04Ga24 | | | 11(2) | | | 27(3) | 22(3) | |
| 2043.3(2) | 7^+ | | 04Ga24 | | | | | | | | |
| 2046.0(2) | $\langle 19 \rangle$ | | 04Ga24 | | | | | | | | |
| 2047.5(3) | | | 04Ga24 | | | | | | | | |
| 2083.5(6) | | | 04Ga24 | | | | | | | | |
| 2166.0(5) | $\langle 19 \rangle$ | | 04Ga24 | | | | | | | | |
| 2232.1(2) | $\langle 21 \rangle$ | | 04Ga24 | | | | | | | | |
| 2260.5(9) | $1, 3$ | | 04Ga24 | | | | | | | | |
| 2312.1(5) | $\langle 19 \rangle$ | | 04Ga24 | | | | | | | | |
| 2442.7(3) | $7, 9$ | | 04Ga24 | | | | | | 18(9) | | |
| 2464.8(2) | $7-11$ | | 04Ga24 | | | | | | | | |
| 2515.2(3) | $7, 9$ | | 04Ga24 | | | | | | | | |
| 2630.7(4) | | | | | | | | | | | |
| 2734.1(4) | $\langle 21 \rangle$ | | 04Ga24 | | | | | | | | |
| 2791.5(2) | $7, 9$ | | 04Ga24 | | | | | | | | |
| 2822.2(3) | $7-11$ | | 04Ga24 | | | | | | | | |
| 2886.3(6) | 3 | | 04Ga24 | | | | | | | | |
| 3287.7(1) | | | | | | | | | | | |
| 3333.3(2) | 3^- | | 04Ga24 | | | | 100 | | | | |
| 3397.5(2) | 3 | | 04Ga24 | | | | | | | | |
| 3564.5(4) | 3 | | 04Ga24 | | | | | | | | |
| 3605.2(2) | 19^- | | 04Ga24 | | | | | | | | |
| 3647.1(3) | $19, 21$ | | 04Ga24 | | | | | | | | |
| 3861.0(8) | | | | | | | | | | | |
| 3899.6(11) | | | 04Ga24 | | | | | | | | |

Additional data on this isotope can be found in [04Le13, 00Pi03].

Energy levels and branching ratios [96Ki01]. Part 2

¹²⁷Sn
₅₀

| E^* [keV] | $2J^\pi$ | Branching ratios in percentage | | |
|----------------|----------------|--------------------------------|---------------------------------|----------------------------------|
| | | $E_f^*:$ $2J_f^\pi:$ | 1053.3 $\langle 7^+ \rangle$ | 1555.80 $\langle 7^+ \rangle$ |
| 1602.5(1) | 7 ⁺ | | 0.4(1) | |
| 1909.3(1) | 7 ⁺ | | 41(5) | 20(2) |
| 2024.3(2) | 7 ⁺ | | 5(2) | 32(3) |
| 2442.7(3) | 7,9 | | 82(9) | 3(2) |

Energy levels and branching ratios [01Ka61].

¹²⁸Sn
₅₀

| E^* [keV] | J^π | $T_{1/2}$ or Γ_{cm} |
|----------------|--|--------------------------------------|
| 0.0 | 0 ⁺ | 59.07(14) m |
| 1168.82(4) | 2 ⁺ | |
| 2000.37(7) | $\langle 4^+ \rangle$ | |
| 2091.50(11) | $\langle 7^- \rangle$ | 6.5(5) s |
| 2104.07(5) | $\langle 2 \rangle^+$ | |
| 2120.91(8) | $\langle 5^- \rangle$ | 8.6(8) ns |
| 2258.36(6) | $\langle 1 \rangle^-, \langle 2 \rangle^+$ | |
| 2274.06(10) | $\langle 2^-, 3, 4^+ \rangle$ | |
| 2378.08(13) | $\langle 7^- \rangle$ | |
| 2412.71(12) | $\langle 7, 8, 9^- \rangle$ | |
| 2491.91(17) | $\langle 7, 8, 9^- \rangle$ | |
| 2547.10(11) | $\langle 7^- \rangle$ | |
| 2578.62(8) | $\langle 1 \rangle^-, \langle 2 \rangle^+$ | |
| 2633.09(10) | $\langle 2^-, 3, 4^+ \rangle$ | |
| 2642.27(6) | $\langle 2^-, 3, 4^+ \rangle$ | |
| 2756.54(10) | $\langle 2^-, 3, 4^+ \rangle$ | |
| 2952.46(10) | $\langle 2^-, 3, 4^+ \rangle$ | |
| 2959.49(21) | | |
| 3091.97(9) | $\langle 2^-, 3, 4^+ \rangle$ | |
| 3175.79(12) | $\langle 7^- \rangle$ | |
| 3225.6(3) | $\langle 1 \rangle^-, \langle 2 \rangle^+$ | |
| 3383.14(16) | $\langle 7^- \rangle$ | |
| 3519.86(10) | $\langle 2 \rangle^+$ | |
| 3608.50(19) | $\langle 7, 8, 9^- \rangle$ | |
| 3633.46(13) | | |
| 3769.08(20) | $\langle 7, 8, 9^- \rangle$ | |
| 3871.48(15) | $\langle 8^-, 9^- \rangle$ | |
| 3886.39(13) | $\langle 2 \rangle^+$ | |
| 3954.85(9) | $\langle 2 \rangle^+$ | |
| 3958.55(15) | $\langle 8^-, 9^- \rangle$ | |
| 3987.6(3) | $\langle 7, 8, 9^- \rangle$ | |
| 3997.61(9) | $\langle 3, 4 \rangle^+$ | |

| (continued) | | $^{128}_{50}\text{Sn}$ |
|-------------|--|------------------------|
| E^* | J^π | $T_{1/2}$ or |
| [keV] | | Γ_{cm} |
| 4038.01(14) | $\langle 1 \rangle^-, \langle 2 \rangle^+$ | |
| 4065.36(15) | $\langle 8^-, 9^- \rangle$ | |
| 4075.03(10) | $\langle 3, 4 \rangle^+$ | |
| 4213.62(15) | $\langle 8^-, 9^- \rangle$ | |
| 4219.87(10) | $\langle 3, 4 \rangle^+$ | |
| 4227.2(3) | $\langle 1 \rangle^-, \langle 2 \rangle^+$ | |
| 4243.02(16) | $\langle 7, 8, 9^- \rangle$ | |
| 4297.70(15) | $\langle 2 \rangle^+$ | |
| 4509.8(10) | $\langle 1 \rangle^-, \langle 2 \rangle^+$ | |
| 4898.01(19) | $\langle 8^-, 9^- \rangle$ | |

| Energy levels and branching ratios [01Ka61]. Part 2 | | | | | | | | | | | | $^{128}_{50}\text{Sn}$ |
|---|--|--------------------------------|-----------------------|--------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|--------|--------|--------|------------------------|
| E^* | J^π | Branching ratios in percentage | | | | | | | | | | |
| [keV] | | E_f^* : J_f^π : | 0.0 0 ⁺ | 1168.8 2 ⁺ | 2000.4 $\langle 4^+ \rangle$ | 2091.5 $\langle 7^- \rangle$ | 2104.1 $\langle 2 \rangle^+$ | 2120.9 $\langle 5^- \rangle$ | 2258.4 | 2274.1 | 2412.7 | 2491.9 |
| 1168.82(4) | 2 ⁺ | | 100 | | | | | | | | | |
| 2000.37(7) | $\langle 4^+ \rangle$ | | | 100 | | | | | | | | |
| 2091.50(11) | $\langle 7^- \rangle$ | | | | 100 | | | | | | | |
| 2104.07(5) | $\langle 2 \rangle^+$ | | 45(3) | 55 | | | | | | | | |
| 2120.91(8) | $\langle 5^- \rangle$ | | | | 100 | | | | | | | |
| 2258.36(6) | $\langle 1 \rangle^-, \langle 2 \rangle^+$ | | 30(2) | 70 | | | | | | | | |
| 2274.06(10) | $\langle 2^-, 3, 4^+ \rangle$ | | | 100 | | | | | | | | |
| 2378.08(13) | $\langle 7^- \rangle$ | | | | | | | 100 | | | | |
| 2412.71(12) | $\langle 7, 8, 9^- \rangle$ | | | | | 100 | | | | | | |
| 2491.91(17) | $\langle 7, 8, 9^- \rangle$ | | | | | | | | | | 100 | |
| 2547.10(11) | $\langle 7^- \rangle$ | | | | | | | 100 | | | | |
| 2578.62(8) | $\langle 1 \rangle^-, \langle 2 \rangle^+$ | | 42(4) | 47 | | | 11(3) | | | | | |
| 2633.09(10) | $\langle 2^-, 3, 4^+ \rangle$ | | | 100 | | | | | | | | |
| 2642.27(6) | $\langle 2^-, 3, 4^+ \rangle$ | | | 58 | | | 42(3) | | | | | |
| 2756.54(10) | $\langle 2^-, 3, 4^+ \rangle$ | | | 100 | | | | | | | | |
| 2952.46(10) | $\langle 2^-, 3, 4^+ \rangle$ | | | 89 | | | | | | | | |
| 2959.49(21) | | | | | | | | | | | 70 | 30(12) |
| 3091.97(9) | $\langle 2^-, 3, 4^+ \rangle$ | | | 65 | | | | | | | | |
| 3175.79(12) | $\langle 7^- \rangle$ | | | | | | | 84 | | | 16(3) | |
| 3225.6(3) | $\langle 1 \rangle^-, \langle 2 \rangle^+$ | | 81 | | | | | | | | | |
| 3383.14(16) | $\langle 7^- \rangle$ | | | | | | | 66 | | | | |
| 3519.86(10) | $\langle 2 \rangle^+$ | | 90 | 7.6(5) | | | | | | | | |
| 3769.08(20) | $\langle 7, 8, 9^- \rangle$ | | | | | | | | | | 100 | |
| 3871.48(15) | $\langle 8^-, 9^- \rangle$ | | | | | 100 | | | | | | |
| 3886.39(13) | $\langle 2 \rangle^+$ | | 93 | | | | | | | | | |
| 3954.85(9) | $\langle 2 \rangle^+$ | | 66 | 12(2) | | | | | 22(2) | | | |

(continued)

 $^{128}_{50}\text{Sn}$

| E^* | J^π | Branching ratios in percentage | | | | | | | | | | |
|-------------|--|--|--------------|-----------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|--------|--------|--------|---------|
| [keV] | | E_{f}^* : J_{f}^π : | 0.0 0^+ | 1168.8 2^+ | 2000.4 $\langle 4^+ \rangle$ | 2091.5 $\langle 7^- \rangle$ | 2104.1 $\langle 2 \rangle^+$ | 2120.9 $\langle 5^- \rangle$ | 2258.4 | 2274.1 | 2412.7 | 2491.9 |
| 3958.55(15) | $\langle 8^-, 9^- \rangle$ | | | | | 100 | | | | | | |
| 3997.61(9) | $\langle 3, 4 \rangle^+$ | | | | | | 11(3) | | 55 | | | |
| 4038.01(14) | $\langle 1 \rangle^-, \langle 2 \rangle^+$ | | 74 | | | | | | | | | |
| 4065.36(15) | $\langle 8^-, 9^- \rangle$ | | | | | 96 | | | | | | 4.4(10) |
| 4075.03(10) | $\langle 3, 4 \rangle^+$ | | | 23(3) | | | | | 77 | | | |
| 4213.62(15) | $\langle 8^-, 9^- \rangle$ | | | | | 100 | | | | | | |
| 4219.87(10) | $\langle 3, 4 \rangle^+$ | | | 52 | | | | | 37(3) | 11(3) | | |
| 4227.2(3) | $\langle 1 \rangle^-, \langle 2 \rangle^+$ | | 32(7) | 68 | | | | | | | | |
| 4297.70(15) | $\langle 2 \rangle^+$ | | 91 | 8.5(8) | | | | | | | | |
| 4509.8(10) | $\langle 1 \rangle^-, \langle 2 \rangle^+$ | | 100 | | | | | | | | | |

Energy levels and branching ratios [01Ka61]. Part 3

 $^{128}_{50}\text{Sn}$

| E^* | J^π | Branching ratios in percentage | | | | | | | | |
|-------------|---|--------------------------------|---------------------------------|--------|--------|---------|--------|---------------------------------|---------------------------------|--------|
| [keV] | | E_f^* : J_f^π : | 2547.1 $\langle 7^- \rangle$ | 2633.1 | 2642.3 | 2756.5 | 2952.5 | 3175.8 $\langle 7^- \rangle$ | 3383.1 $\langle 7^- \rangle$ | 3633.5 |
| 2952.46(10) | $\langle 2^- , 3, 4^+ \rangle$ | | | | 11(3) | | | | | |
| 3091.97(9) | $\langle 2^- , 3, 4^+ \rangle$ | | | | 35(5) | | | | | |
| 3225.6(3) | $\langle 1 \rangle^- , \langle 2 \rangle^+$ | | | | 19(5) | | | | | |
| 3383.14(16) | $\langle 7^- \rangle$ | | | | | | | 34(7) | | |
| 3519.86(10) | $\langle 2 \rangle^+$ | | | 2.4(5) | | | | | | |
| 3608.50(19) | $\langle 7, 8, 9^- \rangle$ | 100 | | | | | | | | |
| 3633.46(13) | | | | | | | | 100 | | |
| 3886.39(13) | $\langle 2 \rangle^+$ | | | | | 6.7(16) | | | | |
| 3987.6(3) | $\langle 7, 8, 9^- \rangle$ | | | | | | | 100 | | |
| 3997.61(9) | $\langle 3, 4 \rangle^+$ | | | | | 25(3) | 10(3) | | | |
| 4038.01(14) | $\langle 1 \rangle^- , \langle 2 \rangle^+$ | | | | | 26(3) | | | | |
| 4243.02(16) | $\langle 7, 8, 9^- \rangle$ | | | | | | | 60 | | 40(7) |
| 4898.01(19) | $\langle 8^- , 9^- \rangle$ | | | | | | | | 42(8) | 58 |