

Energy levels and branching ratios [00Re14].

¹⁶¹Er
68

E^*	$2J^\pi$	L	σ (d,t)	$T_{1/2}$ or	Ref.	Branching ratios in percentage					
[keV]		(d,t)	$\mu\text{b/sr}$	Γ_{cm}		$E_f^*:$ $2J_f^\pi:$	0 3 ⁻	59.5 5 ⁻	143.9 7 ⁻	172 5 ⁻	189 9 ⁺
0	3 ⁻		55	3.21(3) h	69Tj01						
59.501(24)	5 ⁻			≤ 0.15 ns			100				
143.89(3)	7 ⁻		77	≤ 0.18 ns	69Tj01		29	71			
172.06(3)	5 ⁻		9	0.35(10) ns	69Tj01		62(5)	38(3)	x		
189.42(3)	9 ⁺		34	84(10) ns	69Tj01				100		
212.91(3)	5 ⁺		5	0.81(6) ns	69Tj01		49(4)	46(4)	5(1)	x	x
217.34(4)	7 ⁺			0.55(5) ns				93(8)	7(3)		x
249.77(3)	9 ⁻		7		69Tj01			50(4)	50(4)		
266.44(3)	7 ⁻		50	0.21(3) ns	69Tj01		16(2)	15(5)	38(3)	31(11)	
267.45(4)	13 ⁺		79	2.0(2) ns	69Tj01						100
296.69(4)	11 ⁺										78(11)
369.48(5)	3 ⁺						55(5)	12(2)		5(2)	
388.45(6)	11 ⁻		5		69Tj01				65(6)		
390.20(4)	9 ⁻		incl		69Tj01				≤ 3	33(3)	26(6)
396.44(4)	11 ⁻		20	7.5(7) μs	69Tj01				11(1)		17(2)
463.11(9)	3 ⁺		85		69Tj01		31(4)	13(2)			
466.1	17 ⁺										
481	1 ⁺		143		69Tj01						
496.3(1)	5 ⁺		10		69Tj01		5(2)	8(3)			
508.9	15 ⁺										
522			4		69Tj01						
531.2	13 ⁻										
540	$\langle 11^- \rangle$		3		69Tj01						
563			13		69Tj01						
578.6	13 ⁻										
590.1(1)	7 ⁺		≤ 2		69Tj01						32(4)
621											
635			27		69Tj01						
665			4		69Tj01						
704			10		69Tj01						
712			23		69Tj01						
724.8(2)	$\langle 3^- \rangle$		10		69Tj01		44(5)	14(5)	11(4)	16(4)	
729.3	15 ⁻										
738			8		69Tj01						
782.5	15 ⁻										
783.5	21 ⁺										
843.2(2)	$\langle 5^- \rangle$		7		69Tj01		14(3)	29(4)	17(7)	14(5)	
848.8	19 ⁺										
891.6	17 ⁻										
1006.4	17 ⁻										
1148.0	19 ⁻										
1208.4	25 ⁺										
1249.5	19 ⁻										
1301.6	23 ⁺										
1312.8	21 ⁻										

(continued)

¹⁶¹Er
68

E^*	$2J^\pi$	L	σ (d,t)	$T_{1/2}$ or Ref.	E_f^* : $2J_f^\pi$:	Branching ratios in percentage				
[keV]		(d,t)	$\mu\text{b/sr}$	Γ_{cm}		0 3 ⁻	59.5 5 ⁻	143.9 7 ⁻	172 5 ⁻	189 9 ⁺
1481.20(19)	$\langle 5, 7^- \rangle$					9(4)	≤ 13	13(6)	29(4)	
1509.1	21 ⁻									
1632.0	23 ⁻									
1727.0	29 ⁺									
1772.4	25 ⁻									
1783.3	23 ⁻									
1849.5	27 ⁺									
1960.25(17)	$\langle 7^- \rangle$								49(4)	5(1)
2044.6(3)	9 ⁺									
2063.09(21)	$\langle 5^+, 7 \rangle$								[35]	[8]
2066.89(17)	$\langle 5, 7^- \rangle$					≤ 3	5(2)	≤ 5	35(4)	
2072	25 ⁻									
2150.6	27 ⁻									
2256.8	29 ⁻									
2326.2	33 ⁺									
2368.3	27 ⁻									
2476.5	31 ⁺									
2674.6	29 ⁻									
2775.6	33 ⁻									
2991.4	37 ⁺									
3168.5	35 ⁺									
3346.0	37 ⁻									
3708.2	41 ⁺									
3912.9	39 ⁺									
3976.8	41 ⁻									
4461.2	45 ⁺									
4671.3	45 ⁻									
4691.2	43 ⁺									
5247	49 ⁺									
5427.6	49 ⁻									
6077	53 ⁺									
≈ 6240	53 ⁻									
6655	55 ⁻									
6957	57 ⁺									
7119	57 ⁻									
7556	59 ⁻									
7872	61 ⁺									
8040	61 ⁻									
8537	63 ⁻									
8806	65 ⁺									
8946	65 ⁻									
9496	67 ⁻									
9766	69 ⁺									
9899	69 ⁻									
10468	71 ⁻									

(continued)

¹⁶¹₆₈Er

E^*	$2J^\pi$	L	σ (d,t)	$T_{1/2}$ or	Ref.	Branching ratios in percentage					
[keV]		(d,t)	$\mu\text{b/sr}$	Γ_{cm}		$E_{\text{f}}^*:$ $2J_{\text{f}}^\pi:$	0 3 [−]	59.5 5 [−]	143.9 7 [−]	172 5 [−]	189 9 ⁺
10766	73 ⁺										
10882	73 [−]										
11470	75 [−]										
11820	77 ⁺										
11913	77 [−]										
12515	79 [−]										
12929	81 ⁺										
12999	81 [−]										
13608	83 [−]										
14099	85 ⁺										
14144	85 [−]										
14756	87 [−]										
15330	89 ⁺										
15348	89 [−]										
15960	91 [−]										
16615	93 [−]										
16625	93 ⁺										
17224	⟨95 [−] ⟩										
17947	97 [−]										
17981	97 ⁺										
18551	99 [−]										
19336	101 [−]										
19401	101 ⁺										
19942	103 [−]										
20790	105 [−]										
20875	105 ⁺										
20908	105 ⁺										
21398	107 [−]										
22274	109 ⁺										
22918	111 [−]										
24500	115 [−]										
26153	⟨119 [−] ⟩										
27779	⟨123 [−] ⟩										
			69Tj01	Ref.							

Additional data on this isotope can be found in [00Si26, 90Ri09, 90Ri03, 84Pe03].

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

Energy levels and branching ratios [00Re14]. Part 2

¹⁶¹₆₈Er

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E_f^* : $2J_f^\pi$:	213 5 ⁺	217 7 ⁺	249.77 9 ⁻	266.44 7 ⁻	267.45 13 ⁺	296.69 11 ⁺	388.45 11 ⁻	390.20 9 ⁻	396.44 11 ⁻	466.1 17 ⁺
266.44(3)	7 ⁻				x							
296.69(4)	11 ⁺			22(8)	x		x					
369.48(5)	3 ⁺		28(3)									
388.45(6)	11 ⁻				35(4)							
390.20(4)	9 ⁻			17(5)	13(2)	11(3)						
396.44(4)	11 ⁻				34(2)		21(2)	17(2)				
463.11(9)	3 ⁺		56(6)									
466.1	17 ⁺						100					
496.3(1)	5 ⁺		44(5)	43(5)								
508.9	15 ⁺						31	69				
531.2	13 ⁻				87				13			
578.6	13 ⁻										100	
590.1(1)	7 ⁺		22(3)	47(5)								
724.8(2)	⟨3 ⁻ ⟩					14(5)						
729.3	15 ⁻								x			
782.5	15 ⁻										25	
783.5	21 ⁺											100
843.2(2)	⟨5 ⁻ ⟩				19(5)	7(3)						
848.8	19 ⁺											28
1481.20(19)	⟨5,7 ⁻ ⟩		11(5)			7(4)						
1960.25(17)	⟨7 ⁻ ⟩		6(1)	5(1)		12(1)				12(1)		
2044.6(3)	9 ⁺										100	
2063.09(21)	⟨5 ⁺ ,7⟩			[56]			≤5					
2066.89(17)	⟨5,7 ⁻ ⟩		40(4)	≤81		7(2)						

Energy levels and branching ratios [00Re14]. Part 3

¹⁶¹₆₈Er

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E_f^* : $2J_f^\pi$:	496.28 5 ⁺	508.9 15 ⁺	531.2 13 ⁻	578.6 13 ⁻	590.06 7 ⁺	724.84 ⟨3 ⁻ ⟩	729.3 15 ⁻	782.5 15 ⁻	783.5 21 ⁺	848.8 19 ⁺
782.5	15 ⁻					75						
848.8	19 ⁺			72								
891.6	17 ⁻				x							
1006.4	17 ⁻					45				55		
1148.0	19 ⁻								x			
1208.4	25 ⁺										100	
1249.5	19 ⁻									35		
1301.6	23 ⁺										x	x
1312.8	21 ⁻											35
1481.20(19)	⟨5,7 ⁻ ⟩		20(5)				11(5)					
1960.25(17)	⟨7 ⁻ ⟩							11(1)				
2066.89(17)	⟨5,7 ⁻ ⟩							12(4)				

Energy levels and branching ratios [00Re14]. Part 4

 $^{161}_{68}\text{Er}$

E^* [keV]	$2J^\pi$	E^*_f : $2J^\pi_f$:	Branching ratios in percentage									
			891.6 17 ⁻	1006.4 17 ⁻	1148.0 19 ⁻	1208.4 25 ⁺	1249.5 19 ⁻	1301.6 23 ⁺	1312.8 21 ⁻	1509.1 21 ⁻	1632.0 23 ⁻	1727.0 29 ⁺
1249.5	19 ⁻			65								
1312.8	21 ⁻		65									
1509.1	21 ⁻			71			29					
1632.0	23 ⁻				x							
1727.0	29 ⁺					x						
1772.4	25 ⁻							x	x			
1783.3	23 ⁻						x			x		
1849.5	27 ⁺							100				
2072	25 ⁻									x		
2150.6	27 ⁻										x	
2326.2	33 ⁺											100

Energy levels and branching ratios [00Re14]. Part 5

 $^{161}_{68}\text{Er}$

E^* [keV]	$2J^\pi$	E^*_f : $2J^\pi_f$:	Branching ratios in percentage									
			1772.4 25 ⁻	1783.3 23 ⁻	1849.5 27 ⁺	2072 25 ⁻	2256.8 29 ⁻	2326.2 33 ⁺	2476.5 31 ⁺	2775.6 33 ⁻	2991.4 37 ⁺	3168.5 35 ⁺
2072	25 ⁻			x								
2256.8	29 ⁻		x		x							
2368.3	27 ⁻			x		x						
2476.5	31 ⁺				x							
2674.6	29 ⁻					x						
2775.6	33 ⁻						x					
2991.4	37 ⁺							x				
3168.5	35 ⁺								x			
3346.0	37 ⁻									x		
3708.2	41 ⁺										x	
3912.9	39 ⁺											x

Energy levels and branching ratios [00Re14]. Part 6

 $^{161}_{68}\text{Er}$

E^* [keV]	$2J^\pi$	E^*_f : $2J^\pi_f$:	Branching ratios in percentage									
			3346.0 37 ⁻	3708.2 41 ⁺	3912.9 39 ⁺	3976.8 41 ⁻	4461.2 45 ⁺	4671.3 45 ⁻	5247 49 ⁺	5427.6 49 ⁻	6077 53 ⁺	6240 53 ⁻
3976.8	41 ⁻		x									
4461.2	45 ⁺			x								
4671.3	45 ⁻					x						
4691.2	43 ⁺				x							
5247	49 ⁺						x					

(continued)

¹⁶¹₆₈Er

<i>E</i> [*]	2 <i>J</i> ^π	Branching ratios in percentage										
[keV]		<i>E</i> _f [*] : 2 <i>J</i> _f ^π :	3346.0 37 [−]	3708.2 41 ⁺	3912.9 39 ⁺	3976.8 41 [−]	4461.2 45 ⁺	4671.3 45 [−]	5247 49 ⁺	5427.6 49 [−]	6077 53 ⁺	6240 53 [−]
5427.6	49 [−]							x				
6077	53 ⁺								x			
≈6240	53 [−]									x		
6957	57 ⁺										x	
7119	57 [−]											x

Energy levels and branching ratios [00Re14]. Part 7

¹⁶¹₆₈Er

<i>E</i> [*]	2 <i>J</i> ^π	Branching ratios in percentage										
[keV]		<i>E</i> _f [*] : 2 <i>J</i> _f ^π :	6655 55 [−]	6957 57 ⁺	7119 57 [−]	7556 59 [−]	7872 61 ⁺	8040 61 [−]	8537 63 [−]	8806 65 ⁺	8946 65 [−]	9496 67 [−]
7556	59 [−]		x									
7872	61 ⁺			x								
8040	61 [−]				x							
8537	63 [−]					x						
8806	65 ⁺						x					
8946	65 [−]							x				
9496	67 [−]								x			
9766	69 ⁺									x		
9899	69 [−]										x	
10468	71 [−]											x

Energy levels and branching ratios [00Re14]. Part 8

¹⁶¹₆₈Er

<i>E</i> [*]	2 <i>J</i> ^π	Branching ratios in percentage										
[keV]		<i>E</i> _f [*] : 2 <i>J</i> _f ^π :	9766 69 ⁺	9899 69 [−]	10468 71 [−]	10766 73 ⁺	10882 73 [−]	11470 75 [−]	11820 77 ⁺	11913 77 [−]	12515 79 [−]	12929 81 ⁺
10766	73 ⁺		x									
10882	73 [−]			x								
11470	75 [−]				x							
11820	77 ⁺					x						
11913	77 [−]						x					
12515	79 [−]							x				
12929	81 ⁺								x			
12999	81 [−]									x		
13608	83 [−]										x	
14099	85 ⁺											x

Energy levels and branching ratios [00Re14]. Part 9

¹⁶¹₆₈Er

<i>E</i> [*] [keV]	2 <i>J</i> ^π	Branching ratios in percentage											
		<i>E</i> _f [*] : 2 <i>J</i> _f ^π :	12999 81 [−]	13608 83 [−]	14099 85 ⁺	14144 85 [−]	14756 87 [−]	15330 89 ⁺	15348 89 [−]	15960 91 [−]	16615 93 [−]	16625 93 ⁺	17224 ⟨95 [−] ⟩
14144	85 [−]		x										
14756	87 [−]			x									
15330	89 ⁺				x								
15348	89 [−]					x							
15960	91 [−]						x						
16615	93 [−]								x				
16625	93 ⁺							x					
17224	⟨95 [−] ⟩									x			
17947	97 [−]										x		
17981	97 ⁺											x	
18551	99 [−]												x

Energy levels and branching ratios [00Re14]. Part 10

¹⁶¹₆₈Er

<i>E</i> [*] [keV]	2 <i>J</i> ^π	Branching ratios in percentage											
		<i>E</i> _f [*] : 2 <i>J</i> _f ^π :	17947 97 [−]	17981 97 ⁺	18551 99 [−]	19336 101 [−]	19401 101 ⁺	19942 103 [−]	20875 105 ⁺	21398 107 [−]	22918 111 [−]	24500 115 [−]	26153 ⟨119 [−] ⟩
19336	101 [−]		x										
19401	101 ⁺			x									
19942	103 [−]				x								
20790	105 [−]					x							
20875	105 ⁺						x						
20908	105 ⁺						x						
21398	107 [−]							x					
22274	109 ⁺								x				
22918	111 [−]									x			
24500	115 [−]										x		
26153	⟨119 [−] ⟩											x	
27779	⟨123 [−] ⟩												x

Energy levels and branching ratios [99He21].

¹⁶²₆₈Er

<i>E</i> [*] [keV]	<i>J</i> ^π	<i>β</i> _{<i>L</i>} (d,d')	<i>σ</i> (d,d') μb/sr	<i>T</i> _{1/2} or <i>Γ</i> _{cm}	Ref.
0	0 ⁺		12300	Stable	68Tj02
102.04(3)	2 ⁺		2700	1.36(3) ns	68Tj02
329.61(4)	4 ⁺		96		68Tj02
666.64(8)	6 ⁺		9		68Tj02

(continued)

¹⁶²Er₆₈

E^*	J^π	β_L	σ (d,d')	$T_{1/2}$ or	Ref.
[keV]		(d,d')	$\mu\text{b/sr}$	Γ_{cm}	
900.73(5)	2 ⁺	0.133	80	1.25(7) ps	68Tj02
1002.04(6)	3 ⁺				
1087.16(7)	0 ⁺		5		68Tj02
1096.68(11)	8 ⁺				
1128.10(7)	4 ⁺		20		68Tj02
1171.04(5)	2 ⁺		16	0.26(14) ps	68Tj02
1286.21(7)	5 ⁺				
1352.17(5)	1 ⁻				
1356.77(7)	3 ⁻		140		68Tj02
≈ 1369	$\langle 4^+ \rangle$		≈ 2		68Tj02
1412.58(14)	1,2 ⁺	0.025			
1420.45(5)	$\langle 0 \rangle^+$		7		68Tj02
1429.78(7)	2 ⁺			0.43(19) ps	
1459.57(7)	6 ⁺		11		68Tj02
1469.12(11)	5 ⁻				
1500.49(12)	2 ⁺			>0.16 ps	
1506.36(5)	$\langle 1^- \rangle$				
1542.64(20)	$\langle 4^- \rangle$				
1572.83(7)	2 ⁻				
1600	$\langle 1^- \rangle$		15		68Tj02
1602.82(13)	10 ⁺	0.025			
1623.23(10)	3 ⁻		26	>0.31 ns	68Tj02
1669.12(10)	7 ⁺				
1682.25(22)	7 $\langle - \rangle$				
1712.18(10)	4 ⁺				
1729.63(18)	$\langle 5^- \rangle$		≈ 11		68Tj02
1746			2		68Tj02
1761.24(12)	$\langle 6^- \rangle$				
1805.21(9)					
1856.69(13)					
1864.89(21)	2 ⁺	0.025			
1872.65(14)	8 ⁺				
1916			9		68Tj02
1931.29(13)					
1961	$\langle 3^-, 4^+ \rangle$		15		68Tj02
1974.74(10)					
1985.98(15)	9 ⁻		≈ 9		68Tj02
2025.55(12)	7		≈ 6		68Tj02
2026.13(14)					
2039					
2061.35(16)	$\langle 1, 2^+ \rangle$	0.025			
2061.92(12)	$\langle 8^- \rangle$				
2114.10(15)	$\langle 0^+ \rangle$		3		68Tj02
2121.67(8)					
2133.77(11)	9 ⁺				

(continued)

 $^{162}_{68}\text{Er}$

E^*	J^π	β_L	σ (d,d')	$T_{1/2}$ or	Ref.
[keV]		(d,d')	$\mu\text{b/sr}$	Γ_{cm}	
2165.11(14)	12^+				
2192.09(18)	2^+				
2205.94(25)					
2242.20(10)					
2260.23(14)					
2294	$\langle 3^-, 4^+ \rangle$		17		68Tj02
2318.67(11)			5		68Tj02
2338					
2346.58(12)	10^+		6		68Tj02
2368.19(15)	11^-				
2405			7		68Tj02
2429.48(13)	$\langle 10^- \rangle$				
2449.75(16)			4		68Tj02
2526			3		68Tj02
2559			4		68Tj02
2573			5		68Tj02
2598.07(14)					
2603.8(3)					
2624			5		68Tj02
2656.32(13)	11^+				
2664.46(23)					
2745.72(17)	14^+				
2751.8	$\langle 6 \rangle$				
2817.75(15)	13^-				
2841.98(17)	$\langle 12^- \rangle$				
2910.85(17)	12^+				
3039.8(4)					
3116.82(16)	2^+				
3132.50(8)					
3180.3(4)					
3267.60(12)					
3292.4(3)	16^+				
3293.2(3)					
3367.93(13)					
3389.17(20)					
3400.08(17)					
3414.67(20)					
3435.8(4)					
3518.00(22)	$\langle 2^+ \rangle$				
3676.48(13)	$2^+, 3^-$				
3689.6(3)					
3846.6(5)	18^+				
4463.2	20^+				
6675 ^b	$\langle 25^- \rangle$				
6742 ^a	$\langle 26^+ \rangle$				

(continued)

 $^{162}_{68}\text{Er}$

E^*	J^π	β_L	σ (d,d')	$T_{1/2}$ or	Ref.
[keV]		(d,d')	$\mu\text{b/sr}$	Γ_{cm}	
7168 ^c	$\langle 26^- \rangle$				
7516 ^b	$\langle 27^- \rangle$				
7623 ^a	$\langle 28^+ \rangle$				
8014 ^c	$\langle 28^- \rangle$				
8418 ^b	$\langle 29^- \rangle$				
8551 ^a	$\langle 30^+ \rangle$				
8934 ^c	$\langle 30^- \rangle$				
9367 ^b	$\langle 31^- \rangle$				
9508 ^a	$\langle 32^+ \rangle$				
9916 ^c	$\langle 32^- \rangle$				
10328 ^b	$\langle 33^- \rangle$				
10481 ^a	$\langle 34^+ \rangle$				
11470 ^a	$\langle 36^+ \rangle$				
12490 ^a	$\langle 38^+ \rangle$				
13553 ^a	$\langle 40^+ \rangle$				
14664 ^a	$\langle 42^+ \rangle$				
15832 ^a	$\langle 44^+ \rangle$				

Additional data on this isotope can be found in [03Ca03, 00Si26, 00Gr33, 96Ry01, 90Ri09].

Abundance: 0.139(5) %.

a,b,c mark three band introduced in [90Ri03] (No 1,2,3); see levels with J^π up to $50\hbar$ in [00Si26].

Properties of low-lying excitations are discussed in [02Ca35].

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

Energy levels and branching ratios [99He21]. Part 2

 $^{162}_{68}\text{Er}$

E^*	J^π	Branching ratios in percentage										
[keV]		E_f^* : J_f^π :	0 0 ⁺	102 2 ⁺	330 4 ⁺	667 6 ⁺	901 2 ⁺	1002 3 ⁺	1087 0 ⁺	1096.68 8 ⁺	1128.10 4 ⁺	1171.04 2 ⁺
102.04(3)	2 ⁺		100									
329.61(4)	4 ⁺			100								
666.64(8)	6 ⁺				100							
900.73(5)	2 ⁺		43(2)	56(2)	1.3(9)							
1002.04(6)	3 ⁺			75(5)	24.7(17)							
1087.16(7)	0 ⁺	x		100								
1096.68(11)	8 ⁺				100							
1128.10(7)	4 ⁺			20(4)	74(4)	6.1(4)	x					
1171.04(5)	2 ⁺		9(6)	57(3)	34(2)							
1286.21(7)	5 ⁺				79(6)	15.6(13)		x			5.4(6)	
1352.17(5)	1 [−]		42(2)	58(2)								
1356.77(7)	3 [−]			62(4)	38(3)							
1412.58(14)	1,2 ⁺		42(8)	58(8)								
1420.45(5)	⟨0⟩ ⁺	x		90(4)			9.6(8)					

(continued)

 $^{162}_{68}\text{Er}$

E^* [keV]	J^π	Branching ratios in percentage										
		$E_f^*:$ $J_f^\pi:$	0 0 ⁺	102 2 ⁺	330 4 ⁺	667 6 ⁺	901 2 ⁺	1002 3 ⁺	1087 0 ⁺	1096.68 8 ⁺	1128.10 4 ⁺	1171.04 2 ⁺
1429.78(7)	2 ⁺		16(2)	33(3)	51(3)							
1459.57(7)	6 ⁺				30(4)	49(2)					17.2(11)	
1469.12(11)	5 ⁻				100							
1500.49(12)	2 ⁺		10(3)	31(16)	60(6)			≤13				
1506.36(5)	⟨1 ⁻ ⟩		33(2)	67(3)								
1542.64(20)	⟨4 ⁻ ⟩				100							
1572.83(7)	2 ⁻		2.2(5)	7.2(17)	1.3(4)		66(3)	23(2)				
1602.82(13)	10 ⁺									100		
1623.23(10)	3 ⁻		8(3)	51(4)	41(5)							
1669.12(10)	7 ⁺					67(6)				4.8(11)		
1682.25(22)	7 ^{⟨-⟩}					100						
1712.18(10)	4 ⁺						62(4)	34(2)			3(2)	
1729.63(18)	⟨5 ⁻ ⟩			100								
1761.24(12)	⟨6 ⁻ ⟩					100						
1805.21(9)					20(3)							25(1)
1856.69(13)				100								
1864.89(21)	2 ⁺		41(6)	≤23	51(8)						8(2)	
1872.65(14)	8 ⁺					30(4)				52(6)		
1931.29(13)			46(6)	39(4)				14(3)				≤9
1974.74(10)			91(6)	9.0(21)								
1985.98(15)	9 ⁻									100		
2025.55(12)	7					79(7)				20.7(14)		
2026.13(14)				77(6)			23(4)					
2061.35(16)	⟨1,2 ⁺ ⟩		≤21	79(6)								≤13
2061.92(12)	⟨8 ⁻ ⟩									56(4)		
2114.10(15)	⟨0 ⁺ ⟩			61(6)			39(7)					
2121.67(8)					≤16		44(5)	9(2)			31(3)	
2133.77(11)	9 ⁺									56(4)		
2192.09(18)	2 ⁺		35(4)	30(6)	35(4)							
2205.94(25)			≤29	100								
2242.20(10)				80(4)				≤6.8				
2260.23(14)			19(5)	49(6)								
2318.67(11)			14(3)	58(5)								
2449.75(16)			19(3)	≤5			31(6)	≤20				
2598.07(14)				7(2)	≤10		50(7)	43(4)				
2603.8(3)			60(6)	40(8)								
2664.46(23)				47(10)	53(13)		≤83					≤90
3039.8(4)			7(3)									
3116.82(16)	2 ⁺				3.0(8)							
3132.50(8)							40(3)	22(2)				9.1(10)
3180.3(4)			60(12)	40(7)								
3267.60(12)			2.3(8)	12(2)			1.9(8)	4(1)				≤10
3293.2(3)			38(9)	62(7)					≤25			
3367.93(13)			3.1(13)									
3389.17(20)			43(6)	33(5)					8(2)			

(continued)

 $^{162}_{68}\text{Er}$

E^*	J^π	Branching ratios in percentage										
[keV]		E_f^* : J_f^π :	0 0 ⁺	102 2 ⁺	330 4 ⁺	667 6 ⁺	901 2 ⁺	1002 3 ⁺	1087 0 ⁺	1096.68 8 ⁺	1128.10 4 ⁺	1171.04 2 ⁺
3400.08(17)			23(3)	62(4)								
3435.8(4)			62(7)	38(7)								
3518.00(22)	$\langle 2^+ \rangle$		14(3)	45(6)							21(5)	≤ 9
3676.48(13)	$2^+, 3^-$			52(4)		5(2)					9(3)	16(4)
3689.6(3)				75(11)				25(8)				

Energy levels and branching ratios [99He21]. Part 3

 $^{162}_{68}\text{Er}$

E^*	J^π	Branching ratios in percentage										
[keV]		E_f^* : J_f^π :	1286.21 5 ⁺	1352.17 1 ⁻	1356.77 3 ⁻	1412.58 1,2 ⁺	1420.45 $\langle 0 \rangle^+$	1429.78 2 ⁺	1459.57 6 ⁺	1500.49 2 ⁺	1506.36 $\langle 1^- \rangle$	1542.64 $\langle 4^- \rangle$
1459.57(7)	6 ⁺		3.6(7)									
1669.12(10)	7 ⁺		29(2)									
1761.24(12)	$\langle 6^- \rangle$											x
1805.21(9)				55(7)								
1856.69(13)					≤ 21							
1872.65(14)	8 ⁺							x				
1931.29(13)											1.7(11)	
2061.35(16)	$\langle 1, 2^+ \rangle$						14(3)					
2121.67(8)					15(4)							
2242.20(10)				≤ 5.8			20.3(18)					
2260.23(14)								33(6)		≤ 20		
2318.67(11)				18(3)								
2449.75(16)					16(4)	19(2)						
2751.8	$\langle 6 \rangle$							x				
3039.8(4)											65(12)	
3116.82(16)	2 ⁺					11(2)	54(8)			24(4)		
3132.50(8)				2.7(10)	1.4(7)							
3267.60(12)				32(2)			8(2)	15(2)				
3293.2(3)										≤ 61		
3367.93(13)				97(6)			≤ 4.3					
3389.17(20)				16(4)			≤ 33					
3400.08(17)				14(3)				≤ 23				
3414.67(20)				≤ 30			12(3)					
3518.00(22)	$\langle 2^+ \rangle$						≤ 34					
3676.48(13)	2 ⁺ , 3 ⁻			9(2)						10(4)		
3689.6(3)							≤ 50					

Energy levels and branching ratios [99He21]. Part 4

 $^{162}_{68}\text{Er}$

E^*	J^π	Branching ratios in percentage										
[keV]		E_f^* : J_f^π :	1572.83 2 ⁻	1602.82 10 ⁺	1623.23 3 ⁻	1669.12 7 ⁺	1729.63 ⟨5 ⁻ ⟩	1761.24 ⟨6 ⁻ ⟩	1856.69	1864.89 2 ⁺	1872.65 8 ⁺	1931.29
1872.65(14)	8 ⁺			18(6)								
2061.35(16)	⟨1,2 ⁺ ⟩		7(2)									
2061.92(12)	⟨8 ⁻ ⟩							44(3)				
2133.77(11)	9 ⁺			4(2)		40(3)						
2165.11(14)	12 ⁺			100								
2318.67(11)					9.7(15)							
2346.58(12)	10 ⁺			13(1)							11.2(9)	
2368.19(15)	11 ⁻			100								
2429.48(13)	⟨10 ⁻ ⟩			95(8)								
2449.75(16)							16(3)					
2598.07(14)										≤4.2		
2656.32(13)	11 ⁺			9(1)								
2664.46(23)												≤20
3039.8(4)					28(5)							
3116.82(16)	2 ⁺		8(2)		≤20							
3267.60(12)									15(3)			
3676.48(13)	2 ⁺ ,3 ⁻					≤6						

Energy levels and branching ratios [99He21]. Part 5

 $^{162}_{68}\text{Er}$

E^* [keV]	J^π	Branching ratios in percentage										
		E_f^* : J_f^π :	1985.98 9 ⁻	2025.55 7	2061.92 $\langle 8^- \rangle$	2114.10 $\langle 0^+ \rangle$	2121.67	2133.77 9 ⁺	2165.11 12 ⁺	2242.20	2260.23	2318.67
2346.58(12)	10 ⁺							39(4)	37(3)			
2368.19(15)	11 ⁻	x										
2429.48(13)	$\langle 10^- \rangle$				5.3(6)							
2656.32(13)	11 ⁺							49(3)				
2745.72(17)	14 ⁺								100			
2817.75(15)	13 ⁻								69(5)			
3132.50(8)				4.8(10)		1.4(10)	14(3)			≤ 4.4	4.8(10)	
3267.60(12)											10(2)	
3367.93(13)				≤ 9.2								
3414.67(20)												88(9)
3518.00(22)	$\langle 2^+ \rangle$											19(10)
3689.6(3)										≤ 93		

Energy levels and branching ratios [99He21]. Part 6

¹⁶²₆₈Er

E^* [keV]	J^π	Branching ratios in percentage										
		E_f^* : J_f^π :	2346.58 10 ⁺	2368.19 11 ⁻	2429.48 ⟨10 ⁻ ⟩	2745.72 14 ⁺	3292.4 16 ⁺	3846.6 18 ⁺	6675 ⟨25 ⁻ ⟩	6742 ⟨26 ⁺ ⟩	7168 ⟨26 ⁻ ⟩	7516 ⟨27 ⁻ ⟩
2656.32(13)	11 ⁺		41(3)									
2817.75(15)	13 ⁻			31(3)								
2841.98(17)	⟨12 ⁻ ⟩				100							
2910.85(17)	12 ⁺		100									
3292.4(3)	16 ⁺					100						
3846.6(5)	18 ⁺						x					
4463.2	20 ⁺							x				
7516 ^b	⟨27 ⁻ ⟩								x			
7623 ^a	⟨28 ⁺ ⟩									x		
8014 ^c	⟨28 ⁻ ⟩										x	
8418 ^b	⟨29 ⁻ ⟩											x

Energy levels and branching ratios [99He21]. Part 7

¹⁶²₆₈Er

E^*	J^π	Branching ratios in percentage												
[keV]		$E^*_\text{f}:$ $J^\pi_\text{f}:$	7623 $\langle 28^+ \rangle$	8014 $\langle 28^- \rangle$	8418 $\langle 29^- \rangle$	8551 $\langle 30^+ \rangle$	8934 $\langle 30^- \rangle$	9367 $\langle 31^- \rangle$	9508 $\langle 32^+ \rangle$	10481 $\langle 34^+ \rangle$	11470 $\langle 36^+ \rangle$	12490 $\langle 38^+ \rangle$	13553 $\langle 40^+ \rangle$	14664 $\langle 42^+ \rangle$
8551 ^a	$\langle 30^+ \rangle$		x											
8934 ^c	$\langle 30^- \rangle$			x										
9367 ^b	$\langle 31^- \rangle$				x									
9508 ^a	$\langle 32^+ \rangle$					x								
9916 ^c	$\langle 32^- \rangle$						x							
10328 ^b	$\langle 33^- \rangle$							x						
10481 ^a	$\langle 34^+ \rangle$								x					
11470 ^a	$\langle 36^+ \rangle$									x				
12490 ^a	$\langle 38^+ \rangle$										x			
13553 ^a	$\langle 40^+ \rangle$											x		
14664 ^a	$\langle 42^+ \rangle$												x	
15832 ^a	$\langle 44^+ \rangle$													x

Energy levels and branching ratios [00Si01].

¹⁶³₆₈Er

E^*	$2J^\pi$	L	σ (d,p)	σ (d,t)	$T_{1/2}$ or	Ref.	Branching ratios in percentage					
[keV]			$\mu\text{b/sr}$	$\mu\text{b/sr}$	Γ_{cm}		E_{f}^* :	0.0	69.2	84.0	91.5	104
							$2J_{\text{f}}^\pi$:	5 [−]	5 ⁺	7 [−]	7 ⁺	3 [−]
0.0	5 [−]		11	20	75.0(4) m	69Tj01						
69.23(1)	5 ⁺		≈1	≈2	8.3(5) ns	69Tj01		100				
83.96(1)	7 [−]		19	≈7	0.92(8) ns	69Tj01		88.5(19)	12(3)			
91.55(1)	7 ⁺							92(6)	8.1(13)			

(continued)

¹⁶³Er

E^*	$2J^\pi$	L	σ (d,p)	σ (d,t)	$T_{1/2}$ or	Ref.	Branching ratios in percentage					
[keV]			$\mu\text{b/sr}$	$\mu\text{b/sr}$	Γ_{cm}		$E_f^*:$ $2J_f^\pi:$	0.0 5 ⁻	69.2 5 ⁺	84.0 7 ⁻	91.5 7 ⁺	104 3 ⁻
104.32(1)	3 ⁻		34	101	0.52(5) ns	69Tj01		97.0(18)	3.0(8)	0.0016(2)		
120.35(2)	9 ⁺		25	53		69Tj01			x		x	
164.42(1)	5 ⁻		≈ 1			69Tj01		30.0(11)		17.3(5)	4.9(2)	47.9(9)
189.7(2)	9 ⁻		19	18		69Tj01		83(41)		17(9)		
199.3(2)	11 ⁺										27	
247.0(2)	$\langle 13^+ \rangle$											
249.53(1)	7 ⁻		153	198		69Tj01		11.5(8)		9(2)		16.4(8)
319.7(2)	$\langle 11^- \rangle$									58(8)		
345.62(1)	1 ⁻		103	47		69Tj01		9.17(20)				90.8(24)
359.8(3)	$\langle 9^- \rangle$			5		69Tj01						
404.00(1)	3 ⁻		23	11		69Tj01		10.2(3)		3.0(1)		44.0(9)
411.9(2)	$\langle 15^+ \rangle$											
439.54(1)	5 ⁻		38			69Tj01		6.6(6)		8.6(2)		10.6(3)
445.5(6)	$\langle 11^- \rangle$			39	0.58(10) μs	69Tj01						
462.48(2)	3 ⁺		33	172		69Tj01			52.2(11)		1.7(2)	27.8(6)
464.0(2)	$\langle 17^+ \rangle$											
466.1(2)	13 ⁻											
496.2(3)	11 ⁻	6		7		69Tj01						
526.33(4)	5 ⁺			3		69Tj01					68(2)	21.7(14)
531.07(3)	3 ⁺								100			
540.56(3)	1 ⁺	35		207		69Tj01			94.5(22)			3.69(22)
553(3)				13		69Tj01						
573(3)	7 ⁻	64		34		69Tj01						
574.08(3)	3 ⁺	incl	incl						64(3)			24.4(10)
610(3)	$\langle 5^- \rangle$	7		15		69Tj01						
616.5(5)	$\langle 13^- \rangle$											
619.36(2)	3 ⁺			5		69Tj01		2.2(3)	53.0(14)		5.2(7)	29(2)
636(3)	9 ⁻	8				69Tj01						
639.6(2)	$\langle 15^- \rangle$											
655.3(3)	$\langle 13^- \rangle$											
664.86(3)	5 ⁺			26		69Tj01			27(2)		32(1)	14(4)
683.75(2)	$\langle 1^- \rangle$			11		69Tj01		21.8(14)				70.0(15)
698(3)	$\langle 7^- \rangle$	156		5		69Tj01						
717.39(3)	3 ⁻							10.2(9)		8.7(8)		40.1(10)
735.0(2)	$\langle 19^+ \rangle$											
735.38(2)	1 ⁺ , 3 ⁺			17		69Tj01			74.6(17)			
759(3)		6		18		69Tj01						
777.1(2)	$\langle 21^+ \rangle$											
779.63(4)	5 ⁻	11		5		69Tj01			8(1)	10(1)	16(2)	13(1)
≈ 805	$\langle 9^- \rangle$	≈ 2				69Tj01						
809.7(5)	$\langle 15^- \rangle$											
820.6(2)	$\langle 17^- \rangle$											
827(3)		10				69Tj01						
840.5(3)	$\langle 15^- \rangle$											
842(3)		28		4		69Tj01						

(continued)

 $^{163}_{68}\text{Er}$

E^*	$2J^\pi$	L	σ (d,p)	σ (d,t)	$T_{1/2}$ or	Ref.	Branching ratios in percentage					
[keV]			$\mu\text{b/sr}$	$\mu\text{b/sr}$	Γ_{cm}		E_f^* : $2J_f^\pi$:	0.0 5 ⁻	69.2 5 ⁺	84.0 7 ⁻	91.5 7 ⁺	104 3 ⁻
856.22(4)	$\langle 3 \rangle^-$		21	63		69Tj01						34(2)
877(3)	$\langle 5^- \rangle$		8	4		69Tj01						
963.29(8)	$\langle 3 \rangle^+$								33(17)			45(3)
973(3)	$\langle 7^- \rangle$			16		69Tj01						
979		16				69Tj01						
985.67(8)	5 ⁻			10		69Tj01			24(2)	12(3)	16(16)	6(1)
1023.9(5)	$\langle 17^- \rangle$											
1029(5)		3				69Tj01						
1032.3(2)	$\langle 19^- \rangle$											
1040.6(3)	$\langle 17^- \rangle$											
1059.75(4)	3 ⁻	5				69Tj01			5.4(15)			
1075(5)	$\langle 1^- \rangle$	5		4		69Tj01						
1077.3(3)	$\langle 17^+ \rangle$											
1098(5)	3 ⁻	143				69Tj01						
0.0+X	$\langle 25 \rangle$											
1163.1(2)	$\langle 23^+ \rangle$											
1164(5)		15				69Tj01						
1183(5)	5 ⁻	44				69Tj01						
1184.8(2)	$\langle 25^+ \rangle$											
1204(5)		7				69Tj01						
1214.3(3)	$\langle 17^+ \rangle$											
1242.8(2)	$\langle 21^- \rangle$											
1245(5)	7 ⁻	19				69Tj01						
1258.3(5)	$\langle 19^- \rangle$											
1270.6(3)	$\langle 19^- \rangle$											
1281.16(5)	1 ⁺ , 3 ⁺	24				69Tj01						66(4)
1298.0(5)	$\langle 15^- \rangle$											
1316(5)		31				69Tj01						
1344(5)		79				69Tj01						
1352.8(5)	$\langle 19^+ \rangle$											
1369.46(3)	3 ⁺								6.1(4)			61.2(11)
1395(5)	9 ⁻	5				69Tj01						
1433(5)		40				69Tj01						
1473.9(3)	$\langle 21^- \rangle$											
1476.3(2)	$\langle 21^+ \rangle$											
1479.8(2)	$\langle 23^- \rangle$											
1485(5)		52				69Tj01						
1510.3(5)	$\langle 17^- \rangle$											
1511.2(5)	$\langle 21^- \rangle$											
1514.61(3)	3 ⁺							2.3(3)				16.7(6)
1529(5)		40				69Tj01						
1529.6(3)	$\langle 21^+ \rangle$											
1538.79(3)	3 ⁺								17.0(3)		0.53(7)	46.79(11)
1562(5)		45				69Tj01						
1569.80(2)	3 ⁺							0.8(1)	3.8(2)			19.5(6)

(continued)

¹⁶³Er
68

E^*	$2J^\pi$	L	σ (d,p)	σ (d,t)	$T_{1/2}$ or	Ref.	Branching ratios in percentage					
[keV]			$\mu\text{b/sr}$	$\mu\text{b/sr}$	Γ_{cm}		E_f^* : $2J_f^\pi$:	0.0 5 ⁻	69.2 5 ⁺	84.0 7 ⁻	91.5 7 ⁺	104 3 ⁻
1593.03(4)	3 ⁺							1.6(5)				3.0(5)
1607.5(3)	$\langle 21^+ \rangle$											
1635(5)			22			69Tj01						
1653.15(6)	3 ⁺								36(1)		19(1)	
1671(5)			19			69Tj01						
1681.1(2)	$\langle 29^+ \rangle$											
1685.7(2)	$\langle 27^+ \rangle$											
1686(5)			37			69Tj01						
1717			12			69Tj01						
1717.2(4)	$\langle 23^+ \rangle$											
612.0+X	$\langle 29 \rangle$											
1719.2(2)	$\langle 25^- \rangle$											
1722.39(5)	3 ⁺										1.0(3)	1.2(5)
1759(5)		41				69Tj01						
1776.0(3)	$\langle 23^- \rangle$											
1781.4(5)	$\langle 23^- \rangle$											
1784(5)		25				69Tj01						
1801.56(4)	3 ⁺	23				69Tj01			1.25(6)			3.8(2)
1817(5)		21				69Tj01						
1826.49(3)	3 ⁺								1.2(1)	1.6(1)		10.0(4)
1845.2(5)	$\langle 19^- \rangle$											
1853.54(4)	3 ⁺	18				69Tj01		1.3(3)	18.3(8)			50(2)
1872.79(6)	$\langle 3 \rangle^+$	12				69Tj01			51(2)			7.2(4)
1900(5)		18				69Tj01						
1917.48(7)	$\langle 3 \rangle^+$	30				69Tj01			5(2)		26(1)	6.2(5)
1931.8(2)	$\langle 25^+ \rangle$											
1934.9(4)	$\langle 25^- \rangle$											
1938(5)		49				69Tj01						
1953.0(3)	$\langle 25^+ \rangle$											
1957.9(2)	$\langle 27^- \rangle$											
1959(5)		29				69Tj01						
1961.5(5)	$\langle 21^- \rangle$											
1971(5)		22				69Tj01						
1982.4(5)	$\langle 19^+ \rangle$											
1984(5)		13				69Tj01						
2019(5)		40				69Tj01						
2031(5)		38				69Tj01						
2040.68(8)	3 ⁺							3.8(6)	1.1(3)			43(1)
2044.1(3)	$\langle 25^+ \rangle$											
2052.50(6)	3 ⁻	51				69Tj01		1.39(13)	5.7(5)			5.8(5)
2066.9(5)	$\langle 25^- \rangle$											
2077(5)		102				69Tj01						
2096(5)		27				69Tj01						
2104.3(5)	$\langle 23^- \rangle$											
2113(5)		36				69Tj01						

(continued)

¹⁶³Er
68

E^*	$2J^\pi$	L	σ (d,p)	σ (d,t)	$T_{1/2}$ or	Ref.	Branching ratios in percentage					
[keV]			$\mu\text{b/sr}$	$\mu\text{b/sr}$	Γ_{cm}		E_{f}^* : $2J_{\text{f}}^\pi$:	0.0 5 ⁻	69.2 5 ⁺	84.0 7 ⁻	91.5 7 ⁺	104 3 ⁻
2120.3(6)	$\langle 19^+ \rangle$											
2122.21(11)	$1^{\langle - \rangle}, 3$											28(2)
2135(5)			37			69Tj01						
2144.2(5)	$\langle 21^+ \rangle$											
2148(5)			34			69Tj01						
2165(5)			29			69Tj01						
2167.6(3)	$\langle 27^+ \rangle$											
1076.5+X	$\langle 33 \rangle$											
2183(5)			34			69Tj01						
2200(5)			22			69Tj01						
2227.9(2)	$\langle 29^- \rangle$											
2243.21(19)	3 ⁻									10.3(15)		
2258.3(3)	$\langle 33^+ \rangle$											
2271.0(5)	$\langle 25^- \rangle$											
2274.5(10)	$1^{\langle - \rangle}, 3$							100				
2291.4(3)	$\langle 31^+ \rangle$											
2307.8(3)	$\langle 27^- \rangle$											
2314.0(5)	$\langle 21^+ \rangle$											
2331.6(5)	$\langle 23^+ \rangle$											
2368.1(5)	$\langle 27^- \rangle$											
2415.4(2)	$\langle 29^+ \rangle$											
2418.0(4)	$\langle 27^- \rangle$											
2431.7(3)	$\langle 29^- \rangle$											
2448.2(2)	$\langle 29^+ \rangle$											
2448.9(3)	$\langle 31^- \rangle$											
2460.9(5)	$\langle 27^- \rangle$											
2481.5(5)	$\langle 23 \rangle$											
2523.7(5)	$\langle 23^+ \rangle$											
2540.9(3)	$\langle 29^+ \rangle$											
2542.1(5)	$\langle 25^+ \rangle$											
2629.3(14)	$\langle 29^+ \rangle$											
2672.6(5)	$\langle 29^- \rangle$											
2682.7(6)	$\langle 29^- \rangle$											
2698.7(3)	$\langle 31^+ \rangle$											
1624.0+X	$\langle 37 \rangle$											
2741.8(3)	$\langle 33^- \rangle$											
2748.6(5)	$\langle 25^+ \rangle$											
2772.7(5)	$\langle 27^+ \rangle$											
2783.7(3)	$\langle 31^- \rangle$											
2890.5(3)	$\langle 31^- \rangle$											
2905.2(4)	$\langle 31^- \rangle$											
2908.7(3)	$\langle 37^+ \rangle$											
2912.5(2)	$\langle 31^+ \rangle$											
2928.3(3)	$\langle 33^+ \rangle$											
2930.8(3)	$\langle 33^- \rangle$											

(continued)

¹⁶³Er
68

E^*	$2J^\pi$	L	σ (d,p)	σ (d,t)	$T_{1/2}$ or Ref.		Branching ratios in percentage				
[keV]			$\mu\text{b/sr}$	$\mu\text{b/sr}$	Γ_{cm}	$E_{\text{f}}^*:$ $2J_{\text{f}}^\pi:$	0.0 5 ⁻	69.2 5 ⁺	84.0 7 ⁻	91.5 7 ⁺	104 3 ⁻
2965.0(3)	$\langle 35^- \rangle$										
2967.2(3)	$\langle 33^+ \rangle$										
2969.0(3)	$\langle 35^+ \rangle$										
2986.9(5)	$\langle 27^+ \rangle$										
3009.2(6)	$\langle 31^- \rangle$										
3022.1(5)	$\langle 29^+ \rangle$										
1927.9+X	$\langle 39 \rangle$										
3074.0(4)	$\langle 33^+ \rangle$										
3157.6(5)	$\langle 33^- \rangle$										
3214.4(10)	$\langle 33^+ \rangle$										
3236.2(5)	$\langle 29^+ \rangle$										
3274.5(3)	$\langle 37^- \rangle$										
3288.7(5)	$\langle 31^+ \rangle$										
3299.1(3)	$\langle 35^+ \rangle$										
3313.5(3)	$\langle 35^- \rangle$										
3339.1(7)	$\langle 33^- \rangle$										
2236.0+X	$\langle 41 \rangle$										
3428.5(5)	$\langle 35^- \rangle$										
3430.2(3)	$\langle 37^+ \rangle$										
3434.6(3)	$\langle 35^- \rangle$										
3469.4(4)	$\langle 35^+ \rangle$										
3494.5(5)	$\langle 31^+ \rangle$										
3511.9(4)	$\langle 37^- \rangle$										
3530.4(3)	$\langle 37^+ \rangle$										
3530.6(3)	$\langle 39^- \rangle$										
3570.7(5)	$\langle 33^+ \rangle$										
3624.2(3)	$\langle 41^+ \rangle$										
2565.4+X	$\langle 43 \rangle$										
3680.5(4)	$\langle 37^+ \rangle$										
3707.8(4)	$\langle 39^+ \rangle$										
3717.8(5)	$\langle 37^- \rangle$										
3758.3(5)	$\langle 33^+ \rangle$										
3809.6(9)	$\langle 37^+ \rangle$										
3858.2(4)	$\langle 41^- \rangle$										
3867.1(5)	$\langle 35^+ \rangle$										
3893.0(4)	$\langle 39^- \rangle$										
3952.0(3)	$\langle 39^+ \rangle$										
3968.7(3)	$\langle 41^+ \rangle$										
2915.9+X	$\langle 45 \rangle$										
4023.7(5)	$\langle 39^- \rangle$										
4024.8(5)	$\langle 35^+ \rangle$										
4036.9(4)	$\langle 39^- \rangle$										
4067.6(4)	$\langle 39^+ \rangle$										
4070.1(8)	$\langle 37^- \rangle$										
4149.9(4)	$\langle 41^+ \rangle$										

(continued)

¹⁶³Er
68

E^*	$2J^\pi$	L	σ (d,p)	σ (d,t)	$T_{1/2}$ or Ref.	E_f^* :	Branching ratios in percentage				
[keV]			$\mu\text{b/sr}$	$\mu\text{b/sr}$	Γ_{cm}	$2J_f^\pi$:	0.0	69.2	84.0	91.5	104
							5 ⁻	5 ⁺	7 ⁻	7 ⁺	3 ⁻
4156.9(4)	$\langle 41^- \rangle$										
4159.3(3)	$\langle 43^- \rangle$										
4175.9(5)	$\langle 37^+ \rangle$										
4292.5(5)	$\langle 37^+ \rangle$										
4336.0(5)	$\langle 41^+ \rangle$										
4346.5(5)	$\langle 41^- \rangle$										
3283.8+X	$\langle 47 \rangle$										
4395.1(4)	$\langle 45^+ \rangle$										
4438.6(8)	$\langle 41^+ \rangle$										
4494.4(4)	$\langle 43^+ \rangle$										
4496.0(5)	$\langle 39^+ \rangle$										
4505.3(4)	$\langle 45^- \rangle$										
4529.5(4)	$\langle 43^- \rangle$										
4564.3(5)	$\langle 39^+ \rangle$										
4588.5(3)	$\langle 45^+ \rangle$										
4643.1(4)	$\langle 43^+ \rangle$										
4683.5(5)	$\langle 43^- \rangle$										
4686.1(4)	$\langle 43^- \rangle$										
4700.1(4)	$\langle 43^+ \rangle$										
3671.4+X	$\langle 49 \rangle$										
4821.4(5)	$\langle 41^+ \rangle$										
4825.1(4)	$\langle 45^+ \rangle$										
4850.6(5)	$\langle 41^+ \rangle$										
4856.4(4)	$\langle 47^- \rangle$										
4864.0(5)	$\langle 45^- \rangle$										
5017.1(5)	$\langle 45^+ \rangle$										
5037.9(5)	$\langle 45^- \rangle$										
5089.0(4)	$\langle 45^+ \rangle$										
5123.9(5)	$\langle 43^+ \rangle$										
4075.6+X	$\langle 51 \rangle$										
5182.8(5)	$\langle 43^+ \rangle$										
5205.2(4)	$\langle 49^+ \rangle$										
5218.9(5)	$\langle 49^- \rangle$										
5228.3(4)	$\langle 47^- \rangle$										
5305.0(4)	$\langle 47^+ \rangle$										
5312.6(4)	$\langle 49^+ \rangle$										
5372.2(4)	$\langle 47^+ \rangle$										
5387.2(4)	$\langle 47^- \rangle$										
5403.5(5)	$\langle 47^- \rangle$										
5407.3(4)	$\langle 47^+ \rangle$										
5427.7(5)	$\langle 45^+ \rangle$										
5537.2(5)	$\langle 45^+ \rangle$										
5553.3(4)	$\langle 49^+ \rangle$										
4495.4+X	$\langle 53 \rangle$										
5622.3(4)	$\langle 51^- \rangle$										

(continued)

¹⁶³Er
68

E^*	$2J^\pi$	L	σ (d,p)	σ (d,t)	$T_{1/2}$ or Ref.	E_f^* :	Branching ratios in percentage				
[keV]			$\mu\text{b/sr}$	$\mu\text{b/sr}$	Γ_{cm}	$2J_f^\pi$:	0.0	69.2	84.0	91.5	104
							5 ⁻	5 ⁺	7 ⁻	7 ⁺	3 ⁻
5633.4(5)	$\langle 49^- \rangle$										
5738.0(5)	$\langle 49^+ \rangle$										
5744.9(5)	$\langle 47^+ \rangle$										
5783.6(5)	$\langle 49^- \rangle$										
5802.7(5)	$\langle 49^+ \rangle$										
5905.6(6)	$\langle 47^+ \rangle$										
5988.2(5)	$\langle 51^- \rangle$										
5999.8(5)	$\langle 53^- \rangle$										
6034.7(4)	$\langle 53^+ \rangle$										
4930.7+X	$\langle 55 \rangle$										
6077.0(5)	$\langle 49^+ \rangle$										
6108.5(4)	$\langle 51^+ \rangle$										
6144.7(5)	$\langle 51^- \rangle$										
6146.4(4)	$\langle 51^+ \rangle$										
6158.2(4)	$\langle 53^+ \rangle$										
6174.1(5)	$\langle 51^- \rangle$										
6188.9(5)	$\langle 51^+ \rangle$										
6287.8(6)	$\langle 49^+ \rangle$										
6336.6(5)	$\langle 53^+ \rangle$										
6426.6(5)	$\langle 51^+ \rangle$										
6455.9(5)	$\langle 55^- \rangle$										
6463.2(6)	$\langle 53^- \rangle$										
5393.7+X	$\langle 57 \rangle$										
6520.8(5)	$\langle 53^+ \rangle$										
6562.4(5)	$\langle 53^+ \rangle$										
6572.6(6)	$\langle 53^- \rangle$										
6682.4(6)	$\langle 51^+ \rangle$										
6792.0(6)	$\langle 53^+ \rangle$										
6807.3(5)	$\langle 55^- \rangle$										
6848.0(6)	$\langle 57^- \rangle$										
6914.3(5)	$\langle 57^+ \rangle$										
6935.7(5)	$\langle 55^- \rangle$										
6947.0(6)	$\langle 55^+ \rangle$										
5866.5+X	$\langle 59 \rangle$										
6977.5(5)	$\langle 55^+ \rangle$										
6988.6(6)	$\langle 55^- \rangle$										
7020.8(6)	$\langle 55^+ \rangle$										
7088.2(5)	$\langle 57^+ \rangle$										
7090.4(8)	$\langle 53^+ \rangle$										
7173.5(6)	$\langle 55^+ \rangle$										
7176.0(5)	$\langle 57^+ \rangle$										
7322.9(5)	$\langle 57^+ \rangle$										
7348.8(6)	$\langle 57^+ \rangle$										
7351.8(7)	$\langle 57^- \rangle$										
7356.5(5)	$\langle 59^- \rangle$										

(continued)

¹⁶³Er
68

E^*	$2J^\pi$	L	σ (d,p)	σ (d,t)	$T_{1/2}$ or Ref.	E_f^* :	Branching ratios in percentage				
[keV]			$\mu\text{b/sr}$	$\mu\text{b/sr}$	Γ_{cm}	$2J_f^\pi$:	0.0	69.2	84.0	91.5	104
							5 ⁻	5 ⁺	7 ⁻	7 ⁺	3 ⁻
7413.5(8)	$\langle 57^- \rangle$										
6357.7+X	$\langle 61 \rangle$										
7518.0(8)	$\langle 55^+ \rangle$										
7573.9(6)	$\langle 57^+ \rangle$										
7681.2(5)	$\langle 59^- \rangle$										
7733.7(5)	$\langle 59^- \rangle$										
7763.4(6)	$\langle 61^- \rangle$										
7831.9(7)	$\langle 59^- \rangle$										
7845.5(9)	$\langle 59^+ \rangle$										
7856.7(6)	$\langle 61^+ \rangle$										
7954.6(9)	$\langle 57^+ \rangle$										
7988.3(6)	$\langle 59^+ \rangle$										
8067.7(6)	$\langle 61^+ \rangle$										
8080.2(6)	$\langle 61^+ \rangle$										
8127.9(5)	$\langle 61^+ \rangle$										
8195.9(7)	$\langle 61^+ \rangle$										
8277.9(8)	$\langle 61^- \rangle$										
8306.3(9)	$\langle 61^- \rangle$										
8322.9(5)	$\langle 63^- \rangle$										
8420.1(6)	$\langle 61^+ \rangle$										
8551.7(5)	$\langle 63^- \rangle$										
8636.8(6)	$\langle 63^- \rangle$										
8697.8(9)	$\langle 63^- \rangle$										
8745.1(7)	$\langle 65^- \rangle$										
8794.5(11)	$\langle 63^+ \rangle$										
8847.7(6)	$\langle 65^+ \rangle$										
8866.8(7)	$\langle 63^+ \rangle$										
8986.9(6)	$\langle 65^+ \rangle$										
9002.2(6)	$\langle 65^+ \rangle$										
9106.0(8)	$\langle 65^+ \rangle$										
9128.2(8)	$\langle 65^+ \rangle$										
9212.9(9)	$\langle 65^- \rangle$										
9330.3(8)	$\langle 65^+ \rangle$										
9352.3(6)	$\langle 67^- \rangle$										
9440.6(5)	$\langle 67^- \rangle$										
9607.8(10)	$\langle 67^- \rangle$										
9630.0(7)	$\langle 67^- \rangle$										
9779.6(7)	$\langle 69^- \rangle$										
9806.5(8)	$\langle 67^+ \rangle$										
9816.1(7)	$\langle 69^- \rangle$										
9845.9(10)	$\langle 69^+ \rangle$										
9909.4(6)	$\langle 69^+ \rangle$										
10076.3(9)	$\langle 69^+ \rangle$										
10183.2(11)	$\langle 69^- \rangle$										
10229.2(9)	$\langle 69^+ \rangle$										

(continued)

¹⁶³Er
68

E^*	$2J^\pi$	L	σ (d,p)	σ (d,t)	$T_{1/2}$ or	Ref.	Branching ratios in percentage					
[keV]			$\mu\text{b/sr}$	$\mu\text{b/sr}$	Γ_{cm}		E_f^* : $2J_f^\pi$:	0.0 5 ⁻	69.2 5 ⁺	84.0 7 ⁻	91.5 7 ⁺	104 3 ⁻
10299.9(10)	$\langle 69^+ \rangle$											
10380.0(6)	$\langle 71^- \rangle$											
10440.1(6)	$\langle 71^- \rangle$											
10569.8(12)	$\langle 71^- \rangle$											
10732.0(8)	$\langle 73^- \rangle$											
10808.7(12)	$\langle 71^+ \rangle$											
10824.9(13)	$\langle 73^+ \rangle$											
10903.6(8)	$\langle 73^- \rangle$											
10909.0(7)	$\langle 73^+ \rangle$											
11325.0(12)	$\langle 73^+ \rangle$											
11377.5(8)	$\langle 75^- \rangle$											
11548.4(6)	$\langle 75^- \rangle$											
11713.7(11)	$\langle 77^- \rangle$											
11830.9(17)	$\langle 77^+ \rangle$											
11870.0(13)	$\langle 75^+ \rangle$											
12049.6(9)	$\langle 77^- \rangle$											
12699.4(8)	$\langle 79^- \rangle$											
12758.7(12)	$\langle 81^- \rangle$											
12881.5(19)	$\langle 81^+ \rangle$											
13864.7(14)	$\langle 85^- \rangle$											
			69Tj01	69Tj01		Ref.						

Additional data on this isotope can be found in [94Br09, 93Br10, 84Pe03].

Cross sections σ (d,p), σ (d,t) [69Tj01] were measured at 90°; see data for 60° – 125° in [69Tj01].

Assignment of 22 bands and nomenclature of 18 single quasiparticle orbitals can be found in [00Si01].

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

Energy levels and branching ratios [00Si01]. Part 2

¹⁶³Er
68

E^*	$2J^\pi$	Branching ratios in percentage										
[keV]		E_f^* : $2J_f^\pi$:	120 9 ⁺	164 5 ⁻	189.7 9 ⁻	199.3 11 ⁺	247.0 $\langle 13^+ \rangle$	249.53 7 ⁻	319.7 $\langle 11^- \rangle$	345.62 1 ⁻	359.8 $\langle 9^- \rangle$	404.00 3 ⁻
199.3(2)	11 ⁺		73									
247.0(2)	$\langle 13^+ \rangle$		100									
249.53(1)	7 ⁻		12(2)	51(2)								
319.7(2)	$\langle 11^- \rangle$		19(2)		23(3)							
359.8(3)	$\langle 9^- \rangle$			61(23)				39(18)				
404.00(1)	3 ⁻			43(2)						0.1		
411.9(2)	$\langle 15^+ \rangle$					71(4)	29(1)					
439.54(1)	5 ⁻			48(1)				25.6(5)		0.4		x
445.5(6)	$\langle 11^- \rangle$		≈ 37		21	21	13		8			
462.48(2)	3 ⁺			18.2(6)								

(continued)

 $^{163}_{68}\text{Er}$

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		$E_f^*:$ $2J_f^\pi:$	120 9 ⁺	164 5 ⁻	189.7 9 ⁻	199.3 11 ⁺	247.0 ⟨13 ⁺ ⟩	249.53 7 ⁻	319.7 ⟨11 ⁻ ⟩	345.62 1 ⁻	359.8 ⟨9 ⁻ ⟩	404.00 3 ⁻
464.0(2)	⟨17 ⁺ ⟩						100					
466.1(2)	13 ⁻				83(3)	11.7(6)			5.7(3)			
496.2(3)	11 ⁻							53(13)			47(10)	
526.33(4)	5 ⁺			10.1(10)								
574.08(3)	3 ⁺			8.4(6)				2.8(3)				
619.36(2)	3 ⁺			11.0(4)								
639.6(2)	⟨15 ⁻ ⟩						12(3)		79(7)			
655.3(3)	⟨13 ⁻ ⟩										81(9)	
664.86(3)	5 ⁺			16(3)				10(1)				
683.75(2)	⟨1 ⁻ ⟩			2.3(5)						5.9(4)		
717.39(3)	3 ⁻			41(2)								
735.38(2)	1 ⁺ , 3 ⁺									11.1(7)		8.4(3)
779.63(4)	5 ⁻			26(2)				26(3)				
856.22(4)	⟨3 ⁻ ⟩			55(2)				10.9(7)				
963.29(8)	⟨3 ⁺ ⟩			22(1)								
985.67(8)	5 ⁻			8(2)				13(2)		9(1)		
1059.75(4)	3 ⁻									7.0(7)		73.3(18)
1369.46(3)	3 ⁺			28.9(6)								
1514.61(3)	3 ⁺			15.5(6)						16(2)		
1538.79(3)	3 ⁺			25.1(7)						0.94(9)		2.0(2)
1569.80(2)	3 ⁺			7.8(3)						21.2(6)		1.4(2)
1593.03(4)	3 ⁺									35.6(9)		3.1(8)
1653.15(6)	3 ⁺									16(1)		
1722.39(5)	3 ⁺									11.6(12)		52.7(11)
1801.56(4)	3 ⁺			0.7(2)						28.1(9)		54.4(11)
1826.49(3)	3 ⁺			19(1)						12(1)		2.1(3)
1853.54(4)	3 ⁺			17.8(11)								
1872.79(6)	⟨3 ⁺ ⟩			5.3(3)								
1917.48(7)	⟨3 ⁺ ⟩			20(2)								
2040.68(8)	3 ⁺			26(3)								
2052.50(6)	3 ⁻			1.8(10)								5(2)
2122.21(11)	1 ^{⟨-⟩} , 3			33(5)								
2243.21(19)	3 ⁻			9.5(12)								

Energy levels and branching ratios [00Si01]. Part 3

 $^{163}_{68}\text{Er}$

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		$E_f^*:$ $2J_f^\pi:$	411.9 ⟨15 ⁺ ⟩	439.54 5 ⁻	445.5 ⟨11 ⁻ ⟩	462.48 3 ⁺	464.0 ⟨17 ⁺ ⟩	466.1 13 ⁻	496.2 11 ⁻	526.33 5 ⁺	540.56 1 ⁺	574.08 3 ⁺
540.56(3)	1 ⁺					1.8(3)						
616.5(5)	⟨13 ⁻ ⟩				100							
619.36(2)	3 ⁺										x	

(continued)

 $^{163}_{68}\text{Er}$

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		$E_f^*:$ $2J_f^\pi:$	411.9 $\langle 15^+ \rangle$	439.54 5^-	445.5 $\langle 11^- \rangle$	462.48 3^+	464.0 $\langle 17^+ \rangle$	466.1 13^-	496.2 11^-	526.33 5^+	540.56 1^+	574.08 3^+
639.6(2)	$\langle 15^- \rangle$							9(2)				
655.3(3)	$\langle 13^- \rangle$								19(2)			
735.0(2)	$\langle 19^+ \rangle$		83(2)				16.7(6)					
735.38(2)	$1^+, 3^+$											5.8(4)
777.1(2)	$\langle 21^+ \rangle$					100						
809.7(5)	$\langle 15^- \rangle$				25(2)							
820.6(2)	$\langle 17^- \rangle$		18.4(9)					79(3)				
840.5(3)	$\langle 15^- \rangle$								67(5)			
985.67(8)	5^-											12(1)
1032.3(2)	$\langle 19^- \rangle$						21(3)					
1077.3(3)	$\langle 17^+ \rangle$		37(10)				29(8)					
1214.3(3)	$\langle 17^+ \rangle$		50(25)				50(25)					
1298.0(5)	$\langle 15^- \rangle$				75(11)							
1352.8(5)	$\langle 19^+ \rangle$					100						
1369.46(3)	3^+									1.0(2)	0.69(11)	
1514.61(3)	3^+			29(1)								18.4(6)
1529.6(3)	$\langle 21^+ \rangle$					6(2)						
1538.79(3)	3^+			3.1(2)							0.51(10)	
1569.80(2)	3^+			23(1)						1.4(2)	1.5(2)	2.0(2)
1593.03(4)	3^+			41(1)							4.1(6)	
1653.15(6)	3^+			12(2)								
1722.39(5)	3^+										5.2(7)	
1801.56(4)	3^+					0.7(2)					1.8(2)	
1826.49(3)	3^+			20.8(5)		1.2(4)					6.4(3)	
1872.79(6)	$\langle 3^+ \rangle$									2.6(5)	5.1(9)	
2040.68(8)	3^+					6.1(6)						
2052.50(6)	3^-									65(3)		

Energy levels and branching ratios [00Si01]. Part 4

 $^{163}_{68}\text{Er}$

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		$E_f^*:$ $2J_f^\pi:$	616.5 $\langle 13^- \rangle$	619.36 3^+	639.6 $\langle 15^- \rangle$	655.3 $\langle 13^- \rangle$	664.86 5^+	683.75 $\langle 1^- \rangle$	717.39 3^-	735.0 $\langle 19^+ \rangle$	735.38 $1^+, 3^+$	777.1 $\langle 21^+ \rangle$
809.7(5)	$\langle 15^- \rangle$		75(3)									
820.6(2)	$\langle 17^- \rangle$				2.2(2)							
840.5(3)	$\langle 15^- \rangle$					33(3)						
1023.9(5)	$\langle 17^- \rangle$		29(2)									
1032.3(2)	$\langle 19^- \rangle$				69(4)							
1040.6(3)	$\langle 17^- \rangle$					82(6)						
1059.75(4)	3^-							14.3(12)				
1077.3(3)	$\langle 17^+ \rangle$										33(6)	
1163.1(2)	$\langle 23^+ \rangle$									88(3)		11.9(4)

(continued)

¹⁶³Er
68

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		$E_f^*:$ $2J_f^\pi:$	616.5 $\langle 13^- \rangle$	619.36 3^+	639.6 $\langle 15^- \rangle$	655.3 $\langle 13^- \rangle$	664.86 5^+	683.75 $\langle 1 \rangle^-$	717.39 3^-	735.0 $\langle 19^+ \rangle$	735.38 $1^+, 3^+$	777.1 $\langle 21^+ \rangle$
1184.8(2)	$\langle 25^+ \rangle$											100
1242.8(2)	$\langle 21^- \rangle$									14.9(7)		
1281.16(5)	$1^+, 3^+$							34(2)				
1298.0(5)	$\langle 15^- \rangle$		25(4)									
1369.46(3)	3^+			0.7(2)								
1476.3(2)	$\langle 21^+ \rangle$									20(3)		14(3)
1479.8(2)	$\langle 23^- \rangle$											42(4)
1510.3(5)	$\langle 17^- \rangle$		48(3)									
1529.6(3)	$\langle 21^+ \rangle$										30(4)	23(4)
1538.79(3)	3^+						0.51(8)				1.57(6)	
1569.80(2)	3^+			2.0(1)			2.2(3)	3.8(2)			5.2(2)	
1593.03(4)	3^+						5.4(8)					
1607.5(3)	$\langle 21^+ \rangle$									100		
1653.15(6)	3^+			12(2)								
1717.2(4)	$\langle 23^+ \rangle$											69(31)
1722.39(5)	3^+							4.3(5)	6.6(9)	8.4(7)		
1801.56(4)	3^+									1.52(13)		
1826.49(3)	3^+							15.5(5)			6(1)	
1872.79(6)	$\langle 3 \rangle^+$							3.1(8)			14.7(8)	
1917.48(7)	$\langle 3 \rangle^+$						27(1)					
1931.8(2)	$\langle 25^+ \rangle$											4(2)
1953.0(3)	$\langle 25^+ \rangle$											4(1)
2040.68(8)	3^+								11(3)			

Energy levels and branching ratios [00Si01]. Part 5

¹⁶³Er
68

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		$E_f^*:$ $2J_f^\pi:$	779.63 5^-	809.7 $\langle 15^- \rangle$	820.6 $\langle 17^- \rangle$	840.5 $\langle 15^- \rangle$	856.22 $\langle 3 \rangle^-$	963.29 $\langle 3 \rangle^+$	985.67 5^-	1023.9 $\langle 17^- \rangle$	1032.3 $\langle 19^- \rangle$	1040.6 $\langle 17^- \rangle$
1023.9(5)	$\langle 17^- \rangle$			71(4)								
1032.3(2)	$\langle 19^- \rangle$				10(1)							
1040.6(3)	$\langle 17^- \rangle$					18(2)						
1242.8(2)	$\langle 21^- \rangle$				84(3)						0.63(21)	
1258.3(5)	$\langle 19^- \rangle$			61(3)						39(3)		
1270.6(3)	$\langle 19^- \rangle$					79(5)						20.5(12)
1369.46(3)	3^+	0.81(13)						0.61(13)				
1473.9(3)	$\langle 21^- \rangle$											77(5)
1479.8(2)	$\langle 23^- \rangle$										58(4)	
1510.3(5)	$\langle 17^- \rangle$			42(3)								
1511.2(5)	$\langle 21^- \rangle$									65(4)		
1514.61(3)	3^+	2.4(2)										
1538.79(3)	3^+	1.37(8)						0.27(8)				

(continued)

¹⁶³Er
68

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E_f^* : $2J_f^\pi$:	779.63 5 ⁻	809.7 ⟨15 ⁻ ⟩	820.6 ⟨17 ⁻ ⟩	840.5 ⟨15 ⁻ ⟩	856.22 ⟨3 ⁻ ⟩	963.29 ⟨3 ⁺ ⟩	985.67 5 ⁻	1023.9 ⟨17 ⁻ ⟩	1032.3 ⟨19 ⁻ ⟩	1040.6 ⟨17 ⁻ ⟩
1569.80(2)	3 ⁺		3.1(2)						0.9(1)			
1593.03(4)	3 ⁺		5.9(9)									
1653.15(6)	3 ⁺						6(1)					
1801.56(4)	3 ⁺						6.7(2)	0.4(2)				
1826.49(3)	3 ⁺		2.5(3)					1.0(4)				
1845.2(5)	⟨19 ⁻ ⟩			9(1)						17(1)		
1872.79(6)	⟨3 ⁺ ⟩							8(2)				
2052.50(6)	3 ⁻		16(3)									

Energy levels and branching ratios [00Si01]. Part 6

¹⁶³Er
68

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E_f^* : $2J_f^\pi$:	1059.75 3 ⁻	1077.3 ⟨17 ⁺ ⟩	0.0+X ⟨25⟩	1163.1 ⟨23 ⁺ ⟩	1184.8 ⟨25 ⁺ ⟩	1214.3 ⟨17 ⁺ ⟩	1242.8 ⟨21 ⁻ ⟩	1258.3 ⟨19 ⁻ ⟩	1270.6 ⟨19 ⁻ ⟩	1281.16 1 ⁺ , 3 ⁺
1473.9(3)	⟨21 ⁻ ⟩										23(2)	
1476.3(2)	⟨21 ⁺ ⟩			16(2)		50(4)						
1511.2(5)	⟨21 ⁻ ⟩									35(3)		
1529.6(3)	⟨21 ⁺ ⟩							41(12)				
1538.79(3)	3 ⁺	0.29(9)										
1681.1(2)	⟨29 ⁺ ⟩						100					
1685.7(2)	⟨27 ⁺ ⟩					87(3)	13.5(6)					
612.0+X	⟨29⟩				100							
1719.2(2)	⟨25 ⁻ ⟩					23.3(8)			77(2)			
1722.39(5)	3 ⁺	9.1(11)										
1776.0(3)	⟨23 ⁻ ⟩										94(5)	
1781.4(5)	⟨23 ⁻ ⟩									61(6)		
1931.8(2)	⟨25 ⁺ ⟩					25(3)	29(3)					
1953.0(3)	⟨25 ⁺ ⟩					36(4)	15(4)					
1957.9(2)	⟨27 ⁻ ⟩						70(4)					
2044.1(3)	⟨25 ⁺ ⟩					67(7)						
2167.6(3)	⟨27 ⁺ ⟩						94(12)					
2243.21(19)	3 ⁻											80(15)
2307.8(3)	⟨27 ⁻ ⟩						53(3)					
2415.4(2)	⟨29 ⁺ ⟩						7(3)					
2418.0(4)	⟨27 ⁻ ⟩						67(33)					
2448.2(2)	⟨29 ⁺ ⟩						1.6(8)					
2481.5(5)	⟨23⟩					44(13)	56(13)					

Energy levels and branching ratios [00Si01]. Part 7

¹⁶³Er
68

E^*	$2J^\pi$	Branching ratios in percentage										
[keV]		E_f^* : $2J_f^\pi$:	1298.0 $\langle 15^- \rangle$	1352.8 $\langle 19^+ \rangle$	1369.46 3^+	1473.9 $\langle 21^- \rangle$	1476.3 $\langle 21^+ \rangle$	1479.8 $\langle 23^- \rangle$	1510.3 $\langle 17^- \rangle$	1511.2 $\langle 21^- \rangle$	1529.6 $\langle 21^+ \rangle$	1538.79 3^+
1510.3(5)	$\langle 17^- \rangle$		10(5)									
1717.2(4)	$\langle 23^+ \rangle$			31(12)								
1776.0(3)	$\langle 23^- \rangle$					6.0(12)						
1781.4(5)	$\langle 23^- \rangle$									39(4)		
1801.56(4)	3^+				0.7(2)							
1826.49(3)	3^+				0.15(1)							
1845.2(5)	$\langle 19^- \rangle$		32(2)						42(2)			
1853.54(4)	3^+				12.7(13)							
1917.48(7)	$\langle 3 \rangle^+$				12(2)							5(1)
1931.8(2)	$\langle 25^+ \rangle$						24(3)				18(2)	
1934.9(4)	$\langle 25^- \rangle$					100						
1953.0(3)	$\langle 25^+ \rangle$						29(3)				17(2)	
1957.9(2)	$\langle 27^- \rangle$							30(1)				
2066.9(5)	$\langle 25^- \rangle$									71(4)		
2418.0(4)	$\langle 27^- \rangle$							33(13)				

Energy levels and branching ratios [00Si01]. Part 8

¹⁶³Er
68

E^*	$2J^\pi$	Branching ratios in percentage										
[keV]		E_f^* : $2J_f^\pi$:	1569.80 3^+	1593.03 3^+	1607.5 $\langle 21^+ \rangle$	1681.1 $\langle 29^+ \rangle$	1685.7 $\langle 27^+ \rangle$	1686	1717.2 $\langle 23^+ \rangle$	612.0+X $\langle 29 \rangle$	1719.2 $\langle 25^- \rangle$	1722.39 3^+
1872.79(6)	$\langle 3 \rangle^+$		2.8(3)									
2040.68(8)	3^+			9(2)								
2044.1(3)	$\langle 25^+ \rangle$				33(4)							
2122.21(11)	$1^{\langle - \rangle}, 3$											39(7)
2167.6(3)	$\langle 27^+ \rangle$								5.8(29)			
1076.5+X	$\langle 33 \rangle$									100		
2227.9(2)	$\langle 29^- \rangle$						19(1)				81(2)	
2258.3(3)	$\langle 33^+ \rangle$					100						
2291.4(3)	$\langle 31^+ \rangle$					11.2(6)	89(3)					
2415.4(2)	$\langle 29^+ \rangle$					15(2)		21(2)				
2431.7(3)	$\langle 29^- \rangle$							49(3)			25(1)	
2448.2(2)	$\langle 29^+ \rangle$					8(2)		28(2)				
2448.9(3)	$\langle 31^- \rangle$					63(3)						
2540.9(3)	$\langle 29^+ \rangle$					55(3)						
2698.7(3)	$\langle 31^+ \rangle$					59(4)						
2783.7(3)	$\langle 31^- \rangle$					42(3)						
2912.5(2)	$\langle 31^+ \rangle$					50(14)	50(14)					
2928.3(3)	$\langle 33^+ \rangle$					6(2)						
2967.2(3)	$\langle 33^+ \rangle$					1.8(9)						

Energy levels and branching ratios [00Si01]. Part 9

¹⁶³Er₆₈

E^*	$2J^\pi$	Branching ratios in percentage										
[keV]		E_f^* : $2J_f^\pi$:	1776.0 ⟨23 ⁻ ⟩	1781.4 ⟨23 ⁻ ⟩	1845.2 ⟨19 ⁻ ⟩	1931.8 ⟨25 ⁺ ⟩	1934.9 ⟨25 ⁻ ⟩	1953.0 ⟨25 ⁺ ⟩	1957.9 ⟨27 ⁻ ⟩	1961.5 ⟨21 ⁻ ⟩	1982.4 ⟨19 ⁺ ⟩	2044.1 ⟨25 ⁺ ⟩
1961.5(5)	⟨21 ⁻ ⟩				100							
1982.4(5)	⟨19 ⁺ ⟩				100							
2066.9(5)	⟨25 ⁻ ⟩			29(1)								
2104.3(5)	⟨23 ⁻ ⟩				9.8(7)					90(4)		
2144.2(5)	⟨21 ⁺ ⟩									44(3)	56(3)	
2271.0(5)	⟨25 ⁻ ⟩									11.5(6)		
2307.8(3)	⟨27 ⁻ ⟩	47(3)										
2331.6(5)	⟨23 ⁺ ⟩										8.3(9)	
2368.1(5)	⟨27 ⁻ ⟩			78(5)								
2415.4(2)	⟨29 ⁺ ⟩					57(3)						
2431.7(3)	⟨29 ⁻ ⟩						25(1)					
2448.2(2)	⟨29 ⁺ ⟩					9(2)		53(3)				
2448.9(3)	⟨31 ⁻ ⟩								37(1)			
2540.9(3)	⟨29 ⁺ ⟩											45(3)
2783.7(3)	⟨31 ⁻ ⟩								34(3)			
2890.5(3)	⟨31 ⁻ ⟩								75(7)			

Energy levels and branching ratios [00Si01]. Part 10

¹⁶³Er₆₈

E^*	$2J^\pi$	Branching ratios in percentage										
[keV]		E_f^* : $2J_f^\pi$:	2066.9 $\langle 25^- \rangle$	2104.3 $\langle 23^- \rangle$	2120.3 $\langle 19^+ \rangle$	2144.2 $\langle 21^+ \rangle$	2167.6 $\langle 27^+ \rangle$	1077+X $\langle 33 \rangle$	2227.9 $\langle 29^- \rangle$	2258.3 $\langle 33^+ \rangle$	2271.0 $\langle 25^- \rangle$	2291.4 $\langle 31^+ \rangle$
2271.0(5)	$\langle 25^- \rangle$			88(4)								
2314.0(5)	$\langle 21^+ \rangle$				100							
2331.6(5)	$\langle 23^+ \rangle$			32(2)		60(3)						
2368.1(5)	$\langle 27^- \rangle$	22(2)										
2460.9(5)	$\langle 27^- \rangle$			18(2)							82(3)	
2523.7(5)	$\langle 23^+ \rangle$				20(20)							
2542.1(5)	$\langle 25^+ \rangle$					20(1)					33(2)	
2672.6(5)	$\langle 29^- \rangle$	4.7(12)									21(1)	
2682.7(6)	$\langle 29^- \rangle$	72(6)										
2698.7(3)	$\langle 31^+ \rangle$						41(4)					
1624.0+X	$\langle 37 \rangle$							100				
2741.8(3)	$\langle 33^- \rangle$								82(2)			18(1)
2908.7(3)	$\langle 37^+ \rangle$									100		
2930.8(3)	$\langle 33^- \rangle$								35(2)			
2965.0(3)	$\langle 35^- \rangle$									56(2)		
2969.0(3)	$\langle 35^+ \rangle$											100
3299.1(3)	$\langle 35^+ \rangle$									51(4)		
3313.5(3)	$\langle 35^- \rangle$									34(3)		
3469.4(4)	$\langle 35^+ \rangle$									≈ 38		
3530.4(3)	$\langle 37^+ \rangle$									28(3)		

Energy levels and branching ratios [00Si01]. Part 11

 $^{163}_{68}\text{Er}$

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E_f^* : $2J_f^\pi$:	2307.8 $\langle 27^- \rangle$	2314.0 $\langle 21^+ \rangle$	2331.6 $\langle 23^+ \rangle$	2368.1 $\langle 27^- \rangle$	2415.4 $\langle 29^+ \rangle$	2418.0 $\langle 27^- \rangle$	2431.7 $\langle 29^- \rangle$	2448.2 $\langle 29^+ \rangle$	2448.9 $\langle 31^- \rangle$	2460.9 $\langle 27^- \rangle$
2523.7(5)	$\langle 23^+ \rangle$			80(60)								
2542.1(5)	$\langle 25^+ \rangle$				47(3)							
2672.6(5)	$\langle 29^- \rangle$					6.4(6)						68(2)
2682.7(6)	$\langle 29^- \rangle$					28(4)						
2748.6(5)	$\langle 25^+ \rangle$			8(4)								
2772.7(5)	$\langle 27^+ \rangle$				32(2)							
2783.7(3)	$\langle 31^- \rangle$		24(2)									
2890.5(3)	$\langle 31^- \rangle$							25(5)				
2905.2(4)	$\langle 31^- \rangle$											36(1)
2928.3(3)	$\langle 33^+ \rangle$						51(3)			44(2)		
2930.8(3)	$\langle 33^- \rangle$								65(3)			
2965.0(3)	$\langle 35^- \rangle$										44(2)	
2967.2(3)	$\langle 33^+ \rangle$						55(3)			43(3)		
3009.2(6)	$\langle 31^- \rangle$					100						
3434.6(3)	$\langle 35^- \rangle$										61(6)	

Energy levels and branching ratios [00Si01]. Part 12

 $^{163}_{68}\text{Er}$

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E_f^* : $2J_f^\pi$:	2481.5 $\langle 23 \rangle$	2523.7 $\langle 23^+ \rangle$	2540.9 $\langle 29^+ \rangle$	2542.1 $\langle 25^+ \rangle$	2629.3 $\langle 29^+ \rangle$	2672.6 $\langle 29^- \rangle$	2682.7 $\langle 29^- \rangle$	2698.7 $\langle 31^+ \rangle$	1624+X $\langle 37 \rangle$	2741.8 $\langle 33^- \rangle$
2748.6(5)	$\langle 25^+ \rangle$		77(15)	15(4)								
2772.7(5)	$\langle 27^+ \rangle$					68(3)						
2905.2(4)	$\langle 31^- \rangle$							64(3)				
2986.9(5)	$\langle 27^+ \rangle$			40(4)								
3022.1(5)	$\langle 29^+ \rangle$					46(2)						
3074.0(4)	$\langle 33^+ \rangle$				100							
3157.6(5)	$\langle 33^- \rangle$							39(1)				
3214.4(10)	$\langle 33^+ \rangle$						100					
3274.5(3)	$\langle 37^- \rangle$											97(3)
3299.1(3)	$\langle 35^+ \rangle$									49(4)		
3339.1(7)	$\langle 33^- \rangle$								100			
2236.0+X	$\langle 41 \rangle$										100	
3511.9(4)	$\langle 37^- \rangle$											20(2)

Energy levels and branching ratios [00Si01]. Part 13

¹⁶³Er
68

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E_f^* : $2J_f^\pi$:	2748.6 $\langle 25^+ \rangle$	2772.7 $\langle 27^+ \rangle$	2783.7 $\langle 31^- \rangle$	2890.5 $\langle 31^- \rangle$	2905.2 $\langle 31^- \rangle$	2908.7 $\langle 37^+ \rangle$	2912.5 $\langle 31^+ \rangle$	2928.3 $\langle 33^+ \rangle$	2930.8 $\langle 33^- \rangle$	2965.0 $\langle 35^- \rangle$
2986.9(5)	$\langle 27^+ \rangle$		60(4)									
3022.1(5)	$\langle 29^+ \rangle$			54(2)								
3157.6(5)	$\langle 33^- \rangle$						61(2)					
3236.2(5)	$\langle 29^+ \rangle$		39(5)									
3288.7(5)	$\langle 31^+ \rangle$			44(2)								
3313.5(3)	$\langle 35^- \rangle$				66(3)							
3428.5(5)	$\langle 35^- \rangle$						45(2)					
3430.2(3)	$\langle 37^+ \rangle$									79(3)		
3434.6(3)	$\langle 35^- \rangle$					39(4)						
3469.4(4)	$\langle 35^+ \rangle$								62(11)			
3511.9(4)	$\langle 37^- \rangle$										80(3)	
3530.4(3)	$\langle 37^+ \rangle$									18(2)		
3530.6(3)	$\langle 39^- \rangle$							32(1)				68(2)
3624.2(3)	$\langle 41^+ \rangle$							100				
3893.0(4)	$\langle 39^- \rangle$							10(2)				
4149.9(4)	$\langle 41^+ \rangle$							16(3)				

Energy levels and branching ratios [00Si01]. Part 14

¹⁶³Er
68

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E_f^* : $2J_f^\pi$:	2967.2 $\langle 33^+ \rangle$	2969.0 $\langle 35^+ \rangle$	2986.9 $\langle 27^+ \rangle$	3022.1 $\langle 29^+ \rangle$	1928+X $\langle 39 \rangle$	3074.0 $\langle 33^+ \rangle$	3157.6 $\langle 33^- \rangle$	3214.4 $\langle 33^+ \rangle$	3236.2 $\langle 29^+ \rangle$	3274.5 $\langle 37^- \rangle$
3236.2(5)	$\langle 29^+ \rangle$				61(5)							
3274.5(3)	$\langle 37^- \rangle$			3.2(2)								
3288.7(5)	$\langle 31^+ \rangle$					56(2)						
3428.5(5)	$\langle 35^- \rangle$								55(2)			
3430.2(3)	$\langle 37^+ \rangle$		21(2)									
3494.5(5)	$\langle 31^+ \rangle$				48(3)						52(3)	
3530.4(3)	$\langle 37^+ \rangle$		54(2)									
3570.7(5)	$\langle 33^+ \rangle$					64(3)						
2565.4+X	$\langle 43 \rangle$						83(30)					
3680.5(4)	$\langle 37^+ \rangle$							100				
3707.8(4)	$\langle 39^+ \rangle$			100								
3717.8(5)	$\langle 37^- \rangle$								55(2)			
3758.3(5)	$\langle 33^+ \rangle$										47(3)	
3809.6(9)	$\langle 37^+ \rangle$									100		
3858.2(4)	$\langle 41^- \rangle$											100

Energy levels and branching ratios [00Si01]. Part 15

¹⁶³Er
68

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E_f^* : $2J_f^\pi$:	3288.7 31 ⁺	3299.1 35 ⁺	3313.5 35 ⁻	3339.1 33 ⁻	2236+X 41	3428.5 35 ⁻	3430.2 37 ⁺	3434.6 35 ⁻	3469.4 35 ⁺	3494.5 31 ⁺
3570.7(5)	33 ⁺		36(3)									
2565.4+X	43						17(3)					
3717.8(5)	37 ⁻							45(2)				
3758.3(5)	33 ⁺											53(3)
3867.1(5)	35 ⁺		67(3)									
3893.0(4)	39 ⁻				90(5)							
3952.0(3)	39 ⁺			100								
3968.7(3)	41 ⁺								100			
2915.9+X	45						69(12)					
4023.7(5)	39 ⁻							59(2)				
4024.8(5)	35 ⁺											61(4)
4036.9(4)	39 ⁻									100		
4067.6(4)	39 ⁺										100	
4070.1(8)	37 ⁻					100						

Energy levels and branching ratios [00Si01]. Part 16

¹⁶³Er
68

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E_f^* : $2J_f^\pi$:	3511.9 37 ⁻	3530.4 37 ⁺	3570.7 33 ⁺	3624.2 41 ⁺	2565+X 43	3680.5 37 ⁺	3707.8 39 ⁺	3717.8 37 ⁻	3758.3 33 ⁺	3809.6 37 ⁺
3867.1(5)	35 ⁺				33(2)							
2915.9+X	45						31(12)					
4023.7(5)	39 ⁻									41(2)		
4024.8(5)	35 ⁺										39(3)	
4156.9(4)	41 ⁻		100									
4159.3(3)	43 ⁻			88(4)		12(1)						
4175.9(5)	37 ⁺				51(3)							
4292.5(5)	37 ⁺										62(4)	
4336.0(5)	41 ⁺							100				
4346.5(5)	41 ⁻									56(3)		
3283.8+X	47						78(17)					
4395.1(4)	45 ⁺					100						
4438.6(8)	41 ⁺											100
4494.4(4)	43 ⁺								100			
4588.5(3)	45 ⁺					21(2)						

Energy levels and branching ratios [00Si01]. Part 17

 $^{163}_{68}\text{Er}$

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E_f^* : $2J_f^\pi$:	3858.2 $\langle 41^- \rangle$	3867.1 $\langle 35^+ \rangle$	3893.0 $\langle 39^- \rangle$	3952.0 $\langle 39^+ \rangle$	3968.7 $\langle 41^+ \rangle$	2916+X $\langle 45 \rangle$	4023.7 $\langle 39^- \rangle$	4024.8 $\langle 35^+ \rangle$	4036.9 $\langle 39^- \rangle$	4067.6 $\langle 39^+ \rangle$
4175.9(5)	$\langle 37^+ \rangle$			49(2)								
4292.5(5)	$\langle 37^+ \rangle$									38(2)		
4346.5(5)	$\langle 41^- \rangle$								44(2)			
3283.8+X	$\langle 47 \rangle$							22(5)				
4496.0(5)	$\langle 39^+ \rangle$			80(4)								
4505.3(4)	$\langle 45^- \rangle$	100										
4529.5(4)	$\langle 43^- \rangle$				100							
4564.3(5)	$\langle 39^+ \rangle$									40(5)		
4588.5(3)	$\langle 45^+ \rangle$						79(5)					
4643.1(4)	$\langle 43^+ \rangle$					100						
4683.5(5)	$\langle 43^- \rangle$								59(2)			
4686.1(4)	$\langle 43^- \rangle$										100	
4700.1(4)	$\langle 43^+ \rangle$											100
3671.4+X	$\langle 49 \rangle$							100				

Energy levels and branching ratios [00Si01]. Part 18

 $^{163}_{68}\text{Er}$

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E_f^* : $2J_f^\pi$:	4149.9 $\langle 41^+ \rangle$	4156.9 $\langle 41^- \rangle$	4159.3 $\langle 43^- \rangle$	4175.9 $\langle 37^+ \rangle$	4292.5 $\langle 37^+ \rangle$	4336.0 $\langle 41^+ \rangle$	4346.5 $\langle 41^- \rangle$	3284+X $\langle 47 \rangle$	4395.1 $\langle 45^+ \rangle$	4438.6 $\langle 41^+ \rangle$
4496.0(5)	$\langle 39^+ \rangle$					20(2)						
4564.3(5)	$\langle 39^+ \rangle$						60(5)					
4683.5(5)	$\langle 43^- \rangle$								41(2)			
4821.4(5)	$\langle 41^+ \rangle$					53(2)						
4825.1(4)	$\langle 45^+ \rangle$	100										
4850.6(5)	$\langle 41^+ \rangle$					48(4)	27(2)					
4856.4(4)	$\langle 47^- \rangle$				100							
4864.0(5)	$\langle 45^- \rangle$			100								
5017.1(5)	$\langle 45^+ \rangle$							100				
5037.9(5)	$\langle 45^- \rangle$								74(4)			
5089.0(4)	$\langle 45^+ \rangle$	81(11)										19(8)
4075.6+X	$\langle 51 \rangle$									100		
5205.2(4)	$\langle 49^+ \rangle$										100	
5312.6(4)	$\langle 49^+ \rangle$										29(2)	

Energy levels and branching ratios [00Si01]. Part 19

¹⁶³Er
68

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E_f^* : $2J_f^\pi$:	4494.4 $\langle 43^+ \rangle$	4496.0 $\langle 39^+ \rangle$	4505.3 $\langle 45^- \rangle$	4529.5 $\langle 43^- \rangle$	4564.3 $\langle 39^+ \rangle$	4588.5 $\langle 45^+ \rangle$	4643.1 $\langle 43^+ \rangle$	4683.5 $\langle 43^- \rangle$	4686.1 $\langle 43^- \rangle$	4700.1 $\langle 43^+ \rangle$
4821.4(5)	$\langle 41^+ \rangle$			16(1)			32(6)					
4850.6(5)	$\langle 41^+ \rangle$						25(2)					
5037.9(5)	$\langle 45^- \rangle$									26(2)		
5123.9(5)	$\langle 43^+ \rangle$			12(8)			24(1)					
5182.8(5)	$\langle 43^+ \rangle$			68(5)								
5218.9(5)	$\langle 49^- \rangle$				100							
5228.3(4)	$\langle 47^- \rangle$					100						
5305.0(4)	$\langle 47^+ \rangle$		100									
5312.6(4)	$\langle 49^+ \rangle$							71(4)				
5372.2(4)	$\langle 47^+ \rangle$		25(3)						55(3)			20(2)
5387.2(4)	$\langle 47^- \rangle$									28(1)	72(5)	
5403.5(5)	$\langle 47^- \rangle$									70(4)		
5407.3(4)	$\langle 47^+ \rangle$								50(6)			50(6)

Energy levels and branching ratios [00Si01]. Part 20

¹⁶³Er
68

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E_f^* : $2J_f^\pi$:	3671+X $\langle 49 \rangle$	4821.4 $\langle 41^+ \rangle$	4825.1 $\langle 45^+ \rangle$	4850.6 $\langle 41^+ \rangle$	4856.4 $\langle 47^- \rangle$	4864.0 $\langle 45^- \rangle$	5017.1 $\langle 45^+ \rangle$	5037.9 $\langle 45^- \rangle$	5089.0 $\langle 45^+ \rangle$	5123.9 $\langle 43^+ \rangle$
5123.9(5)	$\langle 43^+ \rangle$			15(8)		48(2)						
5182.8(5)	$\langle 43^+ \rangle$			32(3)								
5403.5(5)	$\langle 47^- \rangle$									30(1)		
5427.7(5)	$\langle 45^+ \rangle$			32(2)		18(2)						50(2)
5537.2(5)	$\langle 45^+ \rangle$			37(8)		45(5)						
5553.3(4)	$\langle 49^+ \rangle$				100							
4495.4+X	$\langle 53 \rangle$		100									
5622.3(4)	$\langle 51^- \rangle$						100					
5633.4(5)	$\langle 49^- \rangle$							100				
5738.0(5)	$\langle 49^+ \rangle$								100			
5744.9(5)	$\langle 47^+ \rangle$											51(3)
5783.6(5)	$\langle 49^- \rangle$									77(3)		
5802.7(5)	$\langle 49^+ \rangle$				25(5)						75(8)	

Energy levels and branching ratios [00Si01]. Part 21

¹⁶³Er
68

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E_f^* : $2J_f^\pi$:	4076+X ⟨51⟩	5182.8 ⟨43 ⁺ ⟩	5205.2 ⟨49 ⁺ ⟩	5218.9 ⟨49 ⁻ ⟩	5228.3 ⟨47 ⁻ ⟩	5305.0 ⟨47 ⁺ ⟩	5312.6 ⟨49 ⁺ ⟩	5372.2 ⟨47 ⁺ ⟩	5387.2 ⟨47 ⁻ ⟩	5403.5 ⟨47 ⁻ ⟩
5537.2(5)	⟨45 ⁺ ⟩			18(3)								
5783.6(5)	⟨49 ⁻ ⟩											23(2)
5905.6(6)	⟨47 ⁺ ⟩			69(7)								
5988.2(5)	⟨51 ⁻ ⟩						100					
5999.8(5)	⟨53 ⁻ ⟩					100						
6034.7(4)	⟨53 ⁺ ⟩				100							
4930.7+X	⟨55⟩		100									
6108.5(4)	⟨51 ⁺ ⟩							38(2)		62(4)		
6144.7(5)	⟨51 ⁻ ⟩										100	
6146.4(4)	⟨51 ⁺ ⟩							28(2)		72(4)		
6158.2(4)	⟨53 ⁺ ⟩				32(3)				68(5)			
6174.1(5)	⟨51 ⁻ ⟩											71(5)

Energy levels and branching ratios [00Si01]. Part 22

¹⁶³Er
68

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E_f^* : $2J_f^\pi$:	5407.3 ⟨47 ⁺ ⟩	5427.7 ⟨45 ⁺ ⟩	5537.2 ⟨45 ⁺ ⟩	5553.3 ⟨49 ⁺ ⟩	4495+X ⟨53⟩	5622.3 ⟨51 ⁻ ⟩	5633.4 ⟨49 ⁻ ⟩	5738.0 ⟨49 ⁺ ⟩	5744.9 ⟨47 ⁺ ⟩	5783.6 ⟨49 ⁻ ⟩
5744.9(5)	⟨47 ⁺ ⟩			49(2)								
5905.6(6)	⟨47 ⁺ ⟩				31(3)							
6077.0(5)	⟨49 ⁺ ⟩			47(2)							53(2)	
6174.1(5)	⟨51 ⁻ ⟩											29(3)
6188.9(5)	⟨51 ⁺ ⟩		100									
6287.8(6)	⟨49 ⁺ ⟩				64(8)							
6336.6(5)	⟨53 ⁺ ⟩					100						
6426.6(5)	⟨51 ⁺ ⟩										49(3)	
6455.9(5)	⟨55 ⁻ ⟩							100				
6463.2(6)	⟨53 ⁻ ⟩								100			
5393.7+X	⟨57⟩						100					
6520.8(5)	⟨53 ⁺ ⟩									100		
6562.4(5)	⟨53 ⁺ ⟩					45(6)						
6572.6(6)	⟨53 ⁻ ⟩											76(5)

Energy levels and branching ratios [00Si01]. Part 23

¹⁶³Er₆₈

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E_f^* : $2J_f^\pi$:	5802.7 ⟨49 ⁺ ⟩	5905.6 ⟨47 ⁺ ⟩	5988.2 ⟨51 ⁻ ⟩	5999.8 ⟨53 ⁻ ⟩	6034.7 ⟨53 ⁺ ⟩	4931+X ⟨55⟩	6077.0 ⟨49 ⁺ ⟩	6108.5 ⟨51 ⁺ ⟩	6144.7 ⟨51 ⁻ ⟩	6146.4 ⟨51 ⁺ ⟩
6287.8(6)	⟨49 ⁺ ⟩			36(4)								
6426.6(5)	⟨51 ⁺ ⟩								51(3)			
6562.4(5)	⟨53 ⁺ ⟩		55(9)									
6682.4(6)	⟨51 ⁺ ⟩			54(8)								
6792.0(6)	⟨53 ⁺ ⟩								60(4)			
6807.3(5)	⟨55 ⁻ ⟩				100							
6848.0(6)	⟨57 ⁻ ⟩					100						
6914.3(5)	⟨57 ⁺ ⟩						100					
6935.7(5)	⟨55 ⁻ ⟩										100	
6947.0(6)	⟨55 ⁺ ⟩									100		
5866.5+X	⟨59⟩							100				
6977.5(5)	⟨55 ⁺ ⟩											100

Energy levels and branching ratios [00Si01]. Part 24

¹⁶³Er₆₈

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E_f^* : $2J_f^\pi$:	6158.2 ⟨53 ⁺ ⟩	6174.1 ⟨51 ⁻ ⟩	6188.9 ⟨51 ⁺ ⟩	6287.8 ⟨49 ⁺ ⟩	6336.6 ⟨53 ⁺ ⟩	6426.6 ⟨51 ⁺ ⟩	6455.9 ⟨55 ⁻ ⟩	6463.2 ⟨53 ⁻ ⟩	5394+X ⟨57⟩	6520.8 ⟨53 ⁺ ⟩
6572.6(6)	⟨53 ⁻ ⟩			24(2)								
6682.4(6)	⟨51 ⁺ ⟩					46(4)						
6792.0(6)	⟨53 ⁺ ⟩							40(3)				
6988.6(6)	⟨55 ⁻ ⟩			72(9)								
7020.8(6)	⟨55 ⁺ ⟩				100							
7088.2(5)	⟨57 ⁺ ⟩	100										
7090.4(8)	⟨53 ⁺ ⟩					100						
7173.5(6)	⟨55 ⁺ ⟩							53(4)				
7176.0(5)	⟨57 ⁺ ⟩						100					
7322.9(5)	⟨57 ⁺ ⟩											18(3)
7348.8(6)	⟨57 ⁺ ⟩											100
7351.8(7)	⟨57 ⁻ ⟩									100		
7356.5(5)	⟨59 ⁻ ⟩								100			
6357.7+X	⟨61⟩										100	

Energy levels and branching ratios [00Si01]. Part 25

¹⁶³Er₆₈

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E_f^* : $2J_f^\pi$:	6562.4 ⟨53 ⁺ ⟩	6572.6 ⟨53 ⁻ ⟩	6682.4 ⟨51 ⁺ ⟩	6792.0 ⟨53 ⁺ ⟩	6807.3 ⟨55 ⁻ ⟩	6848.0 ⟨57 ⁻ ⟩	6914.3 ⟨57 ⁺ ⟩	6935.7 ⟨55 ⁻ ⟩	6947.0 ⟨55 ⁺ ⟩	6988.6 ⟨55 ⁻ ⟩
6988.6(6)	⟨55 ⁻ ⟩			28(4)								
7173.5(6)	⟨55 ⁺ ⟩					47(2)						
7322.9(5)	⟨57 ⁺ ⟩		82(9)									
7413.5(8)	⟨57 ⁻ ⟩			100								
7518.0(8)	⟨55 ⁺ ⟩				100							
7573.9(6)	⟨57 ⁺ ⟩					76(4)						
7681.2(5)	⟨59 ⁻ ⟩						100					
7733.7(5)	⟨59 ⁻ ⟩									100		
7763.4(6)	⟨61 ⁻ ⟩							100				
7831.9(7)	⟨59 ⁻ ⟩											100
7845.5(9)	⟨59 ⁺ ⟩										100	
7856.7(6)	⟨61 ⁺ ⟩								100			

Energy levels and branching ratios [00Si01]. Part 26

¹⁶³Er₆₈

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E_f^* : $2J_f^\pi$:	7088.2 ⟨57 ⁺ ⟩	7090.4 ⟨53 ⁺ ⟩	7173.5 ⟨55 ⁺ ⟩	7176.0 ⟨57 ⁺ ⟩	7322.9 ⟨57 ⁺ ⟩	7348.8 ⟨57 ⁺ ⟩	7351.8 ⟨57 ⁻ ⟩	7356.5 ⟨59 ⁻ ⟩	7413.5 ⟨57 ⁻ ⟩	7573.9 ⟨57 ⁺ ⟩
7573.9(6)	⟨57 ⁺ ⟩				24(2)							
7954.6(9)	⟨57 ⁺ ⟩			100								
7988.3(6)	⟨59 ⁺ ⟩				44(4)							56(2)
8067.7(6)	⟨61 ⁺ ⟩					100						
8080.2(6)	⟨61 ⁺ ⟩		100									
8127.9(5)	⟨61 ⁺ ⟩						100					
8195.9(7)	⟨61 ⁺ ⟩							100				
8277.9(8)	⟨61 ⁻ ⟩								100			
8306.3(9)	⟨61 ⁻ ⟩										100	
8322.9(5)	⟨63 ⁻ ⟩									100		
8420.1(6)	⟨61 ⁺ ⟩											45(3)

Energy levels and branching ratios [00Si01]. Part 27

¹⁶³Er₆₈

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E_f^* : $2J_f^\pi$:	7681.2 ⟨59 ⁻ ⟩	7733.7 ⟨59 ⁻ ⟩	7763.4 ⟨61 ⁻ ⟩	7831.9 ⟨59 ⁻ ⟩	7845.5 ⟨59 ⁺ ⟩	7856.7 ⟨61 ⁺ ⟩	7988.3 ⟨59 ⁺ ⟩	8067.7 ⟨61 ⁺ ⟩	8080.2 ⟨61 ⁺ ⟩	8127.9 ⟨61 ⁺ ⟩
8420.1(6)	⟨61 ⁺ ⟩								55(3)			
8551.7(5)	⟨63 ⁻ ⟩		56(6)	44(6)								
8636.8(6)	⟨63 ⁻ ⟩		60(6)	40(6)								
8697.8(9)	⟨63 ⁻ ⟩					100						

(continued)

 $^{163}_{68}\text{Er}$

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E^*_f : $2J^\pi_f$:	7681.2 $\langle 59^- \rangle$	7733.7 $\langle 59^- \rangle$	7763.4 $\langle 61^- \rangle$	7831.9 $\langle 59^- \rangle$	7845.5 $\langle 59^+ \rangle$	7856.7 $\langle 61^+ \rangle$	7988.3 $\langle 59^+ \rangle$	8067.7 $\langle 61^+ \rangle$	8080.2 $\langle 61^+ \rangle$	8127.9 $\langle 61^+ \rangle$
8745.1(7)	$\langle 65^- \rangle$				100							
8794.5(11)	$\langle 63^+ \rangle$						100					
8847.7(6)	$\langle 65^+ \rangle$							100				
8866.8(7)	$\langle 63^+ \rangle$									67(5)		
8986.9(6)	$\langle 65^+ \rangle$											100
9002.2(6)	$\langle 65^+ \rangle$									50(6)		50(10)
9128.2(8)	$\langle 65^+ \rangle$										100	

Energy levels and branching ratios [00Si01]. Part 28

 $^{163}_{68}\text{Er}$

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E^*_f : $2J^\pi_f$:	8195.9 $\langle 61^+ \rangle$	8277.9 $\langle 61^- \rangle$	8322.9 $\langle 63^- \rangle$	8420.1 $\langle 61^+ \rangle$	8551.7 $\langle 63^- \rangle$	8636.8 $\langle 63^- \rangle$	8697.8 $\langle 63^- \rangle$	8745.1 $\langle 65^- \rangle$	8847.7 $\langle 65^+ \rangle$	8866.8 $\langle 63^+ \rangle$
8866.8(7)	$\langle 63^+ \rangle$					33(3)						
9106.0(8)	$\langle 65^+ \rangle$		100									
9212.9(9)	$\langle 65^- \rangle$			100								
9330.3(8)	$\langle 65^+ \rangle$					100						
9352.3(6)	$\langle 67^- \rangle$				100							
9440.6(5)	$\langle 67^- \rangle$						100					
9607.8(10)	$\langle 67^- \rangle$								100			
9630.0(7)	$\langle 67^- \rangle$							100				
9779.6(7)	$\langle 69^- \rangle$									100		
9806.5(8)	$\langle 67^+ \rangle$											100
9816.1(7)	$\langle 69^- \rangle$									100		
9845.9(10)	$\langle 69^+ \rangle$										100	
9909.4(6)	$\langle 69^+ \rangle$										52(4)	

Energy levels and branching ratios [00Si01]. Part 29

 $^{163}_{68}\text{Er}$

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E^*_f : $2J^\pi_f$:	8986.9 $\langle 65^+ \rangle$	9106.0 $\langle 65^+ \rangle$	9128.2 $\langle 65^+ \rangle$	9212.9 $\langle 65^- \rangle$	9330.3 $\langle 65^+ \rangle$	9352.3 $\langle 67^- \rangle$	9440.6 $\langle 67^- \rangle$	9607.8 $\langle 67^- \rangle$	9779.6 $\langle 69^- \rangle$	9806.5 $\langle 67^+ \rangle$
9909.4(6)	$\langle 69^+ \rangle$		48(7)									
10076.3(9)	$\langle 69^+ \rangle$			100								
10183.2(11)	$\langle 69^- \rangle$					100						
10229.2(9)	$\langle 69^+ \rangle$				100							
10299.9(10)	$\langle 69^+ \rangle$						100					
10380.0(6)	$\langle 71^- \rangle$							43(5)	57(10)			
10440.1(6)	$\langle 71^- \rangle$							100				

(continued)

¹⁶³Er₆₈

E^*	$2J^\pi$	Branching ratios in percentage										
		E_f^* :	8986.9	9106.0	9128.2	9212.9	9330.3	9352.3	9440.6	9607.8	9779.6	9806.5
[keV]		$2J_f^\pi$:	$\langle 65^+ \rangle$	$\langle 65^+ \rangle$	$\langle 65^+ \rangle$	$\langle 65^- \rangle$	$\langle 65^+ \rangle$	$\langle 67^- \rangle$	$\langle 67^- \rangle$	$\langle 67^- \rangle$	$\langle 69^- \rangle$	$\langle 67^+ \rangle$
10569.8(12)	$\langle 71^- \rangle$									100		
10732.0(8)	$\langle 73^- \rangle$										25(5)	
10808.7(12)	$\langle 71^+ \rangle$											100
10903.6(8)	$\langle 73^- \rangle$										50(16)	

Energy levels and branching ratios [00Si01]. Part 30

¹⁶³Er₆₈

E^*	$2J^\pi$	Branching ratios in percentage									
[keV]	$E_f^*:$ $2J_f^\pi:$	9816.1 $\langle 69^- \rangle$	9845.9 $\langle 69^+ \rangle$	9909.4 $\langle 69^+ \rangle$	10299.9 $\langle 69^+ \rangle$	10380.0 $\langle 71^- \rangle$	10440.1 $\langle 71^- \rangle$	10732.0 $\langle 73^- \rangle$	10808.7 $\langle 71^+ \rangle$	10824.9 $\langle 73^+ \rangle$	10903.6 $\langle 73^- \rangle$
10732.0(8)	$\langle 73^- \rangle$	75(5)									
10824.9(13)	$\langle 73^+ \rangle$		100								
10903.6(8)	$\langle 73^- \rangle$	50(16)									
10909.0(7)	$\langle 73^+ \rangle$			100							
11325.0(12)	$\langle 73^+ \rangle$				100						
11377.5(8)	$\langle 75^- \rangle$					100					
11548.4(6)	$\langle 75^- \rangle$					47(11)	53(5)				
11713.7(11)	$\langle 77^- \rangle$							100			
11830.9(17)	$\langle 77^+ \rangle$									100	
11870.0(13)	$\langle 75^+ \rangle$								100		
12049.6(9)	$\langle 77^- \rangle$										100

Energy levels and branching ratios [00Si01]. Part 31

¹⁶³Er₆₈

E^*	$2J^\pi$	Branching ratios in percentage					
[keV]		E_f^* : $2J_f^\pi$:	11548.4 $\langle 75^- \rangle$	11713.7 $\langle 77^- \rangle$	11830.9 $\langle 77^+ \rangle$	12758.7 $\langle 81^- \rangle$	3530.5
4149.9(4)	$\langle 41^+ \rangle$						84(4)
12699.4(8)	$\langle 79^- \rangle$		100				
12758.7(12)	$\langle 81^- \rangle$			100			
12881.5(19)	$\langle 81^+ \rangle$				100		
13864.7(14)	$\langle 85^- \rangle$					100	

Energy levels and branching ratios [01Si27].

¹⁶⁴Er
68

E^*	J^π	$I_{s,0}$	$\Gamma_{\gamma o}$	$B(M1)$	$B(E1)$	L	$d\sigma/d\Omega$	σ (d,d')	$T_{1/2}$ or	Ref.
[keV]		[eVb]	[meV]	$[\mu_N^2]$	$[10^{-3}e^2fm^2]$	(p,t)	$\mu\text{b/sr}$	μb	Γ_{cm}	
0.0	0^+					0	580	12070	Stable	72Ma37
91.38(2)	2^+					$\langle 2 \rangle$	250	2930	1.47(3) ns	72Ma37
299.43(3)	4^+					$\langle 4 \rangle$	6	102	86(9) ps	68Tj02
614.37(5)	6^+						3	11		72Ma37
860.25(3)	2^+					$\langle 2 \rangle$	20	68	1.9(2) ps	72Ma37
946.40(5)	3^+									
1024.59(7)	8^+								2.59(14) ps	
1058.48(8)	4^+							37		68Tj02
1197.46(6)	5^+									
1246.04(5)	0^+					0	40			72Ma37
1314.56(4)	2^+					$\langle 2 \rangle$	20	3		72Ma37
1358.68(12)	6^+									
1386.73(4)	1	47.1(46)	21.7(35)		23.31(376)			7		68Tj02
1416.56(5)	0^+						20			72Ma37
1433.97(5)	3^-							94		68Tj02
1469.7(3)	4^+							6		68Tj02
1483.70(4)	2^+							10		68Tj02
1494.8(5)										
1507.6(10)										
1518.06(11)	10^+								1.00(5) ps	
1545.06(10)	7^+									
1555.3(3)	$\langle 5 \rangle^-$									
1568.67(14)	$\langle 3^- \rangle$							39		68Tj02
1577.83(6)	1^-						6			72Ma37
1610.3(3)	$\langle 4^-, 5^- \rangle$									
1631.5(5)								3		68Tj02
1640.2(5)										
1664.18(7)	$\langle 5 \rangle^-$								<0.08 ns	
1683.39(9)	$\langle 5^+ \rangle$									
1702.1(5)										
1702.20(4)	0^+									
1706.6(5)	$\langle 6 \rangle^+$									
1715.5(3)										
1726.1(10)										
1741.6(3)										
1744.48(6)	$\langle 6 \rangle^-$								0.22(3) ns	
1744.84(12)	8^+									
1763.8(4)	$\langle 7 \rangle^-$									
1765.86(4)	0^+									
1788.35(6)	2^+									
1798.4(4)	$\langle 5 \rangle^-$							4		68Tj02
1806(1)										
1813.9(2)	$\langle 6 \rangle^-$									
1833.41(4)	2^+									
1841.7(4)	$\langle 0^+ \rangle$									

(continued)

¹⁶⁴Er
68

E^*	J^π	$I_{s,0}$	$\Gamma_{\gamma o}$	$B(M1)$	$B(E1)$	L	$d\sigma/d\Omega$	σ (d,d')	$T_{1/2}$ or	Ref.
[keV]		[eVb]	[meV]	$[\mu_N^2]$	$[10^{-3}e^2fm^2]$	(p,t)	$\mu\text{b/sr}$	μb	Γ_{cm}	
1845.49(7)	7^-									
1861.5(2)	$\langle 0-2 \rangle^+$									
1875.2(1)	1	19.4(29)	19.5(41)		8.48(178)					96Ma18
1911.26(7)	2^+									
1929(1)										
1953.92(6)	2^+							9		68Tj02
1960.5(3)										
1964.29(12)	$\langle 8^- \rangle$									
1969.6(6)	$\langle 2^+-4^+ \rangle$							13		68Tj02
1977.12(9)	$\langle 9 \rangle^+$									
1984.98(6)	7^-								23.0(12) ns	
2002.6(4)	$\langle 2-5 \rangle$							15		68Tj02
2005.4(4)	8^+									
2018.0(10)										
2022.50(8)										
2025.77(6)	$\langle 2^+ \rangle$									
2032.1(2)										
2035.4(2)	1	15.5(18)	5.6(14)	0.172(43)	1.90(48)			4		68Tj02
2046(2)										
2054.6(10)	$\langle 9 \rangle^-$									
2068.9(6)	$\langle 8 \rangle^+$							7		68Tj02
2069.4(2)								incl		
2082.1(5)										
2082.79(13)	12^+								0.69(12) ps	
2090.96(11)	$\langle 8^- \rangle$							19		68Tj02
2093.6(1)										
2108.54(11)	$\langle 9 \rangle^-$									
2144(1)										
2151(1)										
2163.5(1)	$\langle 8^- \rangle$									
2168.2(3)										
2173.06(5)	0^+									
2184.26(12)	$\langle 10 \rangle^+$									
2240.2(6)										
2254.64(12)										
2261.23(13)	$\langle 10^- \rangle$									
2278.33(6)	2^+									
2279(1)										
2337	$\langle 3^- \rangle$							7		68Tj02
2337.3(1)	$\langle 9^- \rangle$									
2356(2)										
2363.20(13)	$\langle 9^- \rangle$									
2370.5(3)										
2404(1)	1	6.5(16)	7.9(32)		1.63(66)					96Ma18
2408.2(2)	$\langle 11 \rangle^-$									

(continued)

¹⁶⁴Er₆₈

E^*	J^π	$I_{s,0}$	$\Gamma_{\gamma o}$	$B(M1)$	$B(E1)$	L	$d\sigma/d\Omega$	σ (d,d')	$T_{1/2}$ or	Ref.
[keV]		[eVb]	[meV]	$[\mu_N^2]$	$[10^{-3}e^2fm^2]$	(p,t)	$\mu\text{b/sr}$	μb	Γ_{cm}	
2416(1)	1	10.3(14)	8.7(25)	0.160(46)						96Ma18
2421.09(12)	$\langle 10^- \rangle$									
2444.51(6)	$\langle 2^+ \rangle$									
2448.1(5)										
2462.7(2)	10 ⁺									
2470(1)										
2479.44(11)	$\langle 11^+ \rangle$									
2483(2)										
2519.2(3)	$\langle 12^+ \rangle$									
2541.0(2)										
2577(1)	1	10.7(13)	13.5(32)		2.26(54)					96Ma18
2583.3(2)	$\langle 10^- \rangle$									
2592(1)										
2631.19(15)	$\langle 12^- \rangle$									
2640(1)	1	33.8(21)	32.3(36)	0.455(51)						96Ma18
2702.56(15)	14 ⁺									
2733.3(5)	$\langle 12^+ \rangle$									
2747(1)	1	8.4(11)	7.6(35)	0.095(44)						96Ma18
2762(1)	1	11.6(13)	13.5(34)	0.166(42)						96Ma18
2800.41(15)	$\langle 12^- \rangle$									
2815.2(2)	13 ⁻									
2822.1(3)	$\langle 11^- \rangle$									
2823.3(3)										
2874.8(2)	$\langle 14^+ \rangle$									
2933(1)	1	9.9(14)	15.4(40)		1.75(45)					96Ma18
2966(1)	1	8.4(19)	16.8(46)		1.85(51)					96Ma18
3018(1)	1	6.3(13)	5.0(15)	0.047(14)	0.52(16)					96Ma18
3027.2(5)	$\langle 13^+ \rangle$									
3028.8(2)										
3066.6(4)	$\langle 14^- \rangle$									
3078.9(5)	$\langle 12^- \rangle$									
3133(1)	1	11.2(14)	13.3(47)	0.112(40)						96Ma18
3179(1)	1	27.5(22)	32.3(95)	0.261(77)						96Ma18
3220(1)	1	13.0(14)	26.7(59)		2.29(51)					96Ma18
3244.3(3)	$\langle 14^- \rangle$									
3263.1(2)	16 ⁺									
3267.0(6)	$\langle 14^+ \rangle$									
3281.0(2)	$\langle 15^- \rangle$									
3302.9(3)	$\langle 5^- - 7^- \rangle$									
3351.8(5)	$\langle 13^- \rangle$									
3376.1(11)	$\langle 12^+ \rangle$								≥ 170 ns	
3408.1(3)										
3411.2(4)	$\langle 16^+ \rangle$									
3458(1)	1	4.6(14)	16.6(88)		1.15(61)					96Ma18
3518.6(6)	$\langle 15^+ \rangle$									

(continued)

¹⁶⁴Er
68

E^*	J^π	$I_{s,0}$	$\Gamma_{\gamma o}$	$B(M1)$	$B(E1)$	L	$d\sigma/d\Omega$	σ (d,d')	$T_{1/2}$ or	Ref.
[keV]		[eVb]	[meV]	$[\mu_N^2]$	$[10^{-3}e^2fm^2]$	(p,t)	$\mu\text{b/sr}$	μb	Γ_{cm}	
3534.6(1)	$\langle 2^+ \rangle$									
3541(1)	1,2	22.0(40)	23.9(68)	0.140(40)	1.54(44)					96Ma18
3544.1(13)	$\langle 13^+ \rangle$									
3551(1)	1	8.4(14)	13.7(63)	0.079(36)						96Ma18
3559.6(5)	$\langle 16^- \rangle$									
3602(1)	1	13.7(20)	21.6(81)	0.120(45)						96Ma18
3629.6(1)	2 ⁺									
3733.1(13)	$\langle 14^+ \rangle$									
3752(1)	1	7.2(16)	8.8(28)	0.043(14)	0.48(15)					96Ma18
3760.0(4)	$\langle 16^- \rangle$									
3768.2(1)	$\langle 1^+, 2^+ \rangle$									
3768.6(2)	$\langle 18^+ \rangle$									
3800.7(6)	$\langle 16^+ \rangle$									
3804.9(5)	$\langle 17^- \rangle$									
3941.2(15)	$\langle 15^+ \rangle$									
3944(1)	1	15.5(43)	20.9(75)	0.088(32)	0.98(35)					96Ma18
4017.8(7)	$\langle 17^+ \rangle$									
4105.6(7)	$\langle 18^- \rangle$									
4121.2(5)	$\langle 18^+ \rangle$									
4167.9(15)	$\langle 16^+ \rangle$									
4344.4(6)	$\langle 18^- \rangle$									
4345.7(4)	$\langle 20^+ \rangle$									
4364.3(8)	$\langle 18^+ \rangle$									
4384.9(5)	$\langle 19^- \rangle$									
4411.6(16)	$\langle 17^+ \rangle$									
4590.0(8)	$\langle 19^+ \rangle$									
4671.7(16)	$\langle 18^+ \rangle$									
4702.0(8)	$\langle 20^- \rangle$									
4868.4(6)	$\langle 20^+ \rangle$									
4946.7(17)	$\langle 19^+ \rangle$									
4987.3(12)	$\langle 20^- \rangle$									
5000.1(6)	$\langle 22^+ \rangle$									
5018.2(7)	$\langle 21^- \rangle$									
5230.5(9)	$\langle 21^+ \rangle$									
5236.6(18)	$\langle 20^+ \rangle$									
5349.9(9)	$\langle 22^- \rangle$									
5539.9(18)	$\langle 21^+ \rangle$									
5651.5(8)	$\langle 22^+ \rangle$									
5678(2)	$\langle 22^- \rangle$									
5704.1(11)	$\langle 23^- \rangle$									
5729.1(8)	$\langle 24^+ \rangle$									
5856.2(19)	$\langle 22^+ \rangle$									
6052.9(13)	$\langle 24^- \rangle$									
6185.0(19)	$\langle 23^+ \rangle$									
6442.1(15)	$\langle 25^- \rangle$									

(continued)

¹⁶⁴Er₆₈

E^*	J^π	$I_{s,0}$	$\Gamma_{\gamma o}$	$B(M1)$	$B(E1)$	L	$d\sigma/d\Omega$	σ (d,d')	$T_{1/2}$ or	Ref.
[keV]		[eVb]	[meV]	$[\mu_N^2]$	$[10^{-3}e^2fm^2]$	(p,t)	$\mu\text{b/sr}$	μb	Γ_{cm}	
6525.2(20)	$\langle 24^+ \rangle$									
6529.1(13)	$\langle 26^+ \rangle$									
6814.9(17)	$\langle 26^- \rangle$									
6876.9(20)	$\langle 25^+ \rangle$									
7238.1(18)	$\langle 27^- \rangle$									
7239.5(21)	$\langle 26^+ \rangle$									
7399.1(16)	$\langle 28^+ \rangle$									
7613.1(21)	$\langle 27^+ \rangle$									
7640.9(20)	$\langle 28^- \rangle$									
7997.8(22)	$\langle 28^+ \rangle$									
8095.1(21)	$\langle 29^- \rangle$									
8338.1(19)	$\langle 30^+ \rangle$									
8395.1(22)	$\langle 29^+ \rangle$									
8533.9(22)	$\langle 30^- \rangle$									
8802.4(23)	$\langle 30^+ \rangle$									
9016.1(23)	$\langle 31^- \rangle$									
9224.1(24)	$\langle 31^+ \rangle$									
9342.1(22)	$\langle 32^+ \rangle$									
9491.9(24)	$\langle 32^- \rangle$									
9657.4(25)	$\langle 32^+ \rangle$									
10001.1(25)	$\langle 33^- \rangle$									
10410.1(24)	$\langle 34^+ \rangle$									
10515(3)	$\langle 34^- \rangle$									
11049(3)	$\langle 35^- \rangle$									
11549(3)	$\langle 36^+ \rangle$									
		96Ma18	96Ma18	96Ma18	96Ma18	72Ma37	72Ma37	68Tj02		Ref.

Additional data on this isotope can be found in [00Gr33, 97Ma31, 92Ch03].

Abundance: 1.601(3) %.

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

Energy levels and branching ratios [01Si27]. Part 2

¹⁶⁴Er₆₈

E^*	J^π	Branching ratios in percentage										
		E_f^* :	0.0	91.4	299	614	860	946	1025	1058.48	1197.46	1246.04
[keV]		J_f^π :	0 ⁺	2 ⁺	4 ⁺	6 ⁺	2 ⁺	3 ⁺	8 ⁺	4 ⁺	5 ⁺	0 ⁺
91.38(2)	2 ⁺		100									
299.43(3)	4 ⁺			100								
614.37(5)	6 ⁺				100							
860.25(3)	2 ⁺		45(2)	53(2)	1.6(3)							
946.40(5)	3 ⁺			83(7)	17(2)		x					
1024.59(7)	8 ⁺					100						
1058.48(8)	4 ⁺			32(8)	68(5)		x					

(continued)

¹⁶⁴Er
68

E^*	J^π	Branching ratios in percentage										
[keV]		E_f^* : J_f^π :	0.0 0 ⁺	91.4 2 ⁺	299 4 ⁺	614 6 ⁺	860 2 ⁺	946 3 ⁺	1025 8 ⁺	1058.48 4 ⁺	1197.46 5 ⁺	1246.04 0 ⁺
1197.46(6)	5 ⁺				81(4)	15.2(10)		4.1(4)				
1246.04(5)	0 ⁺	x		99(3)			0.8(4)					
1314.56(4)	2 ⁺	35(2)		63(2)	<16		1.4(7)	x				x
1358.68(12)	6 ⁺				20(2)	49(15)				32(7)		
1386.73(4)	1	40(2)		60(2)			x					x
1416.56(5)	0 ⁺	x		100								x
1433.97(5)	3 ⁻			56(3)	32(3)		x					
1469.7(3)	4 ⁺			17(17)	83(17)	x						
1483.70(4)	2 ⁺	20(8)		36(2)	44(5)		x					x
1494.8(5)							x	x				
1507.6(10)					100							
1518.06(11)	10 ⁺								100			
1545.06(10)	7 ⁺					57(7)			16(3)		27(11)	
1555.3(3)	⟨5 ⁻ ⟩				59(12)	24(7)					18(6)	
1568.67(14)	⟨3 ⁻ ⟩			71(18)	29(11)							
1577.83(6)	1 ⁻	20.8(13)		79(8)								x
1610.3(3)	⟨4 ⁻ ,5 ⁻ ⟩							86(5)		14(3)		
1631.5(5)					100	<10		x		x		
1640.2(5)					27(18)					73(15)		
1664.18(7)	⟨5 ⁻ ⟩				70(4)	30(1)						
1683.39(9)	⟨5 ⁺ ⟩							31(9)		35(4)	9(3)	
1702.1(5)							100					
1702.20(4)	0 ⁺	x		66(2)			24(1)					x
1706.6(5)	⟨6 ⁺ ⟩				36(19)	64(22)						
1715.5(3)							x	x				
1726.1(10)						x						
1741.6(3)				26(9)	35(9)			40(11)				
1744.48(6)	⟨6 ⁻ ⟩					5.4(5)					78(4)	
1744.84(12)	8 ⁺								44(25)			
1763.8(4)	⟨7 ⁻ ⟩					100						
1765.86(4)	0 ⁺	x		76(2)			24(2)					x
1788.35(6)	2 ⁺	5.1(9)		33(2)	55(6)					4.3(9)		
1798.4(4)	⟨5 ⁻ ⟩				61	39						
1806(1)										100		
1813.9(2)	⟨6 ⁻ ⟩										100	
1833.41(4)	2 ⁺	22(3)		45(1)	29(1)		4(1)					
1841.7(4)	⟨0 ⁺ ⟩	x		23(8)								
1845.49(7)	7 ⁻					76(4)			24.4(11)			
1875.2(1)	1	33(4)		37(4)			<89					
1911.26(7)	2 ⁺	9(1)		79(4)								<6
1929(1)											100	
1953.92(6)	2 ⁺			88(4)	6(3)		6(3)					
1960.5(3)				x	x			x				
1969.6(6)	⟨2 ⁺ -4 ⁺ ⟩			62(16)	38(12)							
1977.12(9)	⟨9 ⁺ ⟩								34(4)			

(continued)

 $^{164}_{68}\text{Er}$

E^* [keV]	J^π	Branching ratios in percentage										
		$E_f^*:$ $J_f^\pi:$	0.0 0 ⁺	91.4 2 ⁺	299 4 ⁺	614 6 ⁺	860 2 ⁺	946 3 ⁺	1025 8 ⁺	1058.48 4 ⁺	1197.46 5 ⁺	1246.04 0 ⁺
1984.98(6)	7 ⁻					8.2(8)			1.9(4)			
2002.6(4)	⟨2-5⟩				28(14)							
2005.4(4)	8 ⁺					x			x			
2018.0(10)						100						
2022.50(8)		43(6)										
2025.77(6)	⟨2 ⁺ ⟩	12(6)	<18				81(4)					3(1)
2032.1(2)												100
2035.4(2)	1	56(10)	33(8)									
2046(2)				100								
2054.6(10)	⟨9⟩ ⁻								100			
2068.9(6)	⟨8⟩ ⁺					29			71			
2069.4(2)			[100]									
2093.6(1)									100			
2108.54(11)	⟨9⟩ ⁻								100			
2144(1)				100								
2151(1)						100						
2168.2(3)				23(16)						23(16)		
2173.06(5)	0 ⁺	x	42(2)				23(5)					x
2254.64(12)				100								
2278.33(6)	2 ⁺	22(2)	10(2)				47(4)					
2337.3(1)	⟨9 ⁻ ⟩								100			
2356(2)						100						
2404(1)	1	35	65(19)									
2416(1)	1	55	45(11)									
2444.51(6)	⟨2 ⁺ ⟩		<22				4.8(13)					
2448.1(5)									100			
2483(2)						100						
2541.0(2)			59(6)									
2577(1)	1	40	60(11)									
2592(1)									100			
2640(1)	1	58	42(4)									
2747(1)	1	68	32(14)									
2762(1)	1	52	48(10)									
2823.3(3)								38(15)				
2933(1)	1	43	57(11)									
2966(1)	1	34	66(12)									
3018(1)	1	100										
3028.8(2)										15(4)		
3133(1)	1	68	32(10)									
3179(1)	1	71	29(8)									
3220(1)	1	39	61(11)									
3408.1(3)			22(4)	19(4)								
3458(1)	1	26	74(31)									
3541(1)	1,2	100										
3551(1)	1	63	37(15)									

(continued)

 $^{164}_{68}\text{Er}$

E^* [keV]	J^π	Branching ratios in percentage										
		E_f^* : J_f^π :	0.0 0 ⁺	91.4 2 ⁺	299 4 ⁺	614 6 ⁺	860 2 ⁺	946 3 ⁺	1025 8 ⁺	1058.48 4 ⁺	1197.46 5 ⁺	1246.04 0 ⁺
3602(1)	1		68	32(10)								
3629.6(1)	2 ⁺									9(1)		85(4)
3752(1)	1		100									
3768.2(1)	$\langle 1^+, 2^+ \rangle$											[67]
3944(1)	1		100									

Energy levels and branching ratios [01Si27]. Part 3

 $^{164}_{68}\text{Er}$

E^* [keV]	J^π	Branching ratios in percentage										
		E_f^* : J_f^π :	1314.56 2 ⁺	1358.68 6 ⁺	1386.73 1 ⁻	1416.56 0 ⁺	1433.97 3 ⁻	1483.70 2 ⁺	1494.8	1518.06 10 ⁺	1545.06 7 ⁺	1568.67 $\langle 3^- \rangle$
1433.97(5)	3 ⁻		11(3)									
1483.70(4)	2 ⁺		x									
1577.83(6)	1 ⁻				x							
1631.5(5)									x			
1702.20(4)	0 ⁺		<0.4		7.8(4)			2.5(9)				
1744.48(6)	$\langle 6^- \rangle$			4.4(3)							2.2(8)	
1744.84(12)	8 ⁺			56(23)								
1765.86(4)	0 ⁺		<0.5									
1788.35(6)	2 ⁺		2.6(9)									
1841.7(4)	$\langle 0^+ \rangle$							77(23)				
1861.5(2)	$\langle 0-2 \rangle^+$		83(17)					17(8)				
1875.2(1)	1											15(4)
1911.26(7)	2 ⁺				12(2)							
1960.5(3)					x				x			
1977.12(9)	$\langle 9^+ \rangle$										66(5)	
1984.98(6)	7 ⁻			0.4(3)								
2002.6(4)	$\langle 2-5 \rangle$						72(22)					
2022.50(8)					<49		57(18)					
2025.77(6)	$\langle 2^+ \rangle$		3(1)									
2035.4(2)	1		10(5)									
2082.1(5)											100	
2082.79(13)	12 ⁺									100		
2090.96(11)	$\langle 8^- \rangle$										65(13)	
2173.06(5)	0 ⁺		<1					6(1)				
2184.26(12)	$\langle 10^+ \rangle$									38(19)		
2240.2(6)										100		
2278.33(6)	2 ⁺		10(2)				≈ 6	6(2)				
2408.2(2)	$\langle 11^- \rangle$									100		
2444.51(6)	$\langle 2^+ \rangle$				83(3)							6(1)
2462.7(2)	10 ⁺									100		
2470(1)										100		

(continued)

¹⁶⁴Er₆₈

E^*	J^π	Branching ratios in percentage										
[keV]		E_f^* : J_f^π :	1314.56 2 ⁺	1358.68 6 ⁺	1386.73 1 ⁻	1416.56 0 ⁺	1433.97 3 ⁻	1483.70 2 ⁺	1494.8	1518.06 10 ⁺	1545.06 7 ⁺	1568.67 <3 ⁻ >
2479.44(11)	$\langle 11 \rangle^+$									19		
2519.2(3)	$\langle 12^+ \rangle$									27		
3028.8(2)		29(2)										56(7)
3408.1(3)						44(8)						15(7)
3534.6(1)	$\langle 2^+ \rangle$							<21				

Energy levels and branching ratios [01Si27]. Part 4

¹⁶⁴Er₆₈

E^*	J^π	Branching ratios in percentage										
[keV]		E^*_f : J^π_f :	1577.83 1 ⁻	1610.3 ⟨4 ⁻ ,5 ⁻ ⟩	1664.18 ⟨5⟩ ⁻	1706.6 ⟨6⟩ ⁺	1715.5	1744.48 ⟨6⟩ ⁻	1744.84 8 ⁺	1765.86 0 ⁺	1813.9 ⟨6⟩ ⁻	1833.41 2 ⁺
1683.39(9)	⟨5 ⁺ ⟩			25(4)								
1715.5(3)		x										
1744.48(6)	⟨6⟩ ⁻				10.4(11)							
1845.49(7)	7 ⁻							<0.19				
1875.2(1)	1						15(4)					
1960.5(3)		x										
1964.29(12)	⟨8 ⁻ ⟩							59(24)				
1984.98(6)	7 ⁻							68(3)				
2005.4(4)	8 ⁺					x						
2090.96(11)	⟨8 ⁻ ⟩								16(5)		≈19	
2173.06(5)	0 ⁺	26(1)								x		<1
2184.26(12)	⟨10⟩ ⁺								62(7)			
2279(1)									100			
2444.51(6)	⟨2 ⁺ ⟩						6(1)					
2541.0(2)										41(12)		
3629.6(1)	2 ⁺	<6										

Energy levels and branching ratios [01Si27]. Part 5

¹⁶⁴Er₆₈

E^*	J^π	Branching ratios in percentage										
[keV]		E_f^* : J_f^π :	1845.49 7 [−]	1875.2 1	1911.26 2 ⁺	1960.5 8 [−]	1964.29 8 [−]	1977.12 9 ⁺	1984.98 7 [−]	2005.4 8 ⁺	2025.77 2 ⁺	2069.4
1964.29(12)	8 [−]	41(18)										
1984.98(6)	7 [−]	21.9(8)										
2163.5(1)	8 [−]								100			
2168.2(3)											54(23)	
2173.06(5)	0 ⁺			3(1)								
2240.2(6)										x		

(continued)

 $^{164}_{68}\text{Er}$

E^* [keV]	J^π	Branching ratios in percentage										
		E_f^* : J_f^π :	1845.49 7 ⁻	1875.2 1	1911.26 2 ⁺	1960.5 x	1964.29 <8 ⁻ >	1977.12 <9 ⁺ >	1984.98 7 ⁻	2005.4 8 ⁺	2025.77 <2 ⁺ >	2069.4
2261.23(13)	<10 ⁻ >						85(5)					
2278.33(6)	2 ⁺					x						
2370.5(3)									100			
2421.09(12)	<10 ⁻ >							69(7)				
2444.51(6)	<2 ⁺ >					x						
2479.44(11)	<11 ⁺ >							81				
2541.0(2)				<29								
2823.3(3)						x					38(8)	23(8)
3302.9(3)	<5 ⁻ -7 ⁻ >								21(13)			
3534.6(1)	<2 ⁺ >				42(5)							
3768.2(1)	<1 ⁺ , 2 ⁺ >			[33]								

Energy levels and branching ratios [01Si27]. Part 6

 $^{164}_{68}\text{Er}$

E^* [keV]	J^π	Branching ratios in percentage										
		E_f^* : J_f^π :	2082.79 12 ⁺	2090.96 <8 ⁻ >	2108.54 <9 ⁻ >	2163.5 <8 ⁻ >	2173.06 0 ⁺	2184.26 <10 ⁺ >	2240.2	2261.23 <10 ⁻ >	2279	2363.20 <9 ⁻ >
2261.23(13)	<10 ⁻ >				15(6)							
2363.20(13)	<9 ⁻ >					100						
2421.09(12)	<10 ⁻ >			31(5)								
2519.2(3)	<12 ⁺ >		40(6)					33(13)	x			
2583.3(2)	<10 ⁻ >					≈7						93(23)
2631.19(15)	<12 ⁻ >									100		
2702.56(15)	14 ⁺		100									
2733.3(5)	<12 ⁺ >							100				
2815.2(2)	13 ⁻		67(11)									
2822.1(3)	<11 ⁻ >											50(25)
2874.8(2)	<14 ⁺ >		81(6)									
3302.9(3)	<5 ⁻ -7 ⁻ >					79(8)						
3534.6(1)	<2 ⁺ >						58(3)					
3629.6(1)	2 ⁺										6(3)	

Energy levels and branching ratios [01Si27]. Part 7

 $^{164}_{68}\text{Er}$

E^* [keV]	J^π	Branching ratios in percentage										
		E_f^* : J_f^π :	2408.2 <11 ⁻ >	2421.09 <10 ⁻ >	2479.44 <11 ⁺ >	2519.2 <12 ⁺ >	2583.3 <10 ⁻ >	2631.19 <12 ⁻ >	2702.56 14 ⁺	2733.3 <12 ⁺ >	2800.41 <12 ⁻ >	2815.2 13 ⁻
2800.41(15)	<12 ⁻ >			100								
2815.2(2)	13 ⁻		33(17)									

(continued)

 $^{164}_{68}\text{Er}$

E^* [keV]	J^π	Branching ratios in percentage										
		E_f^* : J_f^π :	2408.2 $\langle 11 \rangle^-$	2421.09 $\langle 10 \rangle^-$	2479.44 $\langle 11 \rangle^+$	2519.2 $\langle 12^+ \rangle$	2583.3 $\langle 10^- \rangle$	2631.19 $\langle 12^- \rangle$	2702.56 14^+	2733.3 $\langle 12^+ \rangle$	2800.41 $\langle 12^- \rangle$	2815.2 13^-
2822.1(3)	$\langle 11^- \rangle$						50(12)					
2874.8(2)	$\langle 14^+ \rangle$					19(11)						
3027.2(5)	$\langle 13^+ \rangle$				100							
3066.6(4)	$\langle 14^- \rangle$							100				
3078.9(5)	$\langle 12^- \rangle$						x					
3244.3(3)	$\langle 14^- \rangle$										100	
3263.1(2)	16^+								82(8)			
3267.0(6)	$\langle 14^+ \rangle$									100		
3281.0(2)	$\langle 15^- \rangle$								32(17)			68(9)
3411.2(4)	$\langle 16^+ \rangle$								100			

Energy levels and branching ratios [01Si27]. Part 8

 $^{164}_{68}\text{Er}$

E^* [keV]	J^π	Branching ratios in percentage										
		E_f^* : J_f^π :	2822.1 $\langle 11^- \rangle$	2874.8 $\langle 14^+ \rangle$	3027.2 $\langle 13^+ \rangle$	3066.6 $\langle 14^- \rangle$	3078.9 $\langle 12^- \rangle$	3244.3 $\langle 14^- \rangle$	3263.1 16^+	3267.0 $\langle 14^+ \rangle$	3281.0 $\langle 15^- \rangle$	3376.1 $\langle 12^+ \rangle$
3078.9(5)	$\langle 12^- \rangle$		100									
3263.1(2)	16^+			18(6)								
3351.8(5)	$\langle 13^- \rangle$		55				45					
3376.1(11)	$\langle 12^+ \rangle$		x									
3518.6(6)	$\langle 15^+ \rangle$				100							
3544.1(13)	$\langle 13^+ \rangle$											x
3559.6(5)	$\langle 16^- \rangle$					100						
3733.1(13)	$\langle 14^+ \rangle$											x
3760.0(4)	$\langle 16^- \rangle$							100				
3768.6(2)	$\langle 18^+ \rangle$								100			
3800.7(6)	$\langle 16^+ \rangle$									100		
3804.9(5)	$\langle 17^- \rangle$										100	

Energy levels and branching ratios [01Si27]. Part 9

 $^{164}_{68}\text{Er}$

E^* [keV]	J^π	Branching ratios in percentage										
		E_f^* : J_f^π :	3411.2 $\langle 16^+ \rangle$	3518.6 $\langle 15^+ \rangle$	3544.1 $\langle 13^+ \rangle$	3559.6 $\langle 16^- \rangle$	3733.1 $\langle 14^+ \rangle$	3760.0 $\langle 16^- \rangle$	3768.6 $\langle 18^+ \rangle$	3800.7 $\langle 16^+ \rangle$	3804.9 $\langle 17^- \rangle$	3941.2 $\langle 15^+ \rangle$
3733.1(13)	$\langle 14^+ \rangle$				x							
3941.2(15)	$\langle 15^+ \rangle$				x		x					
4017.8(7)	$\langle 17^+ \rangle$			100								
4105.6(7)	$\langle 18^- \rangle$					100						
4121.2(5)	$\langle 18^+ \rangle$		100									

(continued)

 $^{164}_{68}\text{Er}$

E^* [keV]	J^π	Branching ratios in percentage										
		E_f^* : J_f^π :	3411.2 $\langle 16^+ \rangle$	3518.6 $\langle 15^+ \rangle$	3544.1 $\langle 13^+ \rangle$	3559.6 $\langle 16^- \rangle$	3733.1 $\langle 14^+ \rangle$	3760.0 $\langle 16^- \rangle$	3768.6 $\langle 18^+ \rangle$	3800.7 $\langle 16^+ \rangle$	3804.9 $\langle 17^- \rangle$	3941.2 $\langle 15^+ \rangle$
4167.9(15)	$\langle 16^+ \rangle$					x						x
4344.4(6)	$\langle 18^- \rangle$							100				
4345.7(4)	$\langle 20^+ \rangle$								100			
4364.3(8)	$\langle 18^+ \rangle$									100		
4384.9(5)	$\langle 19^- \rangle$										100	
4411.6(16)	$\langle 17^+ \rangle$											x

Energy levels and branching ratios [01Si27]. Part 10

 $^{164}_{68}\text{Er}$

E^* [keV]	J^π	Branching ratios in percentage										
		E_f^* : J_f^π :	4017.8 $\langle 17^+ \rangle$	4105.6 $\langle 18^- \rangle$	4121.2 $\langle 18^+ \rangle$	4167.9 $\langle 16^+ \rangle$	4344.4 $\langle 18^- \rangle$	4345.7 $\langle 20^+ \rangle$	4384.9 $\langle 19^- \rangle$	4411.6 $\langle 17^+ \rangle$	4590.0 $\langle 19^+ \rangle$	4671.7 $\langle 18^+ \rangle$
4411.6(16)	$\langle 17^+ \rangle$					x						
4590.0(8)	$\langle 19^+ \rangle$		100									
4671.7(16)	$\langle 18^+ \rangle$					x				x		
4702.0(8)	$\langle 20^- \rangle$			100								
4868.4(6)	$\langle 20^+ \rangle$				100							
4946.7(17)	$\langle 19^+ \rangle$									x		x
4987.3(12)	$\langle 20^- \rangle$						100					
5000.1(6)	$\langle 22^+ \rangle$							100				
5018.2(7)	$\langle 21^- \rangle$								100			
5230.5(9)	$\langle 21^+ \rangle$										100	
5236.6(18)	$\langle 20^+ \rangle$											x

Energy levels and branching ratios [01Si27]. Part 11

 $^{164}_{68}\text{Er}$

E^* [keV]	J^π	Branching ratios in percentage										
		E_f^* : J_f^π :	4702.0 $\langle 20^- \rangle$	4868.4 $\langle 20^+ \rangle$	4946.7 $\langle 19^+ \rangle$	4987.3 $\langle 20^- \rangle$	5000.1 $\langle 22^+ \rangle$	5018.2 $\langle 21^- \rangle$	5236.6 $\langle 20^+ \rangle$	5349.9 $\langle 22^- \rangle$	5539.9 $\langle 21^+ \rangle$	5704.1 $\langle 23^- \rangle$
5236.6(18)	$\langle 20^+ \rangle$				x							
5349.9(9)	$\langle 22^- \rangle$		100									
5539.9(18)	$\langle 21^+ \rangle$				x				x			
5651.5(8)	$\langle 22^+ \rangle$			100								
5678(2)	$\langle 22^- \rangle$					100						
5704.1(11)	$\langle 23^- \rangle$							100				
5729.1(8)	$\langle 24^+ \rangle$						100					
5856.2(19)	$\langle 22^+ \rangle$								x		x	
6052.9(13)	$\langle 24^- \rangle$									x		

(continued)

 $^{164}_{68}\text{Er}$

E^* [keV]	J^π	Branching ratios in percentage										
		E^*_f :	4702.0	4868.4	4946.7	4987.3	5000.1	5018.2	5236.6	5349.9	5539.9	5704.1
		J^π_f :	$\langle 20^- \rangle$	$\langle 20^+ \rangle$	$\langle 19^+ \rangle$	$\langle 20^- \rangle$	$\langle 22^+ \rangle$	$\langle 21^- \rangle$	$\langle 20^+ \rangle$	$\langle 22^- \rangle$	$\langle 21^+ \rangle$	$\langle 23^- \rangle$
6185.0(19)	$\langle 23^+ \rangle$										x	
6442.1(15)	$\langle 25^- \rangle$											x

Energy levels and branching ratios [01Si27]. Part 12

 $^{164}_{68}\text{Er}$

E^* [keV]	J^π	Branching ratios in percentage										
		E^*_f :	5729.1	5856.2	6052.9	6185.0	6442.1	6525.2	6529.1	6814.9	6876.9	7238.1
		J^π_f :	$\langle 24^+ \rangle$	$\langle 22^+ \rangle$	$\langle 24^- \rangle$	$\langle 23^+ \rangle$	$\langle 25^- \rangle$	$\langle 24^+ \rangle$	$\langle 26^+ \rangle$	$\langle 26^- \rangle$	$\langle 25^+ \rangle$	$\langle 27^- \rangle$
6185.0(19)	$\langle 23^+ \rangle$			x								
6525.2(20)	$\langle 24^+ \rangle$			x		x						
6529.1(13)	$\langle 26^+ \rangle$	x										
6814.9(17)	$\langle 26^- \rangle$				x							
6876.9(20)	$\langle 25^+ \rangle$					x		x				
7238.1(18)	$\langle 27^- \rangle$						x					
7239.5(21)	$\langle 26^+ \rangle$							x			x	
7399.1(16)	$\langle 28^+ \rangle$								x			
7613.1(21)	$\langle 27^+ \rangle$										x	
7640.9(20)	$\langle 28^- \rangle$									x		
8095.1(21)	$\langle 29^- \rangle$											x

Energy levels and branching ratios [01Si27]. Part 13

 $^{164}_{68}\text{Er}$

E^* [keV]	J^π	Branching ratios in percentage										
		E^*_f :	7239.5	7399.1	7613.1	7640.9	7997.8	8095.1	8338.1	8395.1	8533.9	8802.4
		J^π_f :	$\langle 26^+ \rangle$	$\langle 28^+ \rangle$	$\langle 27^+ \rangle$	$\langle 28^- \rangle$	$\langle 28^+ \rangle$	$\langle 29^- \rangle$	$\langle 30^+ \rangle$	$\langle 29^+ \rangle$	$\langle 30^- \rangle$	$\langle 30^+ \rangle$
7613.1(21)	$\langle 27^+ \rangle$	x										
7997.8(22)	$\langle 28^+ \rangle$	x			x							
8338.1(19)	$\langle 30^+ \rangle$			x								
8395.1(22)	$\langle 29^+ \rangle$				x		x					
8533.9(22)	$\langle 30^- \rangle$					x						
8802.4(23)	$\langle 30^+ \rangle$						x			x		
9016.1(23)	$\langle 31^- \rangle$							x				
9224.1(24)	$\langle 31^+ \rangle$									x		
9342.1(22)	$\langle 32^+ \rangle$								x			
9491.9(24)	$\langle 32^- \rangle$										x	
9657.4(25)	$\langle 32^+ \rangle$											x

Energy levels and branching ratios [01Si27]. Part 14

¹⁶⁴Er₆₈

E^* [keV]	J^π	Branching ratios in percentage					
		$E_f^*:$ $J_f^\pi:$	9016.1 ⟨31 ⁻ ⟩	9342.1 ⟨32 ⁺ ⟩	9491.9 ⟨32 ⁻ ⟩	10001.1 ⟨33 ⁻ ⟩	10410.1 ⟨34 ⁺ ⟩
10001.1(25)	⟨33 ⁻ ⟩		x				
10410.1(24)	⟨34 ⁺ ⟩			x			
10515(3)	⟨34 ⁻ ⟩				x		
11049(3)	⟨35 ⁻ ⟩					x	
11549(3)	⟨36 ⁺ ⟩						x

Energy levels and branching ratios [06Ja0A].

¹⁶⁵Er₆₈

E^* [keV]	$2J^\pi$	$2J^\pi$	σ (d,p)	σ (d,t)	L	σ (d,t)	S_N	L	$d\sigma/d\Omega$	L	σ (p,t)	$T_{1/2}$ or Γ_{cm}	Ref.
		(d,p)	$\mu\text{b/sr}$	$\mu\text{b/sr}$	(d,t)	$\mu\text{b/sr}$	(d,t)	(τ, α)	$\mu\text{b/sr}$	(p,t)	$\mu\text{b/sr}$		
0.0	5 ⁻	5 ⁻	6	34	3	50	0.09					10.36(4) h	76Ma33
47.159(4)	5 ⁺			3		33	0.04				4	4.0(1) ns	75St08
62.671(4)	7 ⁺									0	61		75St08
77.260(4)	7 ⁻	7 ⁻	7	16	3	32	0.06					0.96(8) ns	69Tj01
97.963(9)	9 ⁺	9 ⁺	21	71	4	110	0.92	4	13		12		72Lo20
167.1(6)	⟨11 ⁺ ⟩										5		75St08
175.82(3)	9 ⁻	9 ⁻	11	33	5	35	1.0	5	17				69Tj01
237.8(7)	⟨13 ⁺ ⟩							6	81		2		72Lo20
242.934(4)	3 ⁻	3 ⁻	57	233	1	360	0.17					0.31(4) ns	69Tj01
295.8(7)	⟨11 ⁻ ⟩	1 ⁻	121	92			0.11				<2		69Tj01
296.127(4)	5 ⁻						incl					≤0.2 ns	
297.371(4)	1 ⁻				1	240						0.70(8) ns	
356.529(4)	3 ⁻		13	9	1	40	0.02					0.35(6) ns	69Tj01
372.0(8)	⟨15 ⁺ ⟩										1		75St08
372.712(14)	7 ⁻		122	217	3	280	0.71	3	42				72Lo20
384.327(6)	5 ⁻		27	≈21		45	0.11						69Tj01
431(2)	1 ⁺				0	30	0.02						
463.3(10)	⟨17 ⁺ ⟩												
465	7 ⁺									0	184		75St08
467(2)	⟨9 ⁻ ⟩		4	≈5		15	0.40						69Tj01
477.762(8)	5 ⁻												
507.428(5)	1 ⁺			≈168	0	400	0.17					0.70(12) ns	69Tj01
514(3)	7 ⁻		60										69Tj01
519.153(6)	5 ⁺												
534.561(9)	3 ⁺		27	≈305	2	390	0.57						69Tj01
551.3(6)	11 ⁻			≈57	5	63	1.7	5	89			0.25(3) μs	72Lo20
573(2)	7 ⁻		175	≈18	⟨3⟩	40	0.10						69Tj01
589.773(5)	3 ⁺					70					[11]		75St08
589.927(7)	1 ⁻					incl						≤0.6 ns	
593(2)	[11 ⁻]		[42]	[33]									69Tj01
599(2)	⟨3 ⁺ , 5 ⁺ ⟩				⟨2⟩	35	0.07						06Ja0A

(continued)

¹⁶⁵Er
68

E^*	$2J^\pi$	$2J^\pi$	σ (d,p)	σ (d,t)	L	σ (d,t)	S_N	L	$d\sigma/d\Omega$	L	σ (p,t)	$T_{1/2}$ or	Ref.
[keV]		(d,p)	$\mu\text{b/sr}$	$\mu\text{b/sr}$	(d,t)	$\mu\text{b/sr}$	(d,t)	(τ, α)	$\mu\text{b/sr}$	(p,t)	$\mu\text{b/sr}$	Γ_{cm}	
605.511(8)											[11]		75St08
608.497(7)	3^-		18	≈ 23							incl		69Tj01
648(2)				3		15							69Tj01
674(2)	$5^+, 3^+$				2	12	0.02						
677.9(11)	$\langle 19^+ \rangle$												
684(3)	9^-		7										69Tj01
700(3)			5										69Tj01
706.9(10)	$\langle 13^- \rangle$												
721(2)						15							
730(3)			24								9		69Tj01
745.955(8)	1^+		7	190	0	420	0.28					1.00(15) ns	69Tj01
760(2)	$\langle 7^-, 5^- \rangle$		6	40	3	82	0.60						69Tj01
769.4	$\langle 21^+ \rangle$												
817(2)*	$5^-, 7^-$				3	150	1.7						
820(3)	11^-		7	58									69Tj01
840(2)	$\langle 1^-, 3^- \rangle$				$\langle 1 \rangle$	10	0.008						
853.517(8)	3^+		4										69Tj01
863(2)	$3^+, 5^+$			17	2	38	0.084						69Tj01
873(3)			10										69Tj01
882.8(10)	$\langle 15^- \rangle$												
896(3)			8										69Tj01
920.731(7)	1^-		≈ 2		$\langle 1 \rangle$	10	0.006						69Tj01
955(2)	$\langle 9^+, 7^+ \rangle$				$\langle 4 \rangle$	30	0.3						
962.420(12)	3^-		119										69Tj01
971(2)	$\langle 3^+, 5^+ \rangle$			14		10	0.02						69Tj01
999.89(4)	3^+												
1024(5)	$\langle 5^- \rangle$		48										69Tj01
1039(2)	3^-			96		300	0.20						69Tj01
1045.0(3)			42										69Tj01
1064(2)	5^-			8		35	0.07						69Tj01
1073(5)			11										69Tj01
1078.5(12)	$\langle 17^- \rangle$												
1079.8(15)	$\langle 23^+ \rangle$												
1103.52(1)	3^+												
1106(2)	$\langle 7^- \rangle$		31	9	$\langle 3 \rangle$	13	0.07						69Tj01
1139(2)	$3^+, 5^+$		4	15	2	25	0.07						69Tj01
1153.1(17)	$\langle 25^+ \rangle$												
1165(15)								5,6	26				72Lo20
1172(2)	7^-		5	17	$\langle 3 \rangle$	35	0.10						69Tj01
1198(5)			3										69Tj01
1233(5)			7										69Tj01
1250(2)						10							
1274(2)	$\langle 5^-, 7^- \rangle$			28	$\langle 3 \rangle$	80	0.26						69Tj01
1289.09(2)	3^-		82		$\langle 1 \rangle$	30	0.02						69Tj01
1332(2)					$\langle 3 \rangle$	20							

(continued)

¹⁶⁵Er
68

E^*	$2J^\pi$	$2J^\pi$	σ (d,p)	σ (d,t)	L	σ (d,t)	S_N	L	$d\sigma/d\Omega$	L	σ (p,t)	$T_{1/2}$ or	Ref.
[keV]		(d,p)	$\mu\text{b/sr}$	$\mu\text{b/sr}$	(d,t)	$\mu\text{b/sr}$	(d,t)	(τ, α)	$\mu\text{b/sr}$	(p,t)	$\mu\text{b/sr}$	Γ_{cm}	
1339.68(4)	5^-												
1379(2)	$\langle 5^-, 7^- \rangle$		14	13		36	0.10						69Tj01
1411.86(2)	3^+		35			10							69Tj01
1416.86(4)	3^-		incl										69Tj01
1427.405(9)	3^+												
1474(5)	$\langle 3^- \rangle$		49										69Tj01
1489(2)	1^+		14		0	92	0.11						69Tj01
1528.12(6)	$1^+, 3^+$												
1539(5)	$\langle 5^- \rangle$		82										69Tj01
1564(5)			21										69Tj01
1612(5)			≈ 28										69Tj01
1621.8(20)	$\langle 29^+ \rangle$												
1631(5)	$\langle 7^- \rangle$		≈ 28										69Tj01
1656(5)			83										69Tj01
1728(5)			44										69Tj01
1761(5)			51										69Tj01
1780(5)			45										69Tj01
1805(5)			45										69Tj01
1819(5)			63										69Tj01
1851(5)			23										69Tj01
1889(5)			35										69Tj01
1901(5)			53										69Tj01
1940(5)			78										69Tj01
1951(5)			38										69Tj01
1968(5)			80										69Tj01
2004(5)			22										69Tj01
2018(5)			23										69Tj01
2033(5)			45										69Tj01
2047(5)			35										69Tj01
2057(5)			30										69Tj01
			69Tj01	69Tj01		76Ma33	76Ma33		72Lo20		75St08		Ref.

Additional data on this isotope can be found in [84Pe03, 80Pe07, 75Ja18, 73Ma43].

* Absent in [06Ja0A].

Cross sections σ (d,p), σ (d,t) from [69Tj01], σ (d,t) from [76Ma33] (given in the separate column), σ (τ, α) [72Lo20] and σ (p,t) [75St08] were measured at 90°, 90°, 30°, 60° and 60°, respectively; measurements of σ (d,p) at 15 angles are reported in [79Ja23].

Spectroscopic factor is derived by relation σ (d,t)_{exp}=3.33· $C^2 S d\sigma/d\Omega_{DWBA}/(2j+1)$ [76Ma33].

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

Energy levels and branching ratios [06Ja0A]. Part 2

¹⁶⁵Er
68

E^*	$2J^\pi$	E_f^* :	0.0	47.2	62.7	Branching ratios in percentage						
[keV]	(d,p)	$2J_f^\pi$:	5−	5+	7+	77.3	97.9	167.5	175.86	238.5	242.935	296.123
						7−	9+	⟨11+⟩	9−	13+	3−	5−
47.159(4)			100									
62.671(4)			100	x								
77.260(4)	7−		100	x	x							
97.963(9)	9+			x	x	x						
167.1(6)					32		68					
175.82(3)	9−		100			x						
237.8(7)							69	31				
242.934(4)	3−		98(2)	1.59(4)		0.43(6)						
295.8(7)	1−					98			2.2			
296.127(4)			45(1)	9.3(2)		38.9(21)			x		6.6(5)	
297.371(4)			64(1)								36.2(9)	
356.529(4)			48(1)	x		10.6(3)					27.5(6)	12.5(25)
372.0(8)								68		32		
372.712(14)		x									x	x
384.327(6)		39(4)				41(1)	x				8(1)	12(1)
463.3(10)										80		
477.762(8)			42(2)	29(2)	6.3(3)	14.5(3)					6.7(2)	1.8(2)
507.428(5)				68(2)							9.1(2)	
519.153(6)				17.7(4)	63(3)		16.4(4)					
534.561(9)		x	x									x
551.3(6)						[11]			[46]	[43]		
589.773(5)				31(2)	20.5(5)						4.8(2)	
589.927(7)			38.8(17)								61(2)	
605.511(8)											x	
608.497(7)		31(1)				1.9(3)					34(1)	32(2)
745.955(8)				21.7(8)								
853.517(8)		1.5(1)	88(3)	4.2(1)							4.4(1)	1.70(19)
920.731(7)											4.0(2)	
962.420(12)											2.01(25)	
999.89(4)				45(4)	6.2(7)							5.8(8)
1289.09(2)		27(1)									20.1(9)	
1339.68(4)		13.3(23)			9.4(25)	8.0(18)					8.7(9)	
1416.86(4)		27.7(12)				17.8(31)						
1427.405(9)		11.5(8)	5.5(3)	0.94(3)							42(2)	24.8(11)
1528.12(6)											66(3)	34.5(29)

Energy levels and branching ratios [06Ja0A]. Part 3

¹⁶⁵Er₆₈

E^* [keV]	$2J^\pi$ (d,p)	Branching ratios in percentage										
		E_f^* : $2J_f^\pi$:	297.366 1–	356.517 3–	372.7 ⟨15+⟩	384.322 5–	463.8 ⟨17+⟩	477.764 5–	507.416 1+	519.135 5+	534.564 3+	551.0 11–
356.529(4)			1.0(1)									
384.327(6)			x	x	x							
463.3(10)					20.3							
507.428(5)			13.8(3)	9.3(2)								
519.153(6)				3.2(7)								
534.561(9)						x						
589.773(5)			27.6(8)	2.2(1)		9.3(2)			x	4.6		
605.511(8)						x		x				
608.497(7)						1.9(4)						
706.9(10)												100
745.955(8)			27.5(9)	48(1)					2.7(2)			
769.4							100					
853.517(8)				0.15(5)						0.14(2)	0.11(3)	
882.8(10)												11.0
920.731(7)			5.2(2)	62(4)		1.96(19)		19.6(7)	2.20(17)			
962.420(12)			44(1)	18.7(11)		19.2(5)		12.4(7)			4.1(3)	
999.89(4)									31.8(22)			
1103.52(1)				23.9(14)		2.3(3)			3.1(9)		1.1(3)	
1289.09(2)			10.9(8)	18(3)								
1339.68(4)						12.1(14)						
1411.86(2)										6.2(8)		
1427.405(9)				0.17(3)		1.11(3)		0.84(3)	0.58(5)	0.30(8)		

Energy levels and branching ratios [06Ja0A]. Part 4

¹⁶⁵Er₆₈

E^* [keV]	$2J^\pi$ (d,p)	Branching ratios in percentage										
		E_f^* : $2J_f^\pi$:	589.760 3+	589.868 1–	608.498 3–	678.3 ⟨19+⟩	706.6 ⟨13–⟩	769.8 ⟨21+⟩	853.540 3+	882.5 ⟨15–⟩	999.86 3+	1153.3 ⟨25+⟩
745.955(8)			0.30(10)	0.20(10)								
882.8(10)							89					
920.731(7)			3.06(14)	2.36(14)								
999.89(4)				11.2(12)								
1078.5(12)							43			57		
1079.8(15)						100						
1103.52(1)			32(2)	11.0	7.1(4)				19.1(19)			
1153.1(17)								100				
1289.09(2)					23.9(7)							
1339.68(4)				49(4)								
1411.86(2)				22.8(15)					71(3)			
1416.86(4)			37(4)								17.2(22)	
1427.405(9)			7.0(2)					4.9(2)				
1621.8(20)												100

Energy levels and branching ratios [92Sh13].

¹⁶⁶Er
68

E^*	J^π	$\Gamma_{\gamma o}$	$I_{s,0}$	$\Gamma_{\gamma o}$	$B(M1)$	$B(E1)$	σ (t,p)	σ (τ ,d)	σ (α ,t)	σ (d,t)	σ (τ , α)	Ref.
[keV]		[meV]	[eVb]	[meV]	$[\mu_N^2]$	$[10^{-3}e^2fm^2]$	$\mu b/sr$	$\mu b/sr$	$\mu b/sr$	$\mu b/sr$	$\mu b/sr$	
0.0	0 ⁺						271	<1.0	<1.0			92Bu16
80.577(7)	2 ⁺						21	2.2	6.1	17.3	<1.0	92Bu16
264.991(9)	4 ⁺						8	6.4	24	≈ 39	6.5	92Bu16
545.455(10)	6 ⁺						1	2.8	10.7	34	17.2	92Bu16
785.910(15) ^a	2 ⁺						2	<1.0	<1.0	5.6		92Bu16
859.392(10) ^a	3 ⁺						1		<1.0	5.6		92Bu16
911.210(14)	8 ⁺							<1.0	<1.0	8.2	6.0	79Pa15
956.227(14) ^a	4 ⁺						10	<1.0	<1.0	5.8		92Bu16
1075.278(10) ^a	5 ⁺							<1.0	<1.0	4.1		79Pa15
1215.964(15) ^a	6 ⁺							<1.0		2.3		72Ma37
1349.64(10)	10 ⁺											
1376.034(15) ^a	7 ⁺									<1.0		79Pa15
1458.158(15)	$\langle 2 \rangle^-$						45		<1.0	103	<1.0	92Bu16
1459.93(4)	0 ⁺						incl			incl	incl	72Ma37
1513.744(15)	3 ⁻						6			72	2.1	92Bu16
1528.403(15)	2 ⁺						5		1.6			92Bu16
1555.741(20) ^a	8 ⁺											
1572.196(15)	$\langle 4 \rangle^-$							27	29	5.0		79Pa15
1596.237(15)	$\langle 4 \rangle^-$							1.9	3.0	46	1.9	79Pa15
1662.40(5)	1 ⁻	32(5)	63.6(70)	38.1(47)		23.74(293)		9.8	13.5	14.8		79Pa15
1665.776(15)	5 ⁽⁻⁾						5	incl	incl	incl		92Bu16
1678.77(3)	$\langle 4^+ \rangle$							3.0	≈ 1.0	4.7	1.9	79Pa15
1692.277(15)	5 ⁽⁻⁾						1	8.2	≈ 13	12.4		92Bu16
1703.05(3)	$\langle 2-4 \rangle^+$									4.2	2.0	92Bu16
1714(2)	0 ⁺						54					92Bu16
1721.7(6)	$\langle 3^- \rangle$							1.2	2.6	7.0		79Pa15
1751.40(10) ^a	9 ⁺							<1.0	2.2			79Pa15
1760.9(4)										10.9	2,1	92Bu16
1786.970(20)	6 ⁻							1.9	2.5	3.5		79Pa15
1813.2(3)	1 ⁺	8(1)	24.5(30)	10.4(18)	0.452(78)			<1.0		3.4		79Pa15
1827.56(2)	6 ⁻							6.4	5.7			79Pa15
1830.46(4)	1 ⁻	2.4								9.9		92Bu16
1846.6(5)	12 ⁺											
1865.17(8)							4	4.4	4.5	33	15.5	92Bu16
1894.36(3)										11.3		79Pa15
1897.27(15)	$\langle 6^+ \rangle$									incl		79Pa15
1901	$\langle 5^- \rangle$											92Bu16
1908.2(4)	$\langle 6^- \rangle$									47	5.3	79Pa15
1917.759(20)	3 ⁻							18	13.8			79Pa15
1928	0 ⁺									38	<1.0	92Bu16
1938.275(20)	$\langle 3 \rangle^+$							1.4	4.5			79Pa15
1948												92Bu16
1964.09(15) ^a	10 ⁺											
1969.71(20)	$\langle 2-4 \rangle$									11.8	2.2	79Pa15
1978.426(20)	$\langle 3,4 \rangle^+$							13.2	11.2	26		92Bu16

(continued)

¹⁶⁶Er

E^*	J^π	$\Gamma_{\gamma o}$	$I_{s,0}$	$\Gamma_{\gamma o}$	$B(M1)$	$B(E1)$	$\sigma(t,p)$	$\sigma(\tau,d)$	$\sigma(\alpha,t)$	$\sigma(d,t)$	$\sigma(\tau,\alpha)$	Ref.
[keV]		[meV]	[eVb]	[meV]	$[\mu_N^2]$	$[10^{-3}e^2fm^2]$	$\mu b/sr$	$\mu b/sr$	$\mu b/sr$	$\mu b/sr$	$\mu b/sr$	
1985.638(20)	3^-						19.4	35		15.9		79Pa15
1992.70(10)	$\langle 7 \rangle^-$											
2001.874(20)	$\langle 3 \rangle^-$						14.9	12.7	2.2			92Bu16
2021.359(20)	$\langle 2,3 \rangle^-$						11.7	10.4	96	8.0		92Bu16
2022.62(15)												
2031.5(10)	$\langle 5^+ \rangle$									29	12.7	79Pa15
2046.87(8)	$\langle 2^+, 3 \rangle$						14.9	19				79Pa15
2050	$\langle 7^- \rangle$									22	8.8	79Pa15
2056							33	17.2				79Pa15
2061										28	4.7	92Bu16
2073	$\langle 2^- \rangle$						2.0	3.5				79Pa15
2073.20(20)	$\langle 8 \rangle^-$											
2076.30(3)	$\langle 3^- \rangle$									88		79Pa15
2082.6(4)												
2089.2(5)										10.3	11.2	79Pa15
2092.30(10)	$\langle 7 \rangle^-$											92Bu16
2101.6(3)												
2115	$\langle 6^+ \rangle$						2.2	2.2				79Pa15
2117.8(8)	$\langle 2-4 \rangle$											
2124.7(7)	$\langle 5^- \rangle$									28	18.1	79Pa15
2132.947(20)	3^+						36	38		190		79Pa15
2134.5(10)										incl		79Pa15
2144.60(20)	$\langle 8^- \rangle$											
2148.5(6)	$\langle 4^- \rangle$									33	11.2	79Pa15
2152	$\langle 2^- \rangle$						≈ 13	≈ 8				79Pa15
2160.124(20)	3^+									38		92Bu16
2166	$\langle 2^- \rangle$						≈ 3.5	2.0				79Pa15
2172.75(3)	3^+									14.3	13.2	79Pa15
2182										3.4	5.4	79Pa15
2196(2)	0^+						12					92Bu16
2189.1(10) ^a	$\langle 11^+ \rangle$											
2194.60(20)	$\langle 8^+ \rangle$											
2201.1(10)	$1^{(+)}$	15(3)	14.4(22)	17.5(30)		4.70(81)						76Me04
2204							5.0	11.6				79Pa15
2212.99(15)												92Bu16
2215.974(20)	$2^-, 3^-$						8.7	8.0		86	12.5	79Pa15
2223							11.7	≈ 5				79Pa15
2240.1(10)	$\langle 5^- \rangle$						11.2	12.9				79Pa15
2243.11(3)	3^-									143	30	92Bu16
2246.30(20)	$\langle 9^- \rangle$											
2260.66(5)	$2^{(+)}, 3$											92Bu16
2264.31(8)	$\langle 1, 2^+ \rangle$						4.3	3.6		12.4	16.7	79Pa15
2273.01(5)	3^-									13.8		79Pa15
2282.68(7)	$2^{(+)}, 3$											92Bu16
2290.97(5)	$\langle 3 \rangle^+$						3.1			289	7.1	92Bu16

(continued)

¹⁶⁶Er₆₈

E^*	J^π	$\Gamma_{\gamma o}$	$I_{s,0}$	$\Gamma_{\gamma o}$	$B(M1)$	$B(E1)$	$\sigma(\tau, d)$	$\sigma(\alpha, t)$	$\sigma(d, t)$	$\sigma(\tau, \alpha)$	Ref.
[keV]		[meV]	[eVb]	[meV]	$[\mu_N^2]$	$[10^{-3}e^2fm^2]$	$\mu b/sr$	$\mu b/sr$	$\mu b/sr$	$\mu b/sr$	
2315	$\langle 3,4 \rangle^+$						4.2	2.0	277	9.8	79Pa15
2328.50(20)	$\langle 9^- \rangle$										
2328.69(20)	$\langle 1,2 \rangle$										
2333							8.4	5.1	243	11.1	79Pa15
2347								3.4			79Pa15
2352.91(15)	$2^{(+)}, 3$								75		79Pa15
2360							4.1	3.4			79Pa15
2367	$\langle 6^- \rangle$								115	10.2	79Pa15
2377.77(10)	1^+								81	23	79Pa15
2382.26(8)	$\langle 3 \rangle^+$								73		79Pa15
2389.4(5)	14^+						≈ 4	≈ 2			79Pa15
2393.13(6)	$2^+, 3^+$						incl	incl			79Pa15
2402							≈ 6	≈ 6	49	7.6	79Pa15
2413.67(10)	$\langle 2-4 \rangle$						≈ 3	1.8	37	4.9	79Pa15
2427									98		79Pa15
2428.0(5)	$\langle 10^- \rangle$										
2429.0(3) ^a	$\langle 12^+ \rangle$										
2435.13(15)	$\langle 3,4 \rangle^+$						3.4	2.5	≈ 28		79Pa15
2444.2(3)									83	6.8	79Pa15
2453							9.3	6.1			79Pa15
2464.52(20)	1^+	6(2)	10.1(6)	7.2(14)	0.125(24)						76Me04
2475.40(10)	$\langle 1,2 \rangle^+$						7.0	6.2	58	2.9	79Pa15
2479.3(5)	$\langle 10^+ \rangle$										
2495	$\langle 9^- \rangle$								57	34	79Pa15
2504	$\langle 3,4 \rangle^+$						5.9	5.7	94		79Pa15
2512	$\langle 3,4 \rangle^+$								237	18.7	79Pa15
2524	$\langle 1 \rangle$	12(3)	16.2(23)	13.7(24)	0.221(39)				≈ 28		79Pa15
2534							3.0	3.4		7.8	79Pa15
2542.88(10)									41		79Pa15
2563							< 2	3.0	26	5.2	79Pa15
2578									8.8		79Pa15
2586.07(20)	$\langle 3,4 \rangle^+$						7.7		76	7.8	79Pa15
2600.63(6)	$\langle 1 \rangle^+$	25(5)	39.7(75)	35(10)	0.521(147)				30		79Pa15
2608	$\langle 6^- \rangle$						74	34			79Pa15
2613.50(20)											
2619.6(6)	$\langle 2^+ \rangle$								21		79Pa15
2624.8(3)	$\langle 1,2 \rangle$								incl		79Pa15
2628.5(3)	$\langle 1,2 \rangle$										
2632.66(20)	$\langle 3,4 \rangle^+$						11.9	9.8	388	5.3	79Pa15
2649									11.4	2.7	79Pa15
2654.0(3)	$\langle 13^+ \rangle$										
2655							14.2	8.3			79Pa15
2656.0(10)	$\langle 12^+ \rangle$										
2672.00(20)							5.2	2.1	2.7		79Pa15
2679.06(20)	$\langle 1 \rangle^+$	16(5)	16.0(16)	15.2(37)	0.205(50)				19.1		79Pa15

(continued)

¹⁶⁶Er
68

E^*	J^π	Γ_{γ_0}	$I_{s,0}$	Γ_{γ_0}	$B(M1)$	$B(E1)$	$\sigma(\tau, d)$	$\sigma(\alpha, t)$	$\sigma(d, t)$	$\sigma(\tau, \alpha)$	Ref.
[keV]		[meV]	[eVb]	[meV]	$[\mu_N^2]$	$[10^{-3}e^2fm^2]$	$\mu b/sr$	$\mu b/sr$	$\mu b/sr$	$\mu b/sr$	
2687									≈ 20		79Pa15
2729.10(20)	$\langle 3,4 \rangle^+$								48		79Pa15
2768	$\langle 1 \rangle$	13(4)	7.7(7)	13.1(21)		1.77(28)					76Me04
2783.69(20)	$\langle 2 \rangle^+$	3(1)	4.7(9)	3.2(9)	0.038(11)	0.43(12)					76Me04
2797.5(4)	$\langle 1,2 \rangle$										
2812.00(20)	1	58(11)	28.0(23)	53.8(54)		6.93(70)					76Me04
2858.17(20)	$\langle 1,2 \rangle$										
2880.0(5)	$\langle 14^+ \rangle$										
2912							4.5	1.3			79Pa15
2953							10.9	10.0			79Pa15
2967.4(7)	$\langle 16^+ \rangle$										
2993							10.8	1.9			79Pa15
3001											
3057											
3073	1		2.9(5)	10.2(28)		1.01(28)					96Ma18
3076	$\langle 8^+ \rangle$						6.7	6.9			79Pa15
3087							5.0	2.8			79Pa15
3123	1		7.5(7)	13.0(47)		1.22(44)					96Ma18
3144	1	49(7)	48.7(36)	61.8(63)	0.515(53)						76Me04
3147							12.4	1.9			79Pa15
3161							10.5	1.2			79Pa15
3175	1		17.1(18)	24.1(37)	0.195(30)						96Ma18
3187	1		20.5(15)	27.0(31)	0.216(25)						96Ma18
3197	1	33(5)	32.8(24)	44.1(43)	0.350(34)						76Me04
3234											
3240							11.7	4.7			79Pa15
3273	$\langle 9^+ \rangle$						11.2	13.7			79Pa15
3288	1		12.7(14)	30.0(44)		2.42(35)					96Ma18
3322	1		7.8(11)	24.2(49)		1.89(38)					96Ma18
3329	1		16.1(22)	21.7(51)	0.152(36)						96Ma18
3386	1		14.4(25)	35.3(77)		2.61(57)					96Ma18
3425	1		11.5(58)	11.7(67)	0.075(43)	0.83(48)					96Ma18
3430	1		21.1(52)	26.7(98)	0.171(63)						96Ma18
3440	1		9.1(26)	35.6(125)		2.51(88)					96Ma18
3476							15.1				79Pa15
3493	1		18.9(167)	20(19)	0.122(116)	1.35(128)					96Ma18
3498	1		9.1(91)	9.7(103)	0.059(62)	0.65(69)					96Ma18
3501							25	<2			79Pa15

(continued)

¹⁶⁶Er
68

E^*	J^π	$\Gamma_{\gamma o}$	$I_{s,0}$	$\Gamma_{\gamma o}$	$B(M1)$	$B(E1)$	σ (t,p)	σ (τ ,d)	σ (α ,t)	σ (d,t)	σ (τ , α)	Ref.
[keV]		[meV]	[eVb]	[meV]	$[\mu_N^2]$	$[10^{-3}e^2fm^2]$	$\mu\text{b/sr}$	$\mu\text{b/sr}$	$\mu\text{b/sr}$	$\mu\text{b/sr}$	$\mu\text{b/sr}$	
		76Me04	96Ma18	96Ma18	96Ma18	96Ma18	92Bu16	79Pa15	79Pa15	79Pa15	79Pa15	Ref.

Additional data on this isotope can be found in [00Gr33, 00De59, 99GrZU, 98GrZW, 97GaZY, 97Ga11, 96Fa21, 94Gr10, 92Be29, 92Ar06, 90Zi05, 72Ma37, 68Tj02].

Abundance: 33.503(36) %.

"a" marks members of γ -band introduced in [96Fa21].

Cross sections of (p,t) and (t,p) reactions were measured at 25° and 30°, respectively [92Bu16].

Cross sections of neutron transfer reactions (d,t) and (τ , α) were measured at 45° and 50°, and of proton transfer reactions (τ ,d) and (α ,t) – at 45° and 60°, respectively [79Pa15].

Interpretation of results by assignment of transferred orbital momentum l , parameter K^π and predominant two-quasiparticle configuration of the level is given in [79Pa15].

For the level at $E^*=1663$ keV parameters $I_o^{\text{red}}=9.3(6)$ meV and $B(E1)=26.6(16)$ in units $10^{-3}e^2fm^2$ were given in [91Zi01].

Relative strengths of two-neutron transfer reactions (t,p) and (p,t) marked as ε are from [92Bu16].

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

Energy levels and branching ratios [92Sh13]. Part 2

¹⁶⁶Er
68

E^*	J^π	σ (p,t)	ε	ε	$T_{1/2}$ or	Ref.	Branching ratios in percentage					
[keV]		μb	(t,p)	(p,t)	Γ_{cm}		E_f^* : 0.0	80.6	265	545	786	
							J_f^π : 0 ⁺	2 ⁺	4 ⁺	6 ⁺	2 ⁺	
0.0	0 ⁺	630	100	100	Stable	92Bu16						
80.577(7)	2 ⁺	92			1.82(3) ns	92Bu16	100					
264.991(9)	4 ⁺	36			118(5) ps	92Bu16		100				
545.455(10)	6 ⁺	3				92Bu16			100			
785.910(15) ^a	2 ⁺	8			3.26(11) ps	92Bu16	47.1(11)	52(1)	0.8(8)			
859.392(10) ^a	3 ⁺	1				92Bu16		85(2)	15.5(3)			≤0.4
911.210(14)	8 ⁺				4.2(3) ps	79Pa15				100		
956.227(14) ^a	4 ⁺	4				92Bu16		35(1)	64(1)	0.79(2)	0.64(3)	
1075.278(10) ^a	5 ⁺				≤60 ps	79Pa15			82.4(3)	13.70(9)		
1215.964(15) ^a	6 ⁺	4				72Ma37			29.4(2)	58.5(2)		
1349.64(10)	10 ⁺				1.7(2) ps							
1376.034(15) ^a	7 ⁺					79Pa15				66.1(2)		
1458.158(15)	⟨2⟩ ⁻	≤1				92Bu16		0.09(4)			74(1)	
1459.93(4)	0 ⁺	incl	15	≤0.3		72Ma37	x	98(6)			2.04(23)	
1513.744(15)	3 ⁻	6				92Bu16		25(4)	12.9(3)		23(1)	
1528.403(15)	2 ⁺	≤1				92Bu16	2.4(2)	39.9(10)	56(1)		1.62(14)	
1555.741(20) ^a	8 ⁺									20.3(6)		
1572.196(15)	⟨4⟩ ⁻					79Pa15			0.6(2)			
1596.237(15)	⟨4⟩ ⁻					79Pa15			0.8(1)			
1662.40(5)	1 ⁻					79Pa15	39.1(7)	60.9(13)				
1665.776(15)	5 ^{⟨-⟩}	4				92Bu16			66(1)	31.5(9)		

(continued)

¹⁶⁶Er

E^*	J^π	σ (p,t)	ε	ε	$T_{1/2}$ or	Ref.	Branching ratios in percentage				
[keV]		μb	(t,p)	(p,t)	Γ_{cm}		E_f^* : 0.0 J_f^π : 0 ⁺	80.6 2 ⁺	265 4 ⁺	545 6 ⁺	786 2 ⁺
1678.77(3)	$\langle 4^+ \rangle$					79Pa15			100		
1692.277(15)	$5^{(-)}$					92Bu16			56(1)	22.4(5)	
1703.05(3)	$\langle 2-4 \rangle^+$	22				92Bu16		100			
1714(2)	0^+	38	14	14		92Bu16					
1721.7(6)	$\langle 3^- \rangle$					79Pa15		56(7)	44(7)		
1751.40(10) ^a	9^+					79Pa15					
1760.9(4)		1				92Bu16			100	<95	
1786.970(20)	6^-					79Pa15			0.018(5)	1.088(10)	
1813.2(3)	1^+					79Pa15		[100]			
1827.56(2)	6^-					79Pa15			0.017(5)	1.00(4)	
1830.46(4)	1^-	2				92Bu16	23.4(8)	77(5)			
1846.6(5)	12^+				0.90(8) ps						
1865.17(8)		1				92Bu16		100			
1894.36(3)						79Pa15					
1897.27(15)	$\langle 6^+ \rangle$					79Pa15		26(13)	43(13)	31(9)	
1901	$\langle 5^- \rangle$	3				92Bu16					
1908.2(4)	$\langle 6^- \rangle$					79Pa15					
1917.759(20)	3^-					79Pa15		12.9(3)	18.2(5)		4.17(10)
1928	0^+	21		8		92Bu16					
1938.275(20)	$\langle 3 \rangle^+$					79Pa15		0.9(3)	0.71(18)		75(2)
1948		1				92Bu16					
1964.09(15) ^a	10^+										
1969.71(20)	$\langle 2-4 \rangle$					79Pa15		45(10)	55(13)		
1978.426(20)	$\langle 3,4 \rangle^+$	2				92Bu16					46(1)
1985.638(20)	3^-					79Pa15		13(3)	15(2)		
1992.70(10)	$\langle 7^- \rangle$										
2001.874(20)	$\langle 3^- \rangle$	4				92Bu16		7.3(4)	8.3(4)		51(1)
2021.359(20)	$\langle 2,3 \rangle^-$	4				92Bu16					71(1)
2022.62(15)								68(10)	32(3)		
2031.5(10)	$\langle 5^+ \rangle$					79Pa15				100	
2046.87(8)	$\langle 2^+, 3 \rangle$					79Pa15			14.0(15)		
2050	$\langle 7^- \rangle$					79Pa15					
2056						79Pa15					
2061		1				92Bu16					
2073	$\langle 2^- \rangle$					79Pa15					
2073.20(20)	$\langle 8^- \rangle$										
2076.30(3)	$\langle 3^- \rangle$					79Pa15		3.3(4)	8(3)		34(2)
2082.6(4)											
2089.2(5)						79Pa15			100		
2092.30(10)	$\langle 7^- \rangle$	3				92Bu16					
2101.6(3)											72(7)
2115	$\langle 6^+ \rangle$					79Pa15					
2117.8(8)	$\langle 2-4 \rangle$							29(6)	71(17)		
2124.7(7)	$\langle 5^- \rangle$					79Pa15					
2132.947(20)	3^+					79Pa15		30(1)	7.0(1)		1.90(4)

(continued)

¹⁶⁶Er
68

E^*	J^π	σ (p,t)	ε	ε	$T_{1/2}$ or	Ref.	Branching ratios in percentage					
[keV]		μb	(t,p)	(p,t)	Γ_{cm}		$E_f^*:$ $J_f^\pi:$	0.0 0 ⁺	80.6 2 ⁺	265 4 ⁺	545 6 ⁺	786 2 ⁺
2134.5(10)						79Pa15		[100]				
2144.60(20)	$\langle 8^- \rangle$											
2148.5(6)	$\langle 4^- \rangle$					79Pa15				100		
2152	$\langle 2^- \rangle$					79Pa15						
2160.124(20)	3 ⁺	2				92Bu16			39(1)	7.5(2)		34.9(8)
2166	$\langle 2^- \rangle$					79Pa15						
2172.75(3)	3 ⁺					79Pa15			46(1)	10		
2182						79Pa15						
2196(2)	0 ⁺	17	≤ 3	8		92Bu16						
2189.1(10) ^a	$\langle 11^+ \rangle$											
2194.60(20)	$\langle 8^+ \rangle$											
2201.1(10)	1 ⁽⁺⁾					76Me04		35(18)	65(31)			
2204						79Pa15						
2212.99(15)		1				92Bu16				23(3)		45(5)
2215.974(20)	2 ⁻ , 3 ⁻					79Pa15			1.09(4)			4.7(11)
2223						79Pa15						
2240.1(10)	$\langle 5^- \rangle$					79Pa15						
2243.11(3)	3 ⁻	2				92Bu16			16(1)	26(2)		21(3)
2246.30(20)	$\langle 9^- \rangle$											
2260.66(5)	2 ⁽⁺⁾ , 3	5				92Bu16						60(2)
2264.31(8)	$\langle 1, 2^+ \rangle$					79Pa15		24(2)	76(5)			
2273.01(5)	3 ⁻					79Pa15			45(2)	50(2)		1.9(3)
2282.68(7)	2 ⁽⁺⁾ , 3	2				92Bu16			54(2)	46(4)		
2290.97(5)	$\langle 3 \rangle^+$	2				92Bu16			4.8(2)	<1.7		65(1)
2315	$\langle 3, 4 \rangle^+$					79Pa15						
2328.50(20)	$\langle 9^- \rangle$											
2328.69(20)	$\langle 1, 2 \rangle$							66(6)	34(5)			
2333						79Pa15						
2347						79Pa15						
2352.91(15)	2 ⁽⁺⁾ , 3					79Pa15			19(2)			
2360						79Pa15						
2367	$\langle 6^- \rangle$					79Pa15						
2377.77(10)	1 ⁺					79Pa15		9.8(10)	7.7(4)			80(2)
2382.26(8)	$\langle 3 \rangle^+$					79Pa15						6(3)
2389.4(5)	14 ⁺					79Pa15						
2393.13(6)	2 ⁺ , 3 ⁺					79Pa15			6.3(3)	6.7(5)		60(3)
2402						79Pa15						
2413.67(10)	$\langle 2-4 \rangle$					79Pa15			8.2(8)	4.0(10)		53(10)
2427						79Pa15						
2428.0(5)	$\langle 10^- \rangle$											
2429.0(3) ^a	$\langle 12^+ \rangle$											
2435.13(15)	$\langle 3, 4 \rangle^+$					79Pa15						70(13)
2444.2(3)						79Pa15		6.8(20)	15(2)			78(16)
2453						79Pa15						
2464.52(20)	1 ⁺					76Me04		66(5)	34(3)			

(continued)

¹⁶⁶Er
68

E^*	J^π	σ (p,t)	ε	ε	$T_{1/2}$ or	Ref.	Branching ratios in percentage					
[keV]		μb	(t,p)	(p,t)	Γ_{cm}		E_{f}^* : J_{f}^π :	0.0 0 ⁺	80.6 2 ⁺	265 4 ⁺	545 6 ⁺	786 2 ⁺
2475.40(10)	$\langle 1,2 \rangle^+$					79Pa15			36(2)			10(4)
2479.3(5)	$\langle 10^+ \rangle$											
2495	$\langle 9^- \rangle$					79Pa15						
2504	$\langle 3,4 \rangle^+$					79Pa15						
2512	$\langle 3,4 \rangle^+$					79Pa15						
2524	$\langle 1 \rangle$					79Pa15						
2534						79Pa15						
2542.88(10)						79Pa15			21(2)	14		
2563						79Pa15						
2578						79Pa15						
2586.07(20)	$\langle 3,4 \rangle^+$					79Pa15			40(3)	22(3)		
2600.63(6)	$\langle 1 \rangle^+$					79Pa15	[67]		[33]			
2608	$\langle 6^- \rangle$					79Pa15						
2613.50(20)								71(7)	29(5)			
2619.6(6)	$\langle 2^+ \rangle$					79Pa15		47(32)	33(6)	20(9)		
2624.8(3)	$\langle 1,2 \rangle$					79Pa15		51(5)	49(9)			
2628.5(3)	$\langle 1,2 \rangle$							73(7)	27(10)			
2632.66(20)	$\langle 3,4 \rangle^+$					79Pa15			21(2)			79(30)
2649						79Pa15						
2654.0(3)	$\langle 13^+ \rangle$											
2655						79Pa15						
2656.0(10)	$\langle 12^+ \rangle$											
2672.00(20)						79Pa15		67(5)	33(10)			
2679.06(20)	$\langle 1 \rangle^+$					79Pa15		66(5)	34(7)			
2687						79Pa15						
2729.10(20)	$\langle 3,4 \rangle^+$					79Pa15		0.35(11)	4.9(4)			3.2(21)
2768	$\langle 1 \rangle$					76Me04						
2783.69(20)	$\langle 2 \rangle^+$					76Me04		60(3)	40(4)			
2797.5(4)	$\langle 1,2 \rangle$							24(10)	76(8)			
2812.00(20)	1					76Me04		[40]	[60]			
2858.17(20)	$\langle 1,2 \rangle$							22(9)	78(7)			
2880.0(5)	$\langle 14^+ \rangle$											
2912						79Pa15						
2953						79Pa15						
2967.4(7)	$\langle 16^+ \rangle$											
2993						79Pa15						
3001												
3057												
3073	1					96Ma18						
3076	$\langle 8^+ \rangle$					79Pa15						
3087						79Pa15						
3123	1					96Ma18						
3144	1					76Me04						
3147						79Pa15						
3161						79Pa15						

(continued)

¹⁶⁶Er
68

E^*	J^π	σ (p,t)	ε	ε	$T_{1/2}$ or	Ref.	Branching ratios in percentage					
[keV]		μb	(t,p)	(p,t)	Γ_{cm}		$E_{\text{f}}^*:$ $J_{\text{f}}^\pi:$	0.0 0 ⁺	80.6 2 ⁺	265 4 ⁺	545 6 ⁺	786 2 ⁺
3175	1					96Ma18						
3187	1					96Ma18						
3197	1					76Me04						
3234												
3240						79Pa15						
3273	$\langle 9^+ \rangle$					79Pa15						
3288	1					96Ma18						
3322	1					96Ma18						
3329	1					96Ma18						
3386	1					96Ma18						
3425	1					96Ma18						
3430	1					96Ma18						
3440	1					96Ma18						
3476						79Pa15						
3493	1					96Ma18						
3498	1					96Ma18						
3501						79Pa15						
		72Ma37	92Bu16			Ref.						
				92Bu16								

Energy levels and branching ratios [92Sh13]. Part 3

¹⁶⁶Er
68

E^*	J^π	Branching ratios in percentage										
[keV]		E_f^* : J_f^π :	859 3 ⁺	911 8 ⁺	956 4 ⁺	1075.28 5 ⁺	1215.96 6 ⁺	1349.64 10 ⁺	1376.03 7 ⁺	1458.16 $\langle 2 \rangle^-$	1513.74 3 ⁻	1528.40 2 ⁺
956.227(14) ^a	4 ⁺		0.105(5)									
1075.278(10) ^a	5 ⁺		3.70(3)		0.245(5)							
1215.964(15) ^a	6 ⁺				11.6(2)	0.47(2)						
1349.64(10)	10 ⁺			100								
1376.034(15) ^a	7 ⁺			8.13(10)		25.10(11)	0.63(4)					
1458.158(15)	$\langle 2 \rangle^-$		25.6(14)									
1513.744(15)	3 ⁻		21.7(4)		17.0(3)							
1555.741(20) ^a	8 ⁺			37(2)			43(2)					
1572.196(15)	$\langle 4 \rangle^-$		55(1)		19.2(4)	25.0(5)						
1596.237(15)	$\langle 4 \rangle^-$		51(2)		18.6(6)	30(5)						
1665.776(15)	5 $\langle - \rangle$					3.0(3)						
1692.277(15)	5 $\langle - \rangle$				15(2)	2.5(7)	4.0(2)					
1751.40(10) ^a	9 ⁺			47(5)			<8	53(5)				
1786.970(20)	6 ⁻				74.6(3)	7.48(5)		15.4(1)				
1827.56(2)	6 ⁻				71.3(4)	7.97(6)		17.33(8)				
1846.6(5)	12 ⁺						100					
1894.36(3)			[100]									

(continued)

¹⁶⁶Er
68

E^* [keV]	J^π	Branching ratios in percentage										
		E_f^* : J_f^π :	859 3 ⁺	911 8 ⁺	956 4 ⁺	1075.28 5 ⁺	1215.96 6 ⁺	1349.64 10 ⁺	1376.03 7 ⁺	1458.16 $\langle 2 \rangle^-$	1513.74 3 ⁻	1528.40 2 ⁺
1917.759(20)	3 ⁻									43(1)	13.4(3)	
1938.275(20)	$\langle 3 \rangle^+$		22.9(4)		0.46(7)							
1964.09(15) ^a	10 ⁺			38(4)				<19				
1978.426(20)	$\langle 3,4 \rangle^+$		≈35		15.4(6)	1.5(3)					1.6(4)	
1985.638(20)	3 ⁻									8.7(3)	31(1)	
1992.70(10)	$\langle 7 \rangle^-$			[100]								
2001.874(20)	$\langle 3 \rangle^-$		<11.7		18.3(4)					7.9(2)	3.7(8)	
2021.359(20)	$\langle 2,3 \rangle^-$		27.2(6)							2.28(7)		
2046.87(8)	$\langle 2^+,3 \rangle$		72(2)		14.4(8)							
2073.20(20)	$\langle 8 \rangle^-$								100			
2076.30(3)	$\langle 3^- \rangle$				≈55							
2082.6(4)					34(17)						66(16)	
2092.30(10)	$\langle 7 \rangle^-$			100								
2101.6(3)			28(6)									
2124.7(7)	$\langle 5^- \rangle$				100							
2132.947(20)	3 ⁺		25.8(5)		16.5(3)	1.20(4)				4.4(1)	<0.005	0.48(1)
2144.60(20)	$\langle 8^- \rangle$								100			
2148.5(6)	$\langle 4^- \rangle$				<94							
2160.124(20)	3 ⁺		8.3(2)		6.5(2)	2.26(5)					≈0.05	0.45(1)
2172.75(3)	3 ⁺		6.3(2)		7(3)	30(5)					0.16(3)	
2189.1(10) ^a	$\langle 11^+ \rangle$							x				
2194.60(20)	$\langle 8^+ \rangle$			100								
2212.99(15)			16(5)		15(6)							
2215.974(20)	2 ⁻ ,3 ⁻		0.5(3)							70(1)	15.3(4)	
2243.11(3)	3 ⁻		3(2)		1.4(4)						27(2)	
2246.30(20)	$\langle 9^- \rangle$			100								
2260.66(5)	2 ⁽⁺⁾ ,3		40(3)									
2273.01(5)	3 ⁻									2.5(5)		
2282.68(7)	2 ⁽⁺⁾ ,3									<6		
2290.97(5)	$\langle 3 \rangle^+$		27(5)		0.62(10)					0.76(6)		
2328.50(20)	$\langle 9^- \rangle$			100								
2352.91(15)	2 ⁽⁺⁾ ,3		68(10)		13(7)							<22
2377.77(10)	1 ⁺		2.6(6)									
2382.26(8)	$\langle 3 \rangle^+$		77.6(3)							8.9(12)	7.3(12)	
2393.13(6)	2 ⁺ ,3 ⁺		1.8(5)		23(3)							
2413.67(10)	$\langle 2-4 \rangle$		10(5)								6.6(13)	
2435.13(15)	$\langle 3,4 \rangle^+$		30(6)									
2475.40(10)	$\langle 1,2 \rangle^+$		36(3)							18(1)		
2479.3(5)	$\langle 10^+ \rangle$							100				
2542.88(10)			20(7)		36(6)							
2586.07(20)	$\langle 3,4 \rangle^+$		38(15)		<27							
2729.10(20)	$\langle 3,4 \rangle^+$											89(3)

Energy levels and branching ratios [92Sh13]. Part 4

¹⁶⁶Er₆₈

E^*	J^π	Branching ratios in percentage									
[keV]		E^*_f : 1555.74 J^π_f : 8^+	1572.20 $\langle 4 \rangle^-$	1596.24 $\langle 4 \rangle^-$	1662.40 1^-	1665.78 $5^{\langle - \rangle}$	1678.77 $\langle 4^+ \rangle$	1692.28 $5^{\langle - \rangle}$	1703.05	1751.40 9^+	1786.97 6^-
1786.970(20)	6^-		0.59(2)	0.295(7)		0.340(13)		0.206(10)			
1827.56(2)	6^-		0.025(6)	1.24(2)		0.604(17)		0.561(14)			
1908.2(4)	$\langle 6^- \rangle$		100	<14							
1917.759(20)	3^-		7.9(2)		0.09(1)						
1964.09(15) ^a	10^+	62(6)									
1985.638(20)	3^-		18(1)	14.3(4)							
2073.20(20)	$\langle 8 \rangle^-$										<40
2132.947(20)	3^+		0.119(4)	0.220(6)			0.056(7)		0.13		
2160.124(20)	3^+		0.32(6)				0.10(1)				
2189.1(10) ^a	$\langle 11^+ \rangle$									x	
2215.974(20)	$2^-, 3^-$		0.68(3)	<0.08							
2243.11(3)	3^-			≈ 5							
2273.01(5)	3^-				<0.6						
2393.13(6)	$2^+, 3^+$			1.8(4)							
2428.0(5)	$\langle 10^- \rangle$									x	
2542.88(10)				10(1)							

Energy levels and branching ratios [92Sh13]. Part 5

¹⁶⁶Er₆₈

E^*	J^π	Branching ratios in percentage								
[keV]		E_f^* : J_f^π :	1830.46 1 ⁻	1846.6 12 ⁺	1894.36	1917.76 3 ⁻	1938.28 ⟨3⟩ ⁺	1964.09 10 ⁺	1978.43 ⟨3,4⟩ ⁺	1985.64 3 ⁻
2001.874(20)	⟨3⟩ ⁻					3.9(10)				
2132.947(20)	3 ⁺				0.061(1)	9.1(3)	≈1.3		0.35(3)	0.59(2)
2215.974(20)	2 ⁻ ,3 ⁻		0.43(1)			5.36(11)				
2243.11(3)	3 ⁻									1.0(3)
2273.01(5)	3 ⁻									0.25(9)
2290.97(5)	⟨3⟩ ⁺								0.09(5)	
2389.4(5)	14 ⁺			100						
2413.67(10)	⟨2-4⟩						18(3)			
2429.0(3) ^a	⟨12 ⁺ ⟩							x		
2656.0(10)	⟨12 ⁺ ⟩			100						
2729.10(20)	⟨3,4⟩ ⁺									2.0(7)

Energy levels and branching ratios [92Sh13]. Part 6

¹⁶⁶Er₆₈

E^*	J^π	Branching ratios in percentage										
[keV]		E_f^* : J_f^π :	2001.87 $\langle 3 \rangle^-$	2021.36 $\langle 2,3 \rangle^-$	2046.87 $\langle 2^+,3 \rangle$	2076.30 $\langle 3^- \rangle$	2172.75 3^+	2189.1 $\langle 11^+ \rangle$	2215.97 $2^-,3^-$	2389.4 14^+	2429.0 $\langle 12^+ \rangle$	2586.07 $\langle 3,4 \rangle^+$
<hr/>												
2132.947(20)	3^+		0.9(1)									
2160.124(20)	3^+		0.22(2)									
2212.99(15)					<6							
2215.974(20)	$2^-,3^-$			≈ 1.9		0.38(2)						
2273.01(5)	3^-				0.3(1)							
2290.97(5)	$\langle 3 \rangle^+$						2.4(7)					
2382.26(8)	$\langle 3 \rangle^+$								<2.8			
2428.0(5)	$\langle 10^- \rangle$					x						
2654.0(3)	$\langle 13^+ \rangle$							x				
2729.10(20)	$\langle 3,4 \rangle^+$											0.7(3)
2783.69(20)	$\langle 2 \rangle^+$						<26					
2880.0(5)	$\langle 14^+ \rangle$										100	
2967.4(7)	$\langle 16^+ \rangle$									100		

Energy levels and branching ratios [00Ba65].

¹⁶⁷Er₆₈

E^* [keV]	$2J^\pi$	L (d,p)	σ (d,p) $\mu\text{b/sr}$	C^2S (d,p)	σ (d,t) $\mu\text{b/sr}$	L (d,t)	σ (d,t) $\mu\text{b/sr}$	C^2S (d,t)	σ (τ,α) $\mu\text{b/sr}$	$T_{1/2}$ or Γ_{cm}	Ref.
0.0	7^+			≈ 0.001	≈ 1	4	5	0.009		Stable	69Tj01
79.322(1)	$\langle 9 \rangle^+$	4	9	0.04	57	4	84	0.13	≈ 2	119(9) ps	79Ja23
177.97(1)	$\langle 11 \rangle^+$				≈ 2	$\langle 6 \rangle$	7	0.24		55(6) ps	77So08
207.80(1)	1^-	1	149	0.20	201	1	47	0.19		2.269(6) s	89Sh33
264.87(1)	3^-		10	0.01	5	1	20	0.008		1.47(5) ns	89Sh33
281.57(1)	5^-	3	38	0.12	34	$\langle 3 \rangle$	40	0.10			89Sh33
294.95(1)	$\langle 13 \rangle^+$	6	42	0.96	71	6	42	1.22	141	29(6) ps	72Lo20
346.55(2)	5^-			0.03	1	3	7	0.013		1.0(1) ns	89Sh33
413.27(1)	$\langle 7 \rangle^-$	3	84	0.26	65	3	115	0.14			89Sh33
430.03(2)	$\langle 7 \rangle^-$	3	260	0.61	82	3	110	0.15	18		72Lo20
434.45(1)	$\langle 15 \rangle^+$						incl			22(6) ps	
441.98(1)	$\langle 9 \rangle^-$			9.26	<8	$\langle 5 \rangle$		0.36			89Sh33
531.54(4)	3^+					2	190	0.022		19.3(23) ps	89Sh33
535.80(9)	$\langle 9^- \rangle$		11	0.18	13		incl				69Tj01
573.76(5)	$\langle 5 \rangle^+$		6		5	2	9	0.014		36(12) ps	89Sh33
587.37(1)	$\langle 17 \rangle^+$									11(2) ps	
591.79(14)											
598(3)			3								69Tj01
640.25(10)	$\langle 7 \rangle^+$										
645.21(14)	$\langle 11^- \rangle$		7	0.14	5	$\langle 5 \rangle$	7	0.063			89Sh33
662.48(24)	$\langle 11^- \rangle$		10	0.18	38						69Tj01
667.90(2)	$\langle 5 \rangle^-$		incl		incl	3	58	0.12			89Sh33
683.31(15)	$\langle 13^- \rangle$										

(continued)

¹⁶⁷Er
68

E^*	$2J^\pi$	L	σ (d,p)	C^2S	σ (d,t)	L	σ (d,t)	C^2S	σ (τ,α)	$T_{1/2}$ or	Ref.
[keV]		(d,p)	$\mu\text{b/sr}$	(d,p)	$\mu\text{b/sr}$	(d,t)	$\mu\text{b/sr}$	(d,t)	$\mu\text{b/sr}$	Γ_{cm}	
711.06(11)	$\langle 11^+ \rangle$		7		7	4		0.027			89Sh33
711.11(12)	$\langle 9^+ \rangle$		incl			incl	10	incl			77So08
730(2)											
745.32(10)	7^-										
752.72(8)	$\langle 3^- \rangle$	1	34	0.35	200	1	500	0.21			89Sh33
763.46(8)	$\langle 1^- \rangle$										
772.69(1)	$\langle 19^+ \rangle$									6.9(2) ps	
790.97(20)	$\langle 11^+ \rangle$										
801.64(9)	$\langle 3^- \rangle$	1	≈ 136	0.48	31	1	93	0.039			89Sh33
810.1(5)							35				77So08
810.52(8)	$\langle 5^+ \rangle$				31	2	incl	0.054			89Sh33
812.0(7)	$\langle 13^- \rangle$						incl				
812.48(15)	$\langle 5^- \rangle$						incl				
828.32(14)	$\langle 13^+ \rangle$										
845.27(22)	$\langle 9^- \rangle$				38	5	41	1.08	47		72Lo20
856.47(20)	$\langle 5^- \rangle$		≈ 80	0.48		$\langle 3 \rangle$		0.042			89Sh33
873.06(14)	$\langle 7^+ \rangle$										
878.4(3)	$\langle 13^+ \rangle$										
894.74(15)	$\langle 7^- \rangle$	3	≈ 77	0.17	200	3	290	0.53	43		72Lo20
910(2)					≈ 6						69Tj01
932.97(12)	$\langle 9^+ \rangle$				60	4	120	0.28	18		72Lo20
942.95(20)	$\langle 7^- \rangle$		27		13	3	21	0.047			89Sh33
954.53(25)	$\langle 15^- \rangle$										
954.99(4)	$\langle 21^+ \rangle$									3.5(7) ps	
966.03(16)	$\langle 15^+ \rangle$										
968.4(11)	$\langle 11^- \rangle$				3	$\langle 5 \rangle$	20	0.36			89Sh33
979.8(8)	$\langle 15^- \rangle$										
998.73(21)	$\langle 17^- \rangle$										
1002(2)	$\langle 9^- \rangle$				4	$\langle 5 \rangle$	21	0.58			89Sh33
1042.4(4)	$\langle 9^- \rangle$										
1053.2(5)	$\langle 11^- \rangle$				55	$\langle 5 \rangle$	62	1.64	74		72Lo20
1058.24(17)	$\langle 11^+ \rangle$										
1058.96(13)											
1086.30(16)	3^+	2	15		345	2	570	0.91	≈ 18		72Lo20
1110.4(3)	$\langle 13^+ \rangle$				25	$\langle 6 \rangle$		1.89	114		72Lo20
1121(2)											
1125.4(3)	$\langle 17^+ \rangle$										
1135.32(22)	1^+	0	39		384	0	80	0.66			89Sh33
1165.9(9)	$\langle 17^- \rangle$										
1171.1(8)	$\langle 9^- \rangle$		77			$\langle 5 \rangle$	14	1.02			89Sh33
1178.98(23)	$1,3$										
1190(5)					≈ 26		14				69Tj01
1194.20(10)	$\langle 23^+ \rangle$									2.4(5) ps	
1198.6(6)	$\langle 19^+ \rangle$										
1205(5)	1^+				24	0	50	0.053			89Sh33

(continued)

¹⁶⁷Er
68

E^*	$2J^\pi$	L	σ (d,p)	C^2S	σ (d,t)	L	σ (d,t)	C^2S	σ (τ,α)	$T_{1/2}$ or	Ref.
[keV]		(d,p)	$\mu\text{b/sr}$	(d,p)	$\mu\text{b/sr}$	(d,t)	$\mu\text{b/sr}$	(d,t)	$\mu\text{b/sr}$	Γ_{cm}	
1206.0(4)	$\langle \leq 7 \rangle$										
1216.8(5)	$\langle 13^- \rangle$										
1221(2)					≈ 12		17				69Tj01
1227.21(18)	1,3										
1253(2)	$\langle 9^+ \rangle$		11				14				69Tj01
1254.4(3)											
1283(2)			26								69Tj01
1299.1(4)	$\langle 19^+ \rangle$										
1302(2)	$5^-, 7^-$				6	3	22	0.054			89Sh33
1320(20)	$\langle 9^- \rangle$										
1332(5)			3								69Tj01
1336.9(4)	$\langle 19^- \rangle$										
1352(5)					5		11				69Tj01
1368.8(11)	$\langle 19^- \rangle$										
1377(2)	$3^+, 5^+$				75	2	175	0.29			89Sh33
1379.5(9)	$\langle 21^- \rangle$										
1382(2)	$\langle 11^+ \rangle$										
1384.39(12)	$\langle 3^- \rangle$	1	67	0.08							69Tj01
1393.9(6)	$\langle 25^+ \rangle$										
1410(2)			10								69Tj01
1422.7(5)	$\langle 21^+ \rangle$										
1426(2)	1^+				61	0	130	0.14			89Sh33
1440(5)	$\langle 5^- \rangle$	3	121	0.39			16				77So08
1440(5)	1^+					0		0.015			89Sh33
1496.4(5)	$\langle 21^+ \rangle$										
1519(15)					≈ 9				12		72Lo20
1526(5)	$\langle 7^- \rangle$		74	0.23							69Tj01
1530(20)	$\langle 13^+ \rangle$										
1536(5)					≈ 18						69Tj01
1545.4(5)	1,3				≈ 27						69Tj01
1550(2)			49								69Tj01
1553.5(6)	$\langle 23^+ \rangle$										
1558(5)					≈ 26						69Tj01
1565.1(16)	1,3										
1590(5)					2						69Tj01
1596(5)			53								69Tj01
1607(2)											
1625(5)					36						69Tj01
1634(2)	$\langle 9^- \rangle$		14	0.29							69Tj01
1641.1(5)	$1^-, 3$				11						69Tj01
1645(5)			15								69Tj01
1649.3(5)	1,3										
1657(5)*					51						69Tj01
1662.0(4)	1,3										
1681(2)			71								69Tj01

(continued)

¹⁶⁷Er
68

E^*	$2J^\pi$	L	σ (d,p)	C^2S	σ (d,t)	L	σ (d,t)	C^2S	σ (τ,α)	$T_{1/2}$ or	Ref.
[keV]		(d,p)	$\mu\text{b/sr}$	(d,p)	$\mu\text{b/sr}$	(d,t)	$\mu\text{b/sr}$	(d,t)	$\mu\text{b/sr}$	Γ_{cm}	
1698.6(8)	$\langle 27^+ \rangle$										
1712.1(6)	$\langle 23^+ \rangle$										
1719.5(10)	1,3		178								69Tj01
1738(2)											
1747(5)			126		5						69Tj01
1754.8(3)	1,3								13		72Lo20
1775(2)			13								69Tj01
1782.2(9)	$\langle 23^- \rangle$										
1789(2)											
1792.1(11)	1,3										
1800(5)			15								69Tj01
1810.2(13)	1,3				4						69Tj01
1815(5)			24								69Tj01
1816.5(13)	$\langle 25^- \rangle$										
1818.8(15)	$\langle 23^- \rangle$										
1837.0(6)	$\langle 25^+ \rangle$										
1843(2)			28								69Tj01
1853(5)					4						69Tj01
1868.8(11)	1,3		122								69Tj01
1893(5)					28						69Tj01
1901.9(9)	$\langle 29^+ \rangle$										
1911(2)			98								69Tj01
1923(3)	1,3										
1928(2)											
1940(5)					10						69Tj01
1948.2(6)	$\langle 25^+ \rangle$										
1949.4(12)	1,3										
1961(5)											
1976(5)											
1994.7(8)	$\langle 27^+ \rangle$										
1995(5)											
2016(5)											
2050(5)											
2064.1(16)	1,3										
2095(5)	1,3										
2105(5)	1,3										
2113(5)											
2129(5)											
2138(5)											
2156(5)											
2169(5)											
2190(5)											
2201(5)											
2202.0(8)	$\langle 27^+ \rangle$										
2225(5)											

(continued)

¹⁶⁷₆₈Er

E^*	$2J^\pi$	L	σ (d,p)	C^2S	σ (d,t)	L	σ (d,t)	C^2S	σ (τ,α)	$T_{1/2}$ or	Ref.
[keV]		(d,p)	$\mu\text{b/sr}$	(d,p)	$\mu\text{b/sr}$	(d,t)	$\mu\text{b/sr}$	(d,t)	$\mu\text{b/sr}$	Γ_{cm}	
2238(5)											
2249(5)											
2269(5)											
2283.3(10)	$\langle 31^+ \rangle$										
2285.2(14)	$\langle 27^- \rangle$										
2305.5(17)	$\langle 29^- \rangle$										
2319(5)											
2320.8(18)	$\langle 27^- \rangle$										
2327.0(9)	$\langle 29^+ \rangle$										
2336(5)											
2361(5)											
2384(5)											
2408(5)											
2422(5)											
2447(5)											
2462(5)											
2476.9(14)	$\langle 33^+ \rangle$										
2477.1(9)	$\langle 29^+ \rangle$										
2489(5)											
2518(5)											
2528.4(11)	$\langle 31^+ \rangle$										
2530(5)	X^+										
2552(5)											
2562(5)											
2576(5)									24		72Lo20
2610(5)											
2633(5)											
2656(5)											
2725(15)	X^+										
2766.0(13)	$\langle 31^+ \rangle$										
2833.3(24)	31^-										
2842.5(20)	$\langle 33^- \rangle$										
2946.3(15)	$\langle 35^+ \rangle$										
2950(15)	X^+										
3080(15)	X^+										
3081.1(14)	$\langle 33^+ \rangle$										
3118.9(17)	$\langle 37^+ \rangle$										
3152.4(15)	$\langle 35^+ \rangle$										
3255(15)	X^+										
3355(15)	X^+										
3426.5(22)	$\langle 37^- \rangle$										
3475(15)											
3756.1(17)	$\langle 37^+ \rangle$										

(continued)

¹⁶⁷Er
68

E^*	$2J^\pi$	L	σ (d,p)	C^2S	σ (d,t)	L	σ (d,t)	C^2S	σ (τ,α)	$T_{1/2}$ or	Ref.
[keV]		(d,p)	$\mu\text{b/sr}$	(d,p)	$\mu\text{b/sr}$	(d,t)	$\mu\text{b/sr}$	(d,t)	$\mu\text{b/sr}$	Γ_{cm}	
			69Tj01 79Ja23	89Sh33	69Tj01		77So08	78So04	72Lo20		Ref. Ref.

Additional data on this isotope can be found in [87BoZG, 88Bo19, 78So04, 75Ja18, 71Ka01, 68Ha10].

Abundance: 22.869(9) %.

* Several weak groups of levels were observed with the energies between 1657 and 1892 keV [69Tj01].

Cross sections σ (d,p), σ (d,t) [69Tj01] and σ (τ,α) [72Lo20] were measured at 90°, 90° and 45°, respectively; measurements of σ (d,p) at 12 angles are reported in [79Ja23].

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

Energy levels and branching ratios [00Ba65]. Part 2

¹⁶⁷Er
68

E^*	$2J^\pi$	Branching ratios in percentage										
		E_f^* :	0.0	79.3	178	208	265	282	294.953	346.554	413.272	430.028
[keV]		$2J_f^\pi$:	7^+	$\langle 9 \rangle^+$	$\langle 11 \rangle^+$	1^-	3^-	5^-	$\langle 13 \rangle^+$	5^-	$\langle 7 \rangle^-$	$\langle 7 \rangle^-$
79.322(1)	$\langle 9 \rangle^+$		100									
177.97(1)	$\langle 11 \rangle^+$		24.7(12)	75(8)								
207.80(1)	1^-		100									
264.87(1)	3^-		<1.6			100						
281.57(1)	5^-					100	x					
294.95(1)	$\langle 13 \rangle^+$			46(3)	54(5)							
346.55(2)	5^-		100									
413.27(1)	$\langle 7 \rangle^-$						53(3)	47(3)				
430.03(2)	$\langle 7 \rangle^-$		5.1(14)	32(25)						63(14)		
434.45(1)	$\langle 15 \rangle^+$				62(3)				38(4)			
441.98(1)	$\langle 9 \rangle^-$							100	x			
531.54(4)	3^+		100			0.13(3)	0.14(3)	0.14(3)				
535.80(9)	$\langle 9^- \rangle$			<5.0	20(2)					19(2)		61(10)
573.76(5)	$\langle 5 \rangle^+$		69	31(3)								
587.37(1)	$\langle 17 \rangle^+$								66(7)			
591.79(14)			100									
640.25(10)	$\langle 7 \rangle^+$		30(2)	70(4)	x							
645.21(14)	$\langle 11^- \rangle$										65(4)	
662.48(24)	$\langle 11^- \rangle$								16(3)			x
667.90(2)	$\langle 5 \rangle^-$		0.6(3)			5.5(6)	8.7(4)	8.7(4)		62(2)	0.55(15)	12.2(11)
711.06(11)	$\langle 11^+ \rangle$		x	x	x							
711.11(12)	$\langle 9^+ \rangle$			100								
745.32(10)	7^-		6(2)				5(1)	16(6)		33(6)	6(3)	27(6)
752.72(8)	$\langle 3 \rangle^-$					49(6)	36(6)	15(6)				
763.46(8)	$\langle 1 \rangle^-$						81(4)			≈ 19		
790.97(20)	$\langle 11^+ \rangle$				100							

(continued)

 $^{167}_{68}\text{Er}$

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E_f^* : $2J_f^\pi$:	0.0 7 ⁺	79.3 (9) ⁺	178 (11) ⁺	208 1 ⁻	265 3 ⁻	282 5 ⁻	294.953 (13) ⁺	346.554 5 ⁻	413.272 (7) ⁻	430.028 (7) ⁻
801.64(9)	(3) ⁻					76(11)		≈11		≈7		6.7(14)
810.52(8)	(5) ⁺		68(7)					32				
812.48(15)	(5) ⁻						100					
828.32(14)	(13) ⁺			57(5)	43(4)							
845.27(22)	(9) ⁻											100
856.47(20)	(5) ⁻						81(10)				≈19	
873.06(14)	(7) ⁺		44(5)	56(5)								
878.4(3)	(13) ⁺								100			
894.74(15)	(7) ⁻						<53	<51			75(8)	
932.97(12)	(9) ⁺			≈37	63(6)							
942.95(20)	(7) ⁻							100				
966.03(16)	(15) ⁺				48(9)				52(9)			
1058.24(17)	(11) ⁺				60(7)				40(7)			
1058.96(13)							[72]	[28]				
1086.30(16)	3 ⁺					51(7)						
1125.4(3)	(17) ⁺								100			
1135.32(22)	1 ⁺						19(4)					
1171.1(8)	(9) ⁻		100									
1178.98(23)	1,3					76(20)						
1206.0(4)	(≤7)						34(8)	66(13)				
1227.21(18)	1,3					70(13)	≈30					
1254.4(3)							24(11)				49(15)	
1384.39(12)	(3) ⁻									100		
1545.4(5)	1,3						100					
1641.1(5)	1 ⁻ ,3									100		
1649.3(5)	1,3					≈63	37(13)					
1662.0(4)	1,3					83(17)						

Energy levels and branching ratios [00Ba65]. Part 3

 $^{167}_{68}\text{Er}$

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E_f^* : $2J_f^\pi$:	434.447 (15) ⁺	441.979 (9) ⁻	531.54 3 ⁺	535.80 (9) ⁻	587.375 (17) ⁺	591.79	645.21 (11) ⁻	662.48 (11) ⁻	683.31 (13) ⁻	711.06 (11) ⁺
587.37(1)	(17) ⁺		34(9)									
645.21(14)	(11) ⁻			35(3)								
662.48(24)	(11) ⁻					84(13)						
667.90(2)	(5) ⁻				1.1	≈0.12						
683.31(15)	(13) ⁻			100								
745.32(10)	7 ⁻			≤1.3		6(3)						
772.69(1)	(19) ⁺		85(5)				15(3)					
810.1(5)			100									
812.0(7)	(13) ⁻					x				x		

(continued)

 $^{167}_{68}\text{Er}$

E^*	$2J^\pi$	Branching ratios in percentage										
[keV]		E_f^* : $2J_f^\pi$:	434.447 $\langle 15 \rangle^+$	441.979 $\langle 9 \rangle^-$	531.54 3^+	535.80 $\langle 9 \rangle^-$	587.375 $\langle 17 \rangle^+$	591.79	645.21 $\langle 11 \rangle^-$	662.48 $\langle 11 \rangle^-$	683.31 $\langle 13 \rangle^-$	711.06 $\langle 11 \rangle^+$
894.74(15)	$\langle 7 \rangle^-$			25(6)								
954.53(25)	$\langle 15 \rangle^-$								100		x	
954.99(4)	$\langle 21 \rangle^+$						81(9)					
966.03(16)	$\langle 15 \rangle^+$	x										x
979.8(8)	$\langle 15 \rangle^-$									x		
998.73(21)	$\langle 17 \rangle^-$										100	
1042.4(4)	$\langle 9 \rangle^-$			[100]								
1086.30(16)	3^+				49(8)							
1110.4(3)	$\langle 13 \rangle^+$	100										
1125.4(3)	$\langle 17 \rangle^+$	x						x				
1135.32(22)	1^+				81(8)							
1198.6(6)	$\langle 19 \rangle^+$					x						
1299.1(4)	$\langle 19 \rangle^+$	x				x						
1422.7(5)	$\langle 21 \rangle^+$					x						
1496.4(5)	$\langle 21 \rangle^+$					x						
1754.8(3)	1,3				100							

Energy levels and branching ratios [00Ba65]. Part 4

 $^{167}_{68}\text{Er}$

E^*	$2J^\pi$	Branching ratios in percentage										
[keV]		E_f^* : $2J_f^\pi$:	711.11 $\langle 9^+ \rangle$	752.72 $\langle 3 \rangle^-$	772.687 $\langle 19 \rangle^+$	810.52 $\langle 5 \rangle^+$	812.0 $\langle 13^- \rangle$	828.32 $\langle 13 \rangle^+$	954.53 $\langle 15^- \rangle$	954.99 $\langle 21 \rangle^+$	966.03 $\langle 15 \rangle^+$	968.4 $\langle 11^- \rangle$
954.99(4)	$\langle 21 \rangle^+$				19(3)							
979.8(8)	$\langle 15^- \rangle$						x					
1053.2(5)	$\langle 11^- \rangle$	100										
1125.4(3)	$\langle 17^+ \rangle$							x				x
1165.9(9)	$\langle 17^- \rangle$						x					
1178.98(23)	1,3			24(3)								
1194.20(10)	$\langle 23 \rangle^+$				81(10)					19(2)		
1198.6(6)	$\langle 19^+ \rangle$				x							
1216.8(5)	$\langle 13^- \rangle$							100				
1254.4(3)						27(4)						
1299.1(4)	$\langle 19^+ \rangle$				x			x			x	
1336.9(4)	$\langle 19^- \rangle$								100			
1393.9(6)	$\langle 25^+ \rangle$									x		
1422.7(5)	$\langle 21^+ \rangle$				x				x			
1496.4(5)	$\langle 21^+ \rangle$				x					x		
1553.5(6)	$\langle 23^+ \rangle$								x			
1662.0(4)	1,3			17(3)								
1712.1(6)	$\langle 23^+ \rangle$									x		
1837.0(6)	$\langle 25^+ \rangle$									x		
1948.2(6)	$\langle 25^+ \rangle$									x		

Energy levels and branching ratios [00Ba65]. Part 5

 $^{167}_{68}\text{Er}$

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E_f^* : $2J_f^\pi$:	979.8 $\langle 15^- \rangle$	998.73 $\langle 17^- \rangle$	1125.4 $\langle 17^+ \rangle$	1165.9 $\langle 17^- \rangle$	1194.20 $\langle 23 \rangle^+$	1198.6 $\langle 19^+ \rangle$	1299.1 $\langle 19^+ \rangle$	1336.9 $\langle 19^- \rangle$	1368.8 $\langle 19^- \rangle$	1379.5 $\langle 21^- \rangle$
1165.9(9)	$\langle 17^- \rangle$		x									
1336.9(4)	$\langle 19^- \rangle$			<92								
1368.8(11)	$\langle 19^- \rangle$		x			x						
1379.5(9)	$\langle 21^- \rangle$			x								
1393.9(6)	$\langle 25^+ \rangle$						x					
1422.7(5)	$\langle 21^+ \rangle$							x				
1496.4(5)	$\langle 21^+ \rangle$				x				x			
1553.5(6)	$\langle 23^+ \rangle$						x	x				
1698.6(8)	$\langle 27^+ \rangle$						x					
1712.1(6)	$\langle 23^+ \rangle$								x			
1782.2(9)	$\langle 23^- \rangle$									x		x
1816.5(13)	$\langle 25^- \rangle$											x
1818.8(15)	$\langle 23^- \rangle$										x	
1948.2(6)	$\langle 25^+ \rangle$						x					

Energy levels and branching ratios [00Ba65]. Part 6

 $^{167}_{68}\text{Er}$

E^* [keV]	$2J^\pi$	Branching ratios in percentage										
		E_f^* : $2J_f^\pi$:	1393.9 $\langle 25^+ \rangle$	1422.7 $\langle 21^+ \rangle$	1496.4 $\langle 21^+ \rangle$	1553.5 $\langle 23^+ \rangle$	1698.6 $\langle 27^+ \rangle$	1712.1 $\langle 23^+ \rangle$	1782.2 $\langle 23^- \rangle$	1816.5 $\langle 25^- \rangle$	1818.8 $\langle 23^- \rangle$	1837.0 $\langle 25^+ \rangle$
1698.6(8)	$\langle 27^+ \rangle$		x									
1837.0(6)	$\langle 25^+ \rangle$			x		x						
1901.9(9)	$\langle 29^+ \rangle$		x				x					
1948.2(6)	$\langle 25^+ \rangle$				x			x				
1994.7(8)	$\langle 27^+ \rangle$					x						x
2202.0(8)	$\langle 27^+ \rangle$		x					x				
2283.3(10)	$\langle 31^+ \rangle$						x					
2285.2(14)	$\langle 27^- \rangle$								x			
2305.5(17)	$\langle 29^- \rangle$									x		
2320.8(18)	$\langle 27^- \rangle$										x	
2327.0(9)	$\langle 29^+ \rangle$											x

Energy levels and branching ratios [00Ba65]. Part 7

 $^{167}_{68}\text{Er}$

E^* [keV]	$2J^\pi$	Branching ratios in percentage									
		E_f^* : $2J_f^\pi$:	1901.9 $\langle 29^+ \rangle$	1948.2 $\langle 25^+ \rangle$	1994.7 $\langle 27^+ \rangle$	1995	2202.0 $\langle 27^+ \rangle$	2283.3 $\langle 31^+ \rangle$	2285.2 $\langle 27^- \rangle$	2305.5 $\langle 29^- \rangle$	2327.0 $\langle 29^+ \rangle$
2283.3(10)	$\langle 31^+ \rangle$		x								
2327.0(9)	$\langle 29^+ \rangle$					x					

(continued)

 $^{167}_{68}\text{Er}$

E^* [keV]	$2J^\pi$	Branching ratios in percentage									
		$E_f^*:$ $2J_f^\pi:$	1901.9 $\langle 29^+ \rangle$	1948.2 $\langle 25^+ \rangle$	1994.7 $\langle 27^+ \rangle$	1995	2202.0 $\langle 27^+ \rangle$	2283.3 $\langle 31^+ \rangle$	2285.2 $\langle 27^- \rangle$	2305.5 $\langle 29^- \rangle$	2327.0 $\langle 29^+ \rangle$
2476.9(14)	$\langle 33^+ \rangle$		x								
2477.1(9)	$\langle 29^+ \rangle$			x			x				
2528.4(11)	$\langle 31^+ \rangle$				x						x
2766.0(13)	$\langle 31^+ \rangle$						x				
2833.3(24)	31^-								x		
2842.5(20)	$\langle 33^- \rangle$									x	
2946.3(15)	$\langle 35^+ \rangle$							x			

Energy levels and branching ratios [00Ba65]. Part 8

 $^{167}_{68}\text{Er}$

E^* [keV]	$2J^\pi$	Branching ratios in percentage					
		$E_f^*:$ $2J_f^\pi:$	2476.9 $\langle 33^+ \rangle$	2477.1 $\langle 29^+ \rangle$	2528.4 $\langle 31^+ \rangle$	2842.5 $\langle 33^- \rangle$	3081.1 $\langle 33^+ \rangle$
3081.1(14)	$\langle 33^+ \rangle$			x			
3118.9(17)	$\langle 37^+ \rangle$		x				
3152.4(15)	$\langle 35^+ \rangle$				x		
3426.5(22)	$\langle 37^- \rangle$					x	
3756.1(17)	$\langle 37^+ \rangle$						x

Energy levels and branching ratios [94Sh13].

 $^{168}_{68}\text{Er}$

E^*	J^π	$I_{s,0}$	Γ_{γ_0}	$B(M1)$	$B(E1)$	L	$d\sigma/d\Omega$	S_N	σ (d,p)	σ (d,p)	S_N	σ (t,d)	Ref.
[keV]		[eVb]	[meV]	$[\mu_N^2]$	$[10^{-3}e^2fm^2]$	(t,p)	$\mu\text{b/sr}$	(d,p)	$\mu\text{b/sr}$	$\mu\text{b/sr}$	(t,d)	$\mu\text{b/sr}$	
0.0	0^+					0	266		≤ 0.3			≤ 0.8	85Bu19
79.804(1)	2^+						21	≈ 1.67	≈ 4.5		1.56	14	85Bu19
264.089(2)	4^+						12	0.93	5.4		1.11	26	85Bu19
548.745(2)	6^+						2.1	0.81	4.7		0.79	21	85Bu19
821.169(2)	2^+						3.7		1.7			obsc	85Bu19
895.795(2)	3^+								2.2			obsc	85Bu19
928.306(4)	8^+							≤ 0.7	≤ 1.0		≤ 0.4	≤ 2.8	85Bu12
994.750(2)	4^+						12		≤ 1.5			5.8	85Bu19
1094.040(2)	4^-						≈ 4.5	0.77	138	88	0.70	560	85Bu19
1117.572(2)	5^+											obsc	
1193.026(2)	5^-							0.61	28	36	0.62	130	85Bu12
1217.160(14)	0^+					0	30		≤ 1.5				85Bu19
1263.907(2)	6^+											≤ 3.1	
≈ 1266.07													
1276.274(2)	2^+						2.7	≈ 1.6	≈ 2.7	≈ 5	1.25	8.0	85Bu12

(continued)

¹⁶⁸Er
68

E^*	J^π	$I_{s,0}$	$\Gamma_{\gamma o}$	$B(M1)$	$B(E1)$	L	$d\sigma/d\Omega$	S_N	σ (d,p)	σ (d,p)	S_N	σ (t,d)	Ref.
[keV]		[eVb]	[meV]	$[\mu_N^2]$	$[10^{-3}e^2fm^2]$	(t,p)	$\mu\text{b/sr}$	(d,p)	$\mu\text{b/sr}$	$\mu\text{b/sr}$	(t,d)	$\mu\text{b/sr}$	
1311.463(2)	6 ⁻							0.89	19	20	0.89	91	85Bu12
1358.898(5)	1 ⁻						3.0	0.88	12	12	0.70	49	85Bu12
1396.835(6)	10 ⁺												
1403.736(3)	2 ⁻							1.03	43	52	0.81	173	85Bu12
1411.098(2)	4 ⁺						5.4		incl	13		incl	85Bu19
1422.10(3)	0 ⁺						21						85Bu19
1431.466(4)	3 ⁻						14	0.74	39	47	0.69	185	85Bu12
1432.953(3)	7 ⁺								incl			incl	
1448.957(2)	7 ⁻						3.5	1.23	7.4	10	0.99	27	85Bu12
1493.135(4)	2 ⁺						4.5	≤ 0.3	≤ 0.5		≤ 0.2	≤ 1.0	85Bu12
1541.558(2)	3 ⁻						≤ 2	1.11	220	150	0.95	800	85Bu12
1541.710(3)	4 ⁻							incl	incl	incl	incl	incl	85Bu12
1569.452(3)	2 ⁻							≤ 1.2	21			75	85Bu12
1574.117(3)	5 ⁻						4.7	incl	incl	20	≤ 0.9	incl	85Bu12
1605.853(3)	8 ⁻								≈ 4			obsc	85Bu12
1615.343(2)	4 ⁻							0.92	64	64	0.76	225	85Bu12
1616.808(2)	6 ⁺								incl			incl	
1624.508(4)	8 ⁺											incl	
1633.461(3)	3 ⁻						7		8.0	9		≈ 30	85Bu19
1653.549(2)	3 ⁺								≤ 1.0			≤ 2.4	85Bu12
1656.273(4)	4 ⁺						5.4	≤ 0.3	incl		≤ 0.2	incl	85Bu12
1707.995(2)	5 ⁻						2.2	0.83	33	34	≤ 0.9	163	85Bu12
1719.179(3)	4 ⁻							incl	7.6	8		incl	96Ma50
1736.688(2)	4 ⁺						37		≈ 2			incl	85Bu19
1760.760(3)	6 ⁻							≈ 1.9	≈ 12	9		410	85Bu12
1768.17		58.6(56)	44.5(50)		22.38(251)							incl	96Ma18
1773.203(3)	6 ⁻							0.91	85	91	≈ 0.8	incl	85Bu12
1780.1	9 ⁻												03Wu07
1786.113(11)	1 ⁻						2.6		9	11		incl	85Bu19
1795.324(12)	7 ⁻						1.4						85Bu19
1812.2*													00Gr33
1820.134(2)	6 ⁻							≤ 1.6	27	28		320	85Bu12
1820.477(3)	5 ⁻								incl	incl		incl	
1828.065(2)	3 ⁻						2.6	0.26	70	51	0.30	incl	85Bu12
1833.54(11)	0 ⁺						4.9		incl			incl	85Bu19
1839.348(2)	5 ⁺												
1848.351(5)	2 ⁺						22						85Bu19
1892.936(2)	4 ⁻								152	150		820	85Bu18
1893.102(5)	2 ⁺								incl	incl		incl	06Bu09
1896.377(3)	7 ⁻								incl	incl		incl	85Bu19
1902.695(6)	6 ⁺						***	≤ 1.8	87	73	≤ 1.9	incl	85Bu12
1905.092(3)	4 ⁻								incl	incl		incl	
1913.900(6)	3 ⁻								incl	18		incl	85Bu19
1915.504(4)	3 ⁺								incl	incl		incl	
1930.392(4)	2 ⁺												06Bu09

(continued)

¹⁶⁸Er

E^*	J^π	$I_{s,0}$	$\Gamma_{\gamma o}$	$B(M1)$	$B(E1)$	L	$d\sigma/d\Omega$	S_N	σ (d,p)	σ (d,p)	S_N	σ (t,d)	Ref.
[keV]		[eVb]	[meV]	$[\mu_N^2]$	$[10^{-3}e^2fm^2]$	(t,p)	$\mu\text{b/sr}$	(d,p)	$\mu\text{b/sr}$	$\mu\text{b/sr}$	(t,d)	$\mu\text{b/sr}$	
1936.590(9)	1^-	6.1(9)	2.0(3)		0.79(11)		***		≤ 2.2				85Bu19
1943.3	12^+												
1949.638(3)	$\langle 6 \rangle^-$								≈ 6			20	85Bu12
1950.808(2)	7^-							≤ 1.2	incl		≤ 0.9	incl	85Bu12
1952.2(7)	2^+												06Bu09
1961.400(2)	6^+						***		2.2	5			85Bu19
1972.316(16)	2^-												
1975.7	10^-												03Wu07
1983.042(3)	5^-						***	0.12	8.0	4	0.11	26	85Bu12
1994.819(4)	$\langle 3 \rangle^+$												
1999.224(3)	3^-								35			120	85Bu18
2001.954(3)	5^-						***		incl	27		incl	85Bu19
2002.471(5)	$\langle 4 \rangle^+$								incl			incl	
2022.329(6)	3^-								3.0			≈ 4	85Bu12
2031.090(8)	4^+						***						85Bu19
≈ 2038	$\langle 8^- \rangle$							≤ 0.99	≈ 7	7	0.69	20	85Bu12
2055.918(8)	4^+								100			260	
2059.976(2)	4^-							0.34	incl	53	0.29	incl	85Bu12
2070.0	10^+												
2080.457(3)	$\langle 4 \rangle^+$						≈ 1.5						85Bu19
2089.347(3)	4^-								5.5			18	85Bu18
2091.270(5)	6^-							≤ 0.45	incl		≤ 0.35	incl	85Bu12
2097.572(6)	4^-						< 1		≈ 4	6		18	85Bu19
2100.363(4)	$\langle 7^+ \rangle$								incl	6			96Ma50
2108.986(6)	5^+												
2114.1(4)	0^+												06Bu09
2118.793(5)	$\langle 6 \rangle^-$								≤ 14	22		81	85Bu18
2122.426(3)	7^-								incl			incl	
2129.243(18)	5^-								≈ 11	6		incl	96Ma50
2133.76(1)**	1^+								≤ 10				85Bu12
2137	1^-	6.3(10)	4.6(8)		1.34(25)								96Ma18
2137.08(9)	2^+												
2148.370(3)	5^-							0.37	56	42	0.39	195	85Bu12
2169.524(12)	5^+												
2174(3)													
2177.79(2)**	$\langle 2^+ \rangle$						2.7						85Bu19
2183.6	11^-												03Wu07
2185.090(5)	5^-								≈ 2				85Bu12
2186.738(4)	$\langle 3 \rangle^+$								incl				
2188.47(7)**	$4^- - 6^+$								incl				96Gi09
2188.7(1)**	$2^+ - 4^+$												96Gi09
2193.0(1)**	2^+						3.5						85Bu19
2200.421(3)	5^-								≤ 2.5			≤ 5	85Bu12
2200.6(4)	0^+												06Bu09
2210.018(5)	7^-								incl				

(continued)

¹⁶⁸Er

E^*	J^π	$I_{s,0}$	$\Gamma_{\gamma o}$	$B(M1)$	$B(E1)$	L	$d\sigma/d\Omega$	σ (d,p)	σ (d,p)	S_N	σ (t,d)	Ref.
[keV]		[eVb]	[meV]	$[\mu_N^2]$	$[10^{-3}e^2fm^2]$	(t,p)	$\mu\text{b/sr}$	$\mu\text{b/sr}$	$\mu\text{b/sr}$	(t,d)	$\mu\text{b/sr}$	
2218.2*												00Gr33
2221(3)								≤ 1.2				85Bu12
2230.335(16)	2^-						5.3	34			62	85Bu19
2238.18(1)**	4^+							incl	11		incl	85Bu19
2243.523(19)	$\langle 3 \rangle^+$							incl	5		incl	96Ma50
2246.534(9)	6^+							incl				
2254.71(2)*	$\langle 3 \rangle^+$							14	18		70	85Bu18
2255.345(3)	6^-							incl			incl	
2262.69(4)**	2^+-4						16	incl			incl	85Bu19
2264(4)	$\langle 0^+ \rangle$											
2267.620(4)	$\langle 5 \rangle^+$							≤ 8	2			96Ma50
2269(5)	3^-							incl				
2273.6(1)**	2^+-4^+							incl				96Gi09
2279.630(5)	4^+							incl				85Bu19
2286(5)												85Bu18
2291								3	4			96Ma50
2298.263(4)**	$\langle 5 \rangle^+$											96Gi09
2302.57(3)**	3^-							≈ 8	4		41	96Ma50
2303.070(16)	6^-							incl			incl	
2306.883(24)	6^+							incl			incl	
2311.07(3)	$\langle 4 \rangle^+$						8.0	≈ 8	3			85Bu19
2322.2(2)	2^+											06Bu09
2323.20(9)	3^-							≤ 5	3			85Bu19
2331.998(5)**	4^--7^-							incl				85Bu18
2336.26(6)	4^+							37	24		144	96Ma50
2337.126(19)	3^-						12	incl	incl		incl	85Bu19
2342	1	3.1(6)	1.5(3)	0.030(6)	0.33(7)							96Ma18
2345.2(2)**	$1^-, 3^-$							incl	8		incl	96Ma50
2348.57(1)**	4,5							incl	incl		incl	85Bu18
2349.3(3)	2^+											06Bu09
2353(4)												85Bu19
2361	1	4.9(10)	2.4(5)	0.047(10)	0.52(11)							96Ma18
2365.173(13)	$\langle 5 \rangle^-$								24			96Ma50
2365.3(1)**	$\langle 1^+ \rangle$											96Gi09
2366.2(2)	0^+											06Bu09
2368.58(1)	$\langle 5^+ \rangle$							67	5		170	96Ma50
2373.3(5)	$[0^+]$								incl			85Bu19
2373.65(1)*									incl			94Ju02
2382.59(5)**	2^+-4^+							≈ 4.6	5			94Ju02
2392.1(2)	0^+											06Bu09
2392.85(6)**	4^+						7.4	12	10			85Bu19
2393.69(8)*	2^+							incl				94Ju02
2398.58(5)**	$4^+, 5^+$							incl				94Ju02
2401.1(3)**	2^+-4^+							incl	7			94Ju02
2402.38(7)	$\langle 4 \rangle^-$											

(continued)

¹⁶⁸Er

E^*	J^π	$I_{s,0}$	$\Gamma_{\gamma o}$	$B(M1)$	$B(E1)$	L	$d\sigma/d\Omega$	σ (d,p)	σ (d,p)	S_N	σ (t,d)	Ref.
[keV]		[eVb]	[meV]	$[\mu_N^2]$	$[10^{-3}e^2fm^2]$	(t,p)	$\mu\text{b/sr}$	$\mu\text{b/sr}$	$\mu\text{b/sr}$	(t,d)	$\mu\text{b/sr}$	
2411.71(6)**	$4^- - 6^+$								16			96Ma50
2417(2)	1^-	5.6(8)	7.9(13)		1.61(27)		8.6	23				85Bu19
2418.6	12^-											03Wu07
2423.24*	4											00Gr33
2425.76(4)**	2^+											85Bu18
2427.2(6)												
2434.6(7)									24			96Ma50
2437.13*												00Gr33
2440.4(1)**	5^+							21				94Ju02
2450.5(3)	2^+											06Bu09
2451.182(6)	$\langle 5^- \rangle$											85Bu18
2455.92(5)**	$3^+ - 5^+$							9.5	16			94Ju02
2458		4.0(7)	2.1(3)	0.036(6)	0.40(7)							96Ma18
2461.8(2)	2^+											06Bu09
2468.8(9)												
2474.174(12)	6^-						15		18			85Bu19
2477.13(6)	$\langle 5^- \rangle$						incl	17	incl		76	85Bu19
2478.7(3)**	3^-						incl	incl			incl	85Bu19
2479.1(1)*	$[3-5]^-$							incl			incl	94Ju02
2484.57(6)	$\langle 3^+ \rangle$							incl	4		incl	96Ma50
2486(5)	3^-											
2494.52(7)**	3^-						2	12	10		19	94Ju02
2494	1^+	13.5(14)	9.7(11)	0.162(18)								96Ma18
2499.1(5)								incl	incl			
2510	1^-	2.1(5)	3.0(9)		0.55(16)							96Ma18
2513.67(5)**	4^-							15			200	85Bu12
2517.43(1)*	$[3,4]^+$							incl	39		incl	94Ju02
2526.582(12)	$\langle 5^- \rangle$						16	34	6		incl	85Bu19
2528.69*	$\langle 3-5^- \rangle$											00Gr33
2538.2(3)	2^+								2			85Bu18
2547.28(7)	4^+											
2551.58(1)*	$[3-6]$								10			94Ju02
2552.2(3)	2^+											06Bu09
2558.5(3)**	5^-						10	12			129	96Gi09
2559.6*	$\langle 5^- \rangle$							incl			incl	00Gr33
2561.57(4)	4^+							incl	32		incl	96Ma50
2563.5(5)												
2571.3(4)									5			96Ma50
2571.9(5)	$\langle 14^+ \rangle$											
2572.0	$\langle 12^+ \rangle$							26				85Bu12
2572.5(2)	0^+											06Bu09
2578.8(5)								incl				
2586.2(6)									19			96Ma50
2592								17	15			96Ma50
2601.54(24)	X^-								13			85Bu18

(continued)

¹⁶⁸Er

E^*	J^π	$I_{s,0}$	$\Gamma_{\gamma o}$	$B(M1)$	$B(E1)$	L	$d\sigma/d\Omega$	S_N	σ (d,p)	σ (d,p)	S_N	Ref.
[keV]		[eVb]	[meV]	$[\mu_N^2]$	$[10^{-3}e^2fm^2]$	(t,p)	$\mu\text{b/sr}$	(d,p)	$\mu\text{b/sr}$	$\mu\text{b/sr}$	(t,d)	
2613(10)									14			85Bu12
2617.4(2)	0^+											06Bu09
2629.6(4)										11		96Ma50
2639									4.8	5		96Ma50
2643	$1^{(+)}$	5.0(9)	4.5(9)	0.063(13)								96Ma18
2644.1(6)	0^+											06Bu09
2644.4(7)										4		96Ma50
2651.9(5)												
2654.9	13^-											03Wu07
2656.7(6)									16	29		85Bu18
2660.5(1)**	3^+-5^+											94Ju02
2663.234(21)	$\langle 4 \rangle^+$								44	19		96Ma50
2673.6(4)									incl			
2676	1^+	15.8(16)	12.7(14)	0.171(18)						18		96Ma18
2683.8(5)									23			85Bu12
2689.0(6)									incl	12		96Ma50
2694	$1^{(+)}$	3.0(6)	1.9(3)	0.025(5)								96Ma18
2700.5(4)										28		96Ma50
2713.2(6)										6		96Ma50
2715.7	2,4											00Gr33
2727.9(4)										17		96Ma50
2728	$1^{(+)}$	16.6(17)	20.5(23)	0.262(29)								96Ma18
2733.4(4)												
2739.1(4)										22		96Ma50
2740	1^-	4.2(6)	5.7(10)		0.80(14)							96Ma18
2741.9(4)	2^+											06Bu09
2746.6(5)										5		96Ma50
2751.9(6)										18		96Ma50
2764.9(10)												
2769.58(5)	$\langle 5^+ \rangle$											
2777.5(4)												
2786.5(1)**	2^--4^+											96Gi09
2789.2(4)	0^+											06Bu09
2790.8(5)												85Bu18
2792	1^+	17.9(18)	15.1(16)	0.179(19)								96Ma18
2798	1^+	23.6(23)	17.6(18)	0.208(21)								96Ma18
2806.5(6)												
2810.9(6)												
2819.7(6)												
2825.0(4)	2^+											06Bu09
2827	$1^{(+)}$	8.3(10)	8.6(11)	0.099(12)								96Ma18
2835	$1^{(-)}$	5.1(7)	3.5(5)	0.040(6)	0.45(6)							96Ma18
2842.1(3)	0^+											06Bu09
2843.2(11)												
2849	1^-	7.3(9)	8.9(12)		1.10(15)							96Ma18

(continued)

¹⁶⁸Er

E^*	J^π	$I_{s,0}$	Γ_{γ_0}	$B(M1)$	$B(E1)$	L	$d\sigma/d\Omega$	S_N	σ (d,p)	σ (d,p)	S_N	Ref.
[keV]		[eVb]	[meV]	$[\mu_N^2]$	$[10^{-3}e^2fm^2]$	(t,p)	$\mu\text{b/sr}$	(d,p)	$\mu\text{b/sr}$	$\mu\text{b/sr}$	(t,d)	
2849.8(4)												
2854.6(6)												
2855	$\langle 2 \rangle$	3.0(5)	4.5(8)									96Ma18
2871.2(14)												
2872.2(3)	0^+											06Bu09
2874.9(5)												85Bu18
2878.9(4)	2^+											06Bu09
2880.6(5)												
2890.2(5)												
2895.4(5)												
2901.6(5)												
2906.0(4)	2^+											06Bu09
2907.8(5)												
2920.0(5)												
2928.0(8)	$1^{\langle + \rangle}$	3.8(6)	4.1(7)	0.042(7)								96Ma18
2933.2(5)												
2933.9	14^-											03Wu07
2934.1(5)	2^+											06Bu09
2942.9(5)												
2946	$1^{\langle - \rangle}$	8.8(10)	18.4(24)		2.06(27)							96Ma18
2947.4(4)	0^+											06Bu09
2950.7(5)												
2955	1	3.1(5)	2.3(4)	0.023(4)	0.26(5)							96Ma18
2959.1(10)												
2961.2(6)	2^+											06Bu09
2970.7(4)**	3^+-5^+											96Gi09
2972.6(9)												
2975	$1^{\langle - \rangle}$	3.8(6)	7.7(14)		0.84(15)							96Ma18
2979.3(5)												
2984.0(4)												
2991.3(4)												
2998.3(6)	0^+											06Bu09
3001.8(6)												
3009.0(3)	2^+											06Bu09
3011.8(4)												
3019.1(4)												
3020.0(5)	2^+											06Bu09
3026.0(4)												
3028.6(6)	0^+											06Bu09
3030.4(7)												
3033.8(9)												
3042.4(5)	2^+											06Bu09
3044	1	3.2(7)	4.1(10)	0.038(9)	0.42(10)							96Ma18
3048	1^+	8.1(10)	11.5(16)	0.105(14)								96Ma18
3049.9(5)	2^+											06Bu09

(continued)

¹⁶⁸Er
68

E^*	J^π	$I_{s,0}$	$\Gamma_{\gamma o}$	$B(M1)$	$B(E1)$	L	$d\sigma/d\Omega$	S_N	σ (d,p)	σ (d,p)	S_N	σ (t,d)	Ref.
[keV]		[eVb]	[meV]	$[\mu_N^2]$	$[10^{-3}e^2fm^2]$	(t,p)	$\mu\text{b/sr}$	(d,p)	$\mu\text{b/sr}$	$\mu\text{b/sr}$	(t,d)	$\mu\text{b/sr}$	
3055.1(5)	2 ⁺												06Bu09
3063.6(5)													
3065.0(7)	0 ⁺												06Bu09
3068.8(5)													
3078.0(14)													
3081.3(6)	2 ⁺												06Bu09
3082	1	4.9(7)	7.2(12)	0.064(10)	0.71(11)								96Ma18
3087.8(6)													
3095	1 ⁽⁻⁾	8.4(10)	10.8(14)	0.094(12)	1.04(14)								96Ma18
3098.4(6)	2 ⁺												06Bu09
3100.0(4)													
3106.0(6)													
3113.3(5)													
3118.1(5)													
3124.0(5)													
3125	1 ⁺	8.1(10)	10.0(13)	0.085(11)									96Ma18
3127.9(5)													
3131.9(5)													
3137.6(6)													
3139.6(6)	2 ⁺												06Bu09
3142.7(5)													
3151.5*													00Gr33
3157.5(7)	0 ⁺												06Bu09
3157.9*	2												00Gr33
3172.5(7)	2 ⁺												06Bu09
3181	1 ⁻	8.8(11)	22.1(31)		1.96(28)								96Ma18
3183.7(8)	2 ⁺												06Bu09
3188.4	15 ⁻												03Wu07
3190	1 ⁻	9.2(11)	13.2(17)		1.16(15)								96Ma18
3194.4(8)	2 ⁺												06Bu09
3197.6*	2												00Gr33
3204.8*	4												00Gr33
3208	1 ⁽⁺⁾	3.4(6)	3.1(6)	0.024(4)									96Ma18
3220	1	2.9(5)	2.6(5)	0.020(4)	0.22(4)								96Ma18
3222.8*	4,6												00Gr33
3237.2(8)	2 ⁺												06Bu09
3237.6*	4												00Gr33
3242	1	2.7(5)	2.4(5)	0.018(4)	0.20(4)								96Ma18
3259.5(10)	16 ⁺												
3269.4(8)	2 ⁺												06Bu09
3284.7*	2,4,6												00Gr33
3286.8(8)	2 ⁺												06Bu09
3302	1	2.9(6)	2.7(5)	0.020(4)	0.22(4)								96Ma18
3326.9*	2												00Gr33
3334.6*	6												00Gr33

(continued)

¹⁶⁸Er
68

E^*	J^π	$I_{s,0}$	Γ_{γ_0}	$B(M1)$	$B(E1)$	L	$d\sigma/d\Omega$	S_N	σ (d,p)	σ (d,p)	S_N	Ref.
[keV]		[eVb]	[meV]	$[\mu_N^2]$	$[10^{-3}e^2fm^2]$	(t,p)	$\mu\text{b/sr}$	(d,p)	$\mu\text{b/sr}$	$\mu\text{b/sr}$	(t,d)	
3337	$\langle 2 \rangle$	1.8(5)	2.7(8)									96Ma18
3341	$1^{(+)}$	3.8(9)	3.7(9)	0.026(6)								96Ma18
3342.9(10)	2^+											06Bu09
3347.3*												00Gr33
3357	1^+	30.7(34)	50.8(61)	0.348(41)								96Ma18
3361.9(10)	2^+											06Bu09
3371	$\langle 2 \rangle$	3.1(5)	4.1(8)									96Ma18
3376.2*	$2,6$											00Gr33
3390	1^+	79.0(86)	113.2(129)	0.753(86)								96Ma18
3394.1*	4^-											00Gr33
3398.9*	2											00Gr33
3409	1^+	21.2(25)	35.8(45)	0.234(29)								96Ma18
3415.1*	2											00Gr33
3429.2(10)	2^+											06Bu09
3431.6*	$2,6$											00Gr33
3441	$1^{(-)}$	2.9(6)	8.2(21)		0.58(15)							96Ma18
3441.7(10)	2^+											06Bu09
3449	1	10.2(21)	10.5(22)	0.066(14)	0.73(15)							96Ma18
3451.6(10)	2^+											06Bu09
3457	1^+	32.8(37)	50.8(62)	0.319(39)								96Ma18
3459.9(10)	2^+											06Bu09
3468	1^-	15.8(20)	26.3(38)		1.81(26)							96Ma18
3471.6(10)	2^+											06Bu09
3475.3*	2											00Gr33
3480	1^-	18.1(22)	53.5(76)		3.64(52)							96Ma18
3482.6(10)	2^+											06Bu09
3486.9*												00Gr33
3493.3(10)	2^+											06Bu09
3496.0*	$2,6$											00Gr33
3498.9*	4^-											00Gr33
3505	1^-	2.7(8)	7.9(28)		0.53(18)							96Ma18
3506.3(10)	2^+											00Gr33
3513.5*	6											00Gr33
3515.7(10)	2^+											06Bu09
3516	1^-	10.6(18)	19.8(37)		1.31(24)							96Ma18
3520.7*	2											00Gr33
3529	1	3.5(7)	3.8(7)	0.022(4)	0.25(5)							96Ma18
3559.6*	6											00Gr33
3561.9(12)	2^+											06Bu09
3566	1	2.9(6)	3.2(7)	0.018(4)	0.20(4)							96Ma18
3569.4(10)	0^+											06Bu09
3570.5*	6											00Gr33
3586.3(10)	0^+											06Bu09
3587.6*												00Gr33
3591	$1^{(+)}$	5.6(9)	9.8(18)	0.055(10)								96Ma18

(continued)

¹⁶⁸Er

E^*	J^π	$I_{s,0}$	$\Gamma_{\gamma o}$	$B(M1)$	$B(E1)$	L	$d\sigma/d\Omega$	S_N	σ (d,p)	σ (d,p)	S_N	σ (t,d)	Ref.
[keV]		[eVb]	[meV]	$[\mu_N^2]$	$[10^{-3}e^2fm^2]$	(t,p)	$\mu\text{b/sr}$	(d,p)	$\mu\text{b/sr}$	$\mu\text{b/sr}$	(t,d)	$\mu\text{b/sr}$	
3598	1	9.1(13)	16.4(28)	0.091(15)	1.01(17)								96Ma18
3606.4*	2												00Gr33
3617.6(12)	2 ⁺												00Gr33
3627	1	7.1(14)	8.1(16)	0.044(8)	0.49(9)								96Ma18
3629.9(12)	2 ⁺												06Bu09
3634	1 ⁽⁻⁾	5.2(11)	6.0(13)	0.032(7)	0.36(8)								96Ma18
3642.7*													00Gr33
3657	1 ⁽⁺⁾	22.0(29)	36.1(50)	0.191(26)									96Ma18
3660.5*													00Gr33
3663.9(10)	0 ⁺												06Bu09
3679.7*													00Gr33
3696	1	3.6(8)	8.5(20)	0.043(10)	0.48(12)								96Ma18
3702.1*	2												00Gr33
3703	1 ⁻	7.1(11)	27.7(55)		1.57(31)								96Ma18
3714.9(10)*	0 ⁺												00Gr33
3719	1 ⁽⁻⁾	8.5(19)	22.8(57)		1.27(32)								96Ma18
3720.0(15)	2 ⁺												06Bu09
3725.2(15)	2 ⁺												06Bu09
3734.4(10)	0 ⁺												06Bu09
3737	1	6.3(18)	7.6(22)	0.038(11)	0.42(12)								96Ma18
3738.6*	4 ⁻												00Gr33
3740.4(15)	2 ⁺												06Bu09
3745	1 ⁽⁻⁾	10.8(16)	33.5(60)		1.83(33)								96Ma18
3755.0*													00Gr33
3760.1(10)	0 ⁺												06Bu09
3761.2*													00Gr33
3776	1 ⁽⁺⁾	6.2(11)	11.2(21)	0.054(10)									96Ma18
3789	1	13.2(29)	16.4(36)	0.078(17)	0.86(19)								96Ma18
3789.5(15)	2 ⁺												06Bu09
3791.3*	4,6												00Gr33
3800	1 ⁽⁻⁾	3.7(8)	13.5(38)		0.70(20)								96Ma18
3806	1 ⁺	22.2(33)	43.3(69)	0.204(33)									96Ma18
3808.5(15)	2 ⁺												06Bu09
3814	1 ⁽⁻⁾	11.6(18)	25.8(47)	0.121(22)	1.33(25)								96Ma18
3816.6*													00Gr33
3819.4(15)	2 ⁺												06Bu09
3834.8*	4												00Gr33
3861.9(15)	2 ⁺												06Bu09
3868.7(15)	2 ⁺												06Bu09
3869	1	7.3(13)	9.5(17)	0.042(8)	0.47(9)								96Ma18
3876.3(15)	2 ⁺												06Bu09
3888.0*													00Gr33
3894.8*	4												00Gr33
3907.9*	4												00Gr33
3912	1	6.2(13)	8.2(17)	0.035(7)	0.39(8)								96Ma18

(continued)

¹⁶⁸Er

E^*	J^π	$I_{s,0}$	$\Gamma_{\gamma o}$	$B(M1)$	$B(E1)$	$d\sigma/d\Omega$	S_N	σ (d,p)	σ (d,p)	S_N	σ (t,d)	Ref.
[keV]		[eVb]	[meV]	$[\mu_N^2]$	$[10^{-3}e^2fm^2]$	$\mu\text{b/sr}$	(d,p)	$\mu\text{b/sr}$	$\mu\text{b/sr}$	(t,d)	$\mu\text{b/sr}$	
3921	$1^{(-)}$	7.7(16)	14.8(35)	0.063(15)	0.70(16)							96Ma18
3928.9(10)	0^+											06Bu09
3933.0(15)	2^+											06Bu09
3964.9(15)	2^+											06Bu09
3992.0	$\langle 18^+ \rangle$											
4033.5(15)	2^+											06Bu09
4055.9(15)	2^+											06Bu09
4075.6(15)	2^+											06Bu09
		96Ma18	96Ma18	96Ma18	96Ma18	85Bu19	85Bu12		96Ma50		85Bu12	Ref.
								85Bu12		85Bu12		Ref.

Additional data on this isotope can be found in [05Lo09, 03Wu07, 02Ge12, 01Gu12, 01GrZV, 00Gr34, 00Gr33, 00De59, 00Gr34, 98Be62, 98Be20, 98Le03, 97LeZZ, 97GiZY, 96Ma50, 96Gi09, 95Bo20, 94Ju02, 93Re06, 91De24, 91Da12, 88Bo44, 88Ma12, 85Bu18, 68Tj02].

Abundance: 26.978(18) %.

* E^* from [00Gr33] or [94Ju02] not included in Adopted Levels [94Sh13].

** E^* from [96Gi09] not included in Adopted Levels [94Sh13], see also [96Ma50] and [96Gi09].

*** The peak was obscured at 25° by a large $^{12}\text{C}(\text{t,p})$ group from carbon buildup on the target.

All cross sections (for (t,p) and (p,t) reactions) in [85Bu19] were measured at 25° ; $d\sigma/d\Omega$ in [06Bu09] was measured at 5° for $L=0$ and at 14° for $L=2$; relative reaction strength S_N of the (p,t) reaction ("spectroscopic factor" [06Bu09]) was normalized separately for $L=0$ and 2 to 100 for the first state.

Levels of the band built on 4^- state (up to $J=15^-$) are from [03Wu07].

Cross section σ (d,p) in the second column was measured at 40° in [96Ma50], see there data for 15° - 30° and uncertainties; other σ (d,p) and σ (t,d) for all E^* are from [85Bu19].

Parameters S_N from (d,p) and (d,t) reactions are from the evaluation [88Sh11] based on data [85Bu12] from measurement of σ (d,p) and σ (d,t) at 60° and 40° , respectively.

For the level at $E^*=1786$ keV parameters $\Gamma_o^{\text{red}}=9.6(6)$ meV and $B(E1)=27.2(16)$ in units $10^{-3}e^2fm^2$ were given in [91Zi01].

The general conclusion in [94Ju02, 96Gi09] is that existing adopted level scheme is unreliable in its high-energy part due to the use of the method of the Ritz combination.

19 and 18 rotational bands of levels with positive and negative parities are discussed in [91Da12]; the full level scheme with spins of levels up to $J=18$ can be found in [94Sh13].

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

Energy levels and branching ratios [94Sh13]. Part 2

¹⁶⁸Er

E^*	J^π	$\Gamma_{\gamma o}$	σ (t, α)	A_γ	L	σ (p,t)	$d\sigma/d\Omega$	S_N	$T_{1/2}$ or	Ref.
[keV]		[meV]	$\mu\text{b/sr}$		(p,t)	$\mu\text{b/sr}$	$\mu\text{b/sr}$	(p,t)	Γ_{cm}	
0.0	0^+		5	0.85(15)	0	860	693(10)	100	Stable	85Bu19
79.804(1)	2^+		92	-0.40(4)	2	108	126(2)	100	1.88(2) ns	85Bu19
264.089(2)	4^+		9	-0.44(14)		46			114(4) ps	85Bu19

(continued)

¹⁶⁸Er
68

E^*	J^π	$\Gamma_{\gamma o}$	σ (t, α)	A_γ	L	σ (p,t)	$d\sigma/d\Omega$	S_N	$T_{1/2}$ or	Ref.
[keV]		[meV]	$\mu\text{b/sr}$		(p,t)	$\mu\text{b/sr}$	$\mu\text{b/sr}$	(p,t)	Γ_{cm}	
548.745(2)	6 ⁺		3	0.45(22)		5.2			11.6(7) ps	85Bu19
821.169(2)	2 ⁺		20	-0.07(9)	2	14	24.9(4)	15.1	2.73(9) ps	85Bu19
895.795(2)	3 ⁺		44	0.37(6)		11			≤ 120 ps	85Bu19
928.306(4)	8 ⁺								3.6(2) ps	85Bu12
994.750(2)	4 ⁺		9	-0.13(15)		8.8			3.5(7) ps	85Bu19
1094.040(2)	4 ⁻		4	0.44(21)		2.0			109.0(7) ns	85Bu19
1117.572(2)	5 ⁺									
1193.026(2)	5 ⁻		12	0.31(11)					0.70(7) ns	85Bu12
1217.160(14)	0 ⁺				0	5.7	10.4(5)	0.91		85Bu19
1263.907(2)	6 ⁺								4.4(9) ps	
≈ 1266.07										
1276.274(2)	2 ⁺				2	5.0	2.6(2)	1.55		85Bu12
1311.463(2)	6 ⁻		31	0.67(6)						85Bu12
1358.898(5)	1 ⁻					3.0				85Bu12
1396.835(6)	10 ⁺								1.48(10) ps	
1403.736(3)	2 ⁻									85Bu12
1411.098(2)	4 ⁺									85Bu19
1422.10(3)	0 ⁺				0	12.1	9.5(5)	0.65		85Bu19
1431.466(4)	3 ⁻								41 ps	85Bu12
1432.953(3)	7 ⁺									
1448.957(2)	7 ⁻					≈ 1.5				85Bu12
1493.135(4)	2 ⁺		≈ 3		2		6.0(5)	2.88		85Bu12
1541.558(2)	3 ⁻								8 ps	85Bu12
1541.710(3)	4 ⁻									85Bu12
1569.452(3)	2 ⁻									85Bu12
1574.117(3)	5 ⁻					3.2				85Bu12
1605.853(3)	8 ⁻									85Bu12
1615.343(2)	4 ⁻									85Bu12
1616.808(2)	6 ⁺									
1624.508(4)	8 ⁺								3.4(7) ps	
1633.461(3)	3 ⁻					7.8				85Bu19
1653.549(2)	3 ⁺									85Bu12
1656.273(4)	4 ⁺					1.9				85Bu12
1707.995(2)	5 ⁻		≈ 2.5							85Bu12
1719.179(3)	4 ⁻									96Ma50
1736.688(2)	4 ⁺					4.4				85Bu19
1760.760(3)	(6) ⁻									85Bu12
1768.17										96Ma18
1773.203(3)	(6) ⁻									85Bu12
1780.1	9 ⁻									03Wu07
1786.113(11)	1 ⁻	46(5)				4.3			3.5(4) fs	85Bu19
1795.324(12)	(7 ⁻)									85Bu19
1812.2*										00Gr33
1820.134(2)	6 ⁻		7	0.40(16)						85Bu12
1820.477(3)	5 ⁻		incl							

(continued)

¹⁶⁸Er₆₈

E^*	J^π	Γ_{γ_0}	σ (t, α)	A_γ	L	σ (p,t)	$d\sigma/d\Omega$	S_N	$T_{1/2}$ or	Ref.
[keV]		[meV]	$\mu\text{b/sr}$		(p,t)	$\mu\text{b/sr}$	$\mu\text{b/sr}$	(p,t)	Γ_{cm}	
1828.065(2)	3^-		incl			3.3				85Bu12
1833.54(11)	0^+		incl		0		6.7(4)	0.46		85Bu19
1839.348(2)	5^+									
1848.351(5)	2^+				2		3.7(2)	1.56		85Bu19
1892.936(2)	4^-		42	-0.24(8)						85Bu18
1893.102(5)	2^+		incl		2		1.4(1)	0.70		06Bu09
1896.377(3)	$\langle 7 \rangle^-$		incl			2.0				85Bu19
1902.695(6)	6^+		incl							85Bu12
1905.092(3)	4^-		incl							
1913.900(6)	3^-					2.0				85Bu19
1915.504(4)	3^+									
1930.392(4)	2^+				2		0.6(1)	0.25		06Bu09
1936.590(9)	1^-	≈ 1.5				1.4			0.24(7) ps	85Bu19
1943.3	12^+								0.62(4) ps	
1949.638(3)	$\langle 6 \rangle^-$									85Bu12
1950.808(2)	7^-									85Bu12
1952.2(7)	2^+				2		0.7(1)	0.34		06Bu09
1961.400(2)	6^+					2.0				85Bu19
1972.316(16)	2^-									
1975.7	10^-									03Wu07
1983.042(3)	5^-		14	0.55(18)						85Bu12
1994.819(4)	$\langle 3 \rangle^+$									
1999.224(3)	3^-		37	0.44(10)					0.44(+12-8) ns	85Bu18
2001.954(3)	5^-		incl							85Bu19
2002.471(5)	$\langle 4 \rangle^+$									
2022.329(6)	3^-									85Bu12
2031.090(8)	4^+		≈ 4	-0.5(7)						85Bu19
≈ 2038	$\langle 8^- \rangle$									85Bu12
2055.918(8)	4^+								0.32(16) ps	
2059.976(2)	4^-									85Bu12
2070.0	10^+									
2080.457(3)	$\langle 4 \rangle^+$					≈ 1.1				85Bu19
2089.347(3)	4^-		17	0.38(17)						85Bu18
2091.270(5)	6^-		incl							85Bu12
2097.572(6)	4^-									85Bu19
2100.363(4)	$\langle 7^+ \rangle$									96Ma50
2108.986(6)	5^+									
2114.1(4)	0^+				0		2.1(2)	0.11		06Bu09
2118.793(5)	$\langle 6 \rangle^-$		41	0.60(8)						85Bu18
2122.426(3)	7^-									
2129.243(18)	5^-									96Ma50
2133.76(1)**	1^+									85Bu12
2137	1^-	3.4(13)							15(10) fs	96Ma18
2137.08(9)	2^+									
2148.370(3)	5^-		8	0.89(28)						85Bu12

(continued)

¹⁶⁸Er

E^*	J^π	Γ_{γ_0}	σ (t, α)	A_γ	L	σ (p,t)	$d\sigma/d\Omega$	S_N	$T_{1/2}$ or	Ref.
[keV]		[meV]	$\mu\text{b/sr}$		(p,t)	$\mu\text{b/sr}$	$\mu\text{b/sr}$	(p,t)	Γ_{cm}	
2169.524(12)	5^+								0.21(14) ps	
2174(3)										
2177.79(2)**	$\langle 2^+ \rangle$					1.6				85Bu19
2183.6	11^-									03Wu07
2185.090(5)	5^-									85Bu12
2186.738(4)	$\langle 3 \rangle^+$									
2188.47(7)**	$4^- - 6^+$									96Gi09
2188.7(1)**	$2^+ - 4^+$									96Gi09
2193.0(1)**	2^+		120	0.44(5)	2	5.0	15.3(4)	5.77		85Bu19
2200.421(3)	5^-		incl							85Bu12
2200.6(4)	0^+				0		0.75(14)	0.10		06Bu09
2210.018(5)	7^-									
2218.2*										00Gr33
2221(3)										85Bu12
2230.335(16)	2^-									85Bu19
2238.18(1)**	4^+					1.9				85Bu19
2243.523(19)	$\langle 3 \rangle^+$									96Ma50
2246.534(9)	6^+									
2254.71(2)*	$\langle 3 \rangle^+$		47	0.77(12)						85Bu18
2255.345(3)	6^-		incl							
2262.69(4)**	$2^+ - 4^-$		incl			4.0				85Bu19
2264(4)	$\langle 0^+ \rangle$									
2267.620(4)	$\langle 5 \rangle^+$									96Ma50
2269(5)	3^-									
2273.6(1)**	$2^+ - 4^+$									96Gi09
2279.630(5)	4^+					1.6				85Bu19
2286(5)			8.5	≤ -0.76						85Bu18
2291										96Ma50
2298.263(4)**	$\langle 5 \rangle^+$									96Gi09
2302.57(3)**	3^-									96Ma50
2303.070(16)	6^-									
2306.883(24)	6^+									
2311.07(3)	$\langle 4 \rangle^+$									85Bu19
2322.2(2)	2^+				2		11.1(3)	4.03		06Bu09
2323.20(9)	3^-					8.2				85Bu19
2331.998(5)**	$4^- - 7^-$		120	0.45(5)						85Bu18
2336.26(6)	4^+		incl							96Ma50
2337.126(19)	3^-					4.7				85Bu19
2342	1									96Ma18
2345.2(2)**	$1^-, 3^-$									96Ma50
2348.57(1)**	4,5		≈ 5	-0.6(5)						85Bu18
2349.3(3)	2^+				2		15.9(3)	7.33		06Bu09
2353(4)			incl			16				85Bu19
2361	1									96Ma18
2365.173(13)	$\langle 5 \rangle^-$		incl							96Ma50

(continued)

¹⁶⁸Er

E^*	J^π	$\Gamma_{\gamma o}$	σ (t, α)	A_γ	L	σ (p,t)	$d\sigma/d\Omega$	S_N	$T_{1/2}$ or	Ref.
[keV]		[meV]	$\mu\text{b/sr}$		(p,t)	$\mu\text{b/sr}$	$\mu\text{b/sr}$	(p,t)	Γ_{cm}	
2365.3(1)**	$\langle 1^+ \rangle$	4(1)	incl						94(22) fs	96Gi09
2366.2(2)	0^+				0		17.4(6)	1.06		06Bu09
2368.58(1)	$\langle 5^+ \rangle$									96Ma50
2373.3(5)	$[0^+]$									85Bu19
2373.65(1)*										94Ju02
2382.59(5)**	$2^+ - 4^+$									94Ju02
2392.1(2)	0^+				0	[7]	5.2(3)	0.30		06Bu09
2392.85(6)**	4^+		62	0.37(10)						85Bu19
2393.69(8)*	2^+		incl							94Ju02
2398.58(5)**	$4^+, 5^+$		incl							94Ju02
2401.1(3)**	$2^+ - 4^+$		incl							94Ju02
2402.38(7)	$\langle 4^- \rangle$		incl							
2411.71(6)**	$4^- - 6^+$									96Ma50
2417(2)	1^-	9(3)							18(7) fs	85Bu19
2418.6	12^-									03Wu07
2423.24*	4									00Gr33
2425.76(4)**	2^+		11	0.56(11)	2		7.5(2)	2.90		85Bu18
2427.2(6)										
2434.6(7)										96Ma50
2437.13*										00Gr33
2440.4(1)**	5^+									94Ju02
2450.5(3)	2^+				2		4.4(2)	1.61		06Bu09
2451.182(6)	$\langle 5^- \rangle$		37	0.05(7)						85Bu18
2455.92(5)**	$3^+ - 5^+$									94Ju02
2458										96Ma18
2461.8(2)	2^+				2		5.6(2)	1.98		06Bu09
2468.8(9)										
2474.174(12)	6^-									85Bu19
2477.13(6)	$\langle 5^- \rangle$		30	0.13(7)						85Bu19
2478.7(3)**	3^-		incl							85Bu19
2479.1(1)*	$[3-5]^-$		incl							94Ju02
2484.57(6)	$\langle 3^+ \rangle$		incl							96Ma50
2486(5)	3^-									
2494.52(7)**	3^-									94Ju02
2494	1^+	10(2)								96Ma18
2499.1(5)										
2510	1^-									96Ma18
2513.67(5)**	4^-									85Bu12
2517.43(1)*	$[3,4]^+$									94Ju02
2526.582(12)	$\langle 5^- \rangle$									85Bu19
2528.69*	$\langle 3-5 \rangle^-$									00Gr33
2538.2(3)	2^+		20	0.13(9)	2		1.3(3)	4.59		85Bu18
2547.28(7)	4^+									
2551.58(1)*	$[3-6]$									94Ju02
2552.2(3)	2^+				2		2.6(2)	1.03		06Bu09

(continued)

¹⁶⁸Er

E^*	J^π	Γ_{γ_0}	σ (t, α)	A_γ	L	σ (p,t)	$d\sigma/d\Omega$	S_N	$T_{1/2}$ or	Ref.
[keV]		[meV]	$\mu\text{b/sr}$		(p,t)	$\mu\text{b/sr}$	$\mu\text{b/sr}$	(p,t)	Γ_{cm}	
2558.5(3)**	5^-									96Gi09
2559.6*	$\langle 5^- \rangle$									00Gr33
2561.57(4)	4^+									96Ma50
2563.5(5)										
2571.3(4)										96Ma50
2571.9(5)	$\langle 14^+ \rangle$									
2572.0	$\langle 12^+ \rangle$									85Bu12
2572.5(2)	0^+				0		78.6(12)	3.39		06Bu09
2578.8(5)										
2586.2(6)										96Ma50
2592										96Ma50
2601.54(24)	X^-		8	0.55(13)						85Bu18
2613(10)										85Bu12
2617.4(2)	0^+				0		43.0(17)	1.71		06Bu09
2629.6(4)										96Ma50
2639										96Ma50
2643	$1^{(+)}$									96Ma18
2644.1(6)	0^+				0		3.2(4)	0.22		06Bu09
2644.4(7)										96Ma50
2651.9(5)										
2654.9	13^-									03Wu07
2656.7(6)			24	0.22(8)						85Bu18
2660.5(1)**	$3^+ - 5^+$									94Ju02
2663.234(21)	$\langle 4 \rangle^+$									96Ma50
2673.6(4)										
2676	1^+	14(2)								96Ma18
2683.8(5)										85Bu12
2689.0(6)										96Ma50
2694	$1^{(+)}$									96Ma18
2700.5(4)										96Ma50
2713.2(6)										96Ma50
2715.7	2,4									00Gr33
2727.9(4)										96Ma50
2728	$1^{(+)}$	15(3)								96Ma18
2733.4(4)										
2739.1(4)										96Ma50
2740	1^-									96Ma18
2741.9(4)	2^+				2		12.9(5)	4.15		06Bu09
2746.6(5)										96Ma50
2751.9(6)										96Ma50
2764.9(10)										
2769.58(5)	$\langle 5^+ \rangle$									
2777.5(4)										
2786.5(1)**	$2^- - 4^+$									96Gi09
2789.2(4)	0^+				0		15.4(4)	0.59		06Bu09

(continued)

¹⁶⁸Er
68

E^*	J^π	Γ_{γ_0}	$\sigma(t, \alpha)$	A_γ	L	$\sigma(p, t)$	$d\sigma/d\Omega$	S_N	$T_{1/2}$ or	Ref.
[keV]		[meV]	$\mu\text{b/sr}$		(p, t)	$\mu\text{b/sr}$	$\mu\text{b/sr}$	(p, t)	Γ_{cm}	
2790.8(5)			16	0.21(18)						85Bu18
2792	1^+	13(2)								96Ma18
2798	1^+	15(3)							27(5) fs	96Ma18
2806.5(6)										
2810.9(6)										
2819.7(6)										
2825.0(4)	2^+				2		4.1(4)	1.11		06Bu09
2827	$1^{(+)}$	7(2)							41(13) fs	96Ma18
2835	$1^{(-)}$									96Ma18
2842.1(3)	0^+				0		49.1(11)	1.62		06Bu09
2843.2(11)										
2849	1^-	7(3)							33(17) fs	96Ma18
2849.8(4)										
2854.6(6)										
2855	$\langle 2 \rangle$	10(4)							17(7) fs	96Ma18
2871.2(14)										
2872.2(3)	0^+				0		53.0(9)	1.95		06Bu09
2874.9(5)			25	0.07(8)						85Bu18
2878.9(4)	2^+				2		6.8(7)	2.01		06Bu09
2880.6(5)										
2890.2(5)										
2895.4(5)										
2901.6(5)										
2906.0(4)	2^+				2		8.7(6)	2.54		06Bu09
2907.8(5)										
2920.0(5)										
2928.0(8)	$1^{(+)}$									96Ma18
2933.2(5)										
2933.9	14^-									03Wu07
2934.1(5)	2^+				2		13.5(7)	3.90		06Bu09
2942.9(5)										
2946	$1^{(-)}$	12(4)							14(4) fs	96Ma18
2947.4(4)	0^+				0		72.3(11)	3.15		06Bu09
2950.7(5)										
2955	1									96Ma18
2959.1(10)										
2961.2(6)	2^+				2		3.4(3)	1.04		06Bu09
2970.7(4)**	$3^+ - 5^+$									96Gi09
2972.6(9)										
2975	$1^{(-)}$									96Ma18
2979.3(5)										
2984.0(4)										
2991.3(4)										
2998.3(6)	0^+				0		9.3(3)	0.23		06Bu09
3001.8(6)										

(continued)

¹⁶⁸Er

E^*	J^π	Γ_{γ_0}	$\sigma(t, \alpha)$	A_γ	L	$\sigma(p, t)$	$d\sigma/d\Omega$	S_N	$T_{1/2}$ or	Ref.
[keV]		[meV]	$\mu\text{b/sr}$		(p, t)	$\mu\text{b/sr}$	$\mu\text{b/sr}$	(p, t)	Γ_{cm}	
3009.0(3)	2^+				2		525.5(5)	7.60		06Bu09
3011.8(4)										
3019.1(4)										
3020.0(5)	2^+				2		2.0(2)	0.59		06Bu09
3026.0(4)										
3028.6(6)	0^+				0		10.2(3)	0.33		06Bu09
3030.4(7)										
3033.8(9)										
3042.4(5)	2^+				2		12.0(3)	3.57		06Bu09
3044		1								
3048	1^+									96Ma18
3049.9(5)	2^+				2		5.7(3)	1.72		06Bu09
3055.1(5)	2^+				2		1.9(3)	0.55		06Bu09
3063.6(5)	0^+				0		1.6(2)	0.09		06Bu09
3065.0(7)										
3068.8(5)										
3078.0(14)	2^+				2		4.3(3)	1.46		06Bu09
3081.3(6)										
3082		1								
3087.8(6)	1^{\leftarrow}				2		2.9(2)	0.88		96Ma18
3095										
3098.4(6)										
3100.0(4)	1^+									96Ma18
3106.0(6)										
3113.3(5)										
3118.1(5)										
3124.0(5)										
3125										
3127.9(5)										
3131.9(5)										
3137.6(6)										
3139.6(6)										
3142.7(5)	2^+				2		8.8(3)	2.70		06Bu09
3151.5*										
3157.5(7)										
3157.5*	0^+				0		2.2(2)	0.06		00Gr33
3157.9*	2									06Bu09
3172.5(7)	2^+				2		10.7(3)	3.35		00Gr33
3181	1^-									06Bu09
3183.7(8)	2^+				2		16.4(4)	4.45		96Ma18
3188.4	15^-									06Bu09
3190	1^-									03Wu07
3194.4(8)	2^+				2		2.8(2)	0.78		96Ma18
3197.6*	2									06Bu09
3204.8*	4									00Gr33
3208	$1^{(+)}$									00Gr33
										96Ma18

(continued)

¹⁶⁸Er
68

E^*	J^π	$\Gamma_{\gamma o}$	σ (t, α)	A_γ	L	σ (p,t)	$d\sigma/d\Omega$	S_N	$T_{1/2}$ or	Ref.
[keV]		[meV]	$\mu\text{b/sr}$		(p,t)	$\mu\text{b/sr}$	$\mu\text{b/sr}$	(p,t)	Γ_{cm}	
3220	1									96Ma18
3222.8*	4,6									00Gr33
3237.2(8)	2 ⁺				2		6.7(3)	1.83		06Bu09
3237.6*	4									00Gr33
3242	1									96Ma18
3259.5(10)	(16 ⁺)									
3269.4(8)	2 ⁺				2		2.0(2)	0.57		06Bu09
3284.7*	2,4,6									00Gr33
3286.8(8)	2 ⁺				2		5.0(2)	1.35		06Bu09
3302	1									96Ma18
3326.9*	2									00Gr33
3334.6*	6									00Gr33
3337	(2)									96Ma18
3341	1 ⁽⁺⁾									96Ma18
3342.9(10)	2 ⁺				2		2.3(2)	0.64		06Bu09
3347.3*										00Gr33
3357	1 ⁺	50(8)							5.5(9) fs	96Ma18
3361.9(10)	2 ⁺				2		4.9(2)	1.32		06Bu09
3371	(2)									96Ma18
3376.2*	2,6									00Gr33
3390	1 ⁺	113(12)							2.8(3) fs	96Ma18
3394.1*	4 ⁻									00Gr33
3398.9*	2									00Gr33
3409	1 ⁺	31(6)							8.0(15) fs	96Ma18
3415.1*	2									00Gr33
3429.2(10)	2 ⁺				2		6.6(3)	1.79		06Bu09
3431.6*	2,6									00Gr33
3441	1 ⁽⁻⁾									96Ma18
3441.7(10)	2 ⁺				2		4.9(2)	1.29		06Bu09
3449	1									96Ma18
3451.6(10)	2 ⁺				2		3.3(2)	0.81		06Bu09
3457	1 ⁺	59(10)							4.9(9) fs	96Ma18
3459.9(10)	2 ⁺				2		3.6(2)	0.95		06Bu09
3468	1 ⁻									96Ma18
3471.6(10)	2 ⁺				2		4.0(2)	1.15		06Bu09
3475.3*	2									00Gr33
3480	1 ⁻	41(14)							4.7(17) fs	96Ma18
3482.6(10)	2 ⁺				2		4.7(2)	1.34		06Bu09
3486.9*										00Gr33
3493.3(10)	2 ⁺				2		15.8(3)	4.35		06Bu09
3496.0*	2,6									00Gr33
3498.9*	4 ⁻									00Gr33
3505	1 ⁻									96Ma18
3506.3(10)	2 ⁺				2		8.9(3)	2.52		00Gr33
3513.5*	6									00Gr33

(continued)

¹⁶⁸Er

E^*	J^π	$\Gamma_{\gamma o}$	σ (t, α)	A_γ	L	σ (p,t)	$d\sigma/d\Omega$	S_N	$T_{1/2}$ or	Ref.
[keV]		[meV]	$\mu\text{b/sr}$		(p,t)	$\mu\text{b/sr}$	$\mu\text{b/sr}$	(p,t)	Γ_{cm}	
3515.7(10)	2 ⁺				2		3.3(2)	0.88		06Bu09
3516	1 ⁻									96Ma18
3520.7*	2									00Gr33
3529	1									96Ma18
3559.6*	6									00Gr33
3561.9(12)	2 ⁺				2		3.9(2)	1.00		06Bu09
3566	1									96Ma18
3569.4(10)	0 ⁺				0		5.5(3)	0.20		06Bu09
3570.5*	6									00Gr33
3586.3(10)	0 ⁺				0		4.7(2)	0.12		06Bu09
3587.6*										00Gr33
3591	1 ⁽⁺⁾									96Ma18
3598	1									96Ma18
3606.4*	2									00Gr33
3617.6(12)	2 ⁺				2		1.9(2)	0.49		00Gr33
3627	1									96Ma18
3629.9(12)	2 ⁺				2		2.6(3)	0.69		06Bu09
3634	1 ⁽⁻⁾									96Ma18
3642.7*										00Gr33
3657	1 ⁽⁺⁾									96Ma18
3660.5*										00Gr33
3663.9(10)	0 ⁺				0		16.9(3)	0.40		06Bu09
3679.7*										00Gr33
3696	1									96Ma18
3702.1*	2									00Gr33
3703	1 ⁻									96Ma18
3714.9(10)*	0 ⁺				0		2.4(2)	0.08		00Gr33
3719	1 ⁽⁻⁾									96Ma18
3720.0(15)	2 ⁺				2		3.9(3)	0.99		06Bu09
3725.2(15)	2 ⁺				2		2.1(2)	0.53		06Bu09
3734.4(10)	0 ⁺				0		9.1(3)	0.27		06Bu09
3737	1									96Ma18
3738.6*	4 ⁻									00Gr33
3740.4(15)	2 ⁺				2		3.7(3)	1.07		06Bu09
3745	1 ⁽⁻⁾									96Ma18
3755.0*										00Gr33
3760.1(10)	0 ⁺				0		12.3(3)	0.24		06Bu09
3761.2*										00Gr33
3776	1 ⁽⁺⁾									96Ma18
3789	1									96Ma18
3789.5(15)	2 ⁺				2		2.2(2)	0.54		06Bu09
3791.3*	4,6									00Gr33
3800	1 ⁽⁻⁾									96Ma18
3806	1 ⁺									96Ma18
3808.5(15)	2 ⁺				2		4.5(2)	1.11		06Bu09

(continued)

¹⁶⁸Er₆₈

E^*	J^π	$\Gamma_{\gamma o}$	σ (t, α)	A_γ	L	σ (p,t)	$d\sigma/d\Omega$	S_N	$T_{1/2}$ or	Ref.
[keV]		[meV]	$\mu\text{b/sr}$		(p,t)	$\mu\text{b/sr}$	$\mu\text{b/sr}$	(p,t)	Γ_{cm}	
3814	1 ⁽⁻⁾									96Ma18
3816.6*										00Gr33
3819.4(15)	2 ⁺				2		5.7(2)	1.33		06Bu09
3834.8*	4									00Gr33
3861.9(15)	2 ⁺				2		2.2(2)	0.52		06Bu09
3868.7(15)	2 ⁺				2		6.7(3)	1.56		06Bu09
3869	1									96Ma18
3876.3(15)	2 ⁺				2		3.6(2)	0.93		06Bu09
3888.0*										00Gr33
3894.8*	4									00Gr33
3907.9*	4									00Gr33
3912	1									96Ma18
3921	1 ⁽⁻⁾									96Ma18
3928.9(10)	0 ⁺				0		5.2(4)	0.12		06Bu09
3933.0(15)	2 ⁺				2		3.2(3)	0.76		06Bu09
3964.9(15)	2 ⁺				2		4.6(3)	1.13		06Bu09
3992.0	(18 ⁺)									
4033.5(15)	2 ⁺				2		3.0(2)	0.68		06Bu09
4055.9(15)	2 ⁺				2		2.9(3)	0.74		06Bu09
4075.6(15)	2 ⁺				2		2.6(3)	0.67		06Bu09
		76Me04		85Bu18		85Bu19				Ref.
			85Bu18		06Bu09		06Bu09	06Bu09		Ref.

Energy levels and branching ratios [94Sh13]. Part 3

¹⁶⁸Er₆₈

E^*	J^π	Branching ratios in percentage									
[keV]		E_f^* : 0.0	79.8	264	549	821	896	928	995	1094.04	1117.57
		J_f^π : 0 ⁺	2 ⁺	4 ⁺	6 ⁺	2 ⁺	3 ⁺	8 ⁺	4 ⁺	4 ⁻	5 ⁺
79.804(1)	2 ⁺	100									
264.089(2)	4 ⁺		100								
548.745(2)	6 ⁺			100							
821.169(2)	2 ⁺	47.9(2)	51(1)	0.89(4)							
895.795(2)	3 ⁺		85(2)	15.3(2)		0.03(1)					
928.306(4)	8 ⁺				100						
994.750(2)	4 ⁺		36.7(4)	62(1)	0.7(1)	0.50(3)					
1094.040(2)	4 ⁻		0.11(1)	10.6(1)		0.14(1)	83(2)		6.43(7)		
1117.572(2)	5 ⁺			83(7)	13.6(16)		3.4(5)		0.31(5)		
1193.026(2)	5 ⁻			33(3)	6.6(8)					60(9)	0.17(5)
1217.160(14)	0 ⁺		100								
1263.907(2)	6 ⁺			34(4)	55(5)			0.44(8)	10.8(14)		0.45(9)
1276.274(2)	2 ⁺	25(3)	25(3)	47(4)		2.5(4)	1.2(3)				
1311.463(2)	6 ⁻				0.36(12)					77(7)	1.3(2)

(continued)

 $^{168}_{68}\text{Er}$

E^* [keV]	J^π	Branching ratios in percentage									
		$E_f^*: 0.0$ $J_f^\pi: 0^+$	79.8 2 ⁺	264 4 ⁺	549 6 ⁺	821 2 ⁺	896 3 ⁺	928 8 ⁺	995 4 ⁺	1094.04 4 ⁻	1117.57 5 ⁺
1358.898(5)	1 ⁻	24(2)	75(5)			0.8(2)					
1396.835(6)	10 ⁺							100			
1403.736(3)	2 ⁻		75(7)			23(3)	2.3(3)				
1411.098(2)	4 ⁺		37(4)	25(3)	24(3)	1.0(2)	6.2(7)		4.4(5)		0.33(7)
1422.10(3)	0 ⁺		100								
1431.466(4)	3 ⁻	0.25(9)	50(5)	49(5)			0.18(3)				
1432.953(3)	7 ⁺				61(7)			10.0(12)			29(4)
1448.957(2)	7 ⁻				9.9(16)			1.3(2)			
1493.135(4)	2 ⁺	10(2)	40(9)	43(6)		2.9(5)	2.4(4)		0.6(2)		
1541.558(2)	3 ⁻	0.005(1)	0.58(1)	3.96(4)		28.7(3)	3.52(3)		6.2(1)	56(1)	
1541.710(3)	4 ⁻			68(9)			12(2)		19(4)		
1569.452(3)	2 ⁻	0.004(1)	0.36(2)			72(1)	27(1)				
1574.117(3)	5 ⁻			64(6)	36(4)						
1615.343(2)	4 ⁻			≈1.9			32(4)		1.6(2)	5.7(7)	8.0(11)
1616.808(2)	6 ⁺			≈19	49(8)			3.9(11)	3.4(4)		7.5(9)
1624.508(4)	8 ⁺				62(19)			20(6)			
1633.461(3)	3 ⁻		0.2(1)			33(4)	40(4)		27(2)		
1653.549(2)	3 ⁺					9.0(17)	0.85(22)			89(12)	
1656.273(4)	4 ⁺		<4	69(7)	26(5)	1.4(6)	0.8(2)		1.7(3)		1.0(2)
1707.995(2)	5 ⁻								34(4)	6.0(9)	1.2(2)
1719.179(3)	4 ⁻						49(6)		19(2)		33(3)
1736.688(2)	4 ⁺		<5.2	5.9(13)			0.99(20)			1.6(4)	
1760.760(3)	⟨6⟩ ⁻				60(10)						22(2)
1773.203(3)	⟨6⟩ ⁻									36(7)	
1786.113(11)	1 ⁻	26(6)	74(11)								
1795.324(12)	⟨7⟩ ⁻				53(15)			47(6)			
1820.134(2)	6 ⁻									1.7(5)	20(3)
1820.477(3)	5 ⁻								62(8)		13.2(15)
1828.065(2)	3 ⁻					10(2)	45(4)		28(4)		
1833.54(11)	0 ⁺		100								
1839.348(2)	5 ⁺			6(2)					7.3(8)	6.3(11)	3.1(9)
1848.351(5)	2 ⁺	40(8)	37(5)			7(1)	13(2)				
1892.936(2)	4 ⁻									91(8)	1.2(4)
1893.102(5)	2 ⁺		65(12)			4.1(12)	10(2)				
1902.695(6)	6 ⁺				90(19)			7.7(17)			
1905.092(3)	4 ⁻									94(9)	
1913.900(6)	3 ⁻		43(9)	54(7)			2.3(7)				
1915.504(4)	3 ⁺		63(9)	<8		13(3)	5.7(9)		16(3)		2.1(6)
1930.392(4)	2 ⁺	35(6)	46(11)			8(2)	10(2)				
1936.590(9)	1 ⁻	98(13)									
1949.638(3)	⟨6⟩ ⁻										66(13)
1961.400(2)	6 ⁺										5(2)
1972.316(16)	2 ⁻		54(9)			12(3)	34(5)				
1983.042(3)	5 ⁻									8.6(15)	
1994.819(4)	⟨3⟩ ⁺		66(12)	30(5)							

(continued)

¹⁶⁸Er

E^* [keV]	J^π	Branching ratios in percentage										
		$E_f^*:$ $J_f^\pi:$	0.0 0 ⁺	79.8 2 ⁺	264 4 ⁺	549 6 ⁺	821 2 ⁺	896 3 ⁺	928 8 ⁺	995 4 ⁺	1094.04 4 ⁻	1117.57 5 ⁺
2001.954(3)	5 ⁻										14(2)	
2002.471(5)	⟨4⟩ ⁺			32(6)	46(6)			8(2)		9(2)		
2022.329(6)	3 ⁻			75(10)	21(4)							
2031.090(8)	4 ⁺			8(3)	58(7)			2.9(12)		5(2)		
2055.918(8)	4 ⁺						31(5)	14(3)		7(1)	36(5)	1.5(3)
2059.976(2)	4 ⁻										85(9)	
2080.457(3)	⟨4⟩ ⁺			22(6)	40(9)		22(6)				11(2)	
2091.270(5)	6 ⁻											13(3)
2097.572(6)	4 ⁻				37(8)			25(4)		6(2)		29(4)
2108.986(6)	5 ⁺				43(7)	39(7)						16(3)
2129.243(18)	5 ⁻				47(9)	45(5)						
2133.76(1)**	1 ⁺	86(17)										
2137.08(9)	2 ⁺	36(11)	25(7)	39(11)								
2148.370(3)	5 ⁻										21(5)	
2169.524(12)	5 ⁺							34(16)		18(4)		9(4)
2177.79(2)**	⟨2⟩ ⁺	83(21)										
2185.090(5)	5 ⁻				69(12)	30(5)						
2188.47(7)**	4 ⁻ –6 ⁺				45(10)	14(4)		22(6)				
2193.0(1)**	2 ⁺						72(18)	28(9)				
2230.335(16)	2 ⁻						66(20)					
2238.18(1)**	4 ⁺										86(10)	
2243.523(19)	⟨3⟩ ⁺		64(9)	35(6)								
2246.534(9)	6 ⁺					46(11)						
2254.71(2)*	⟨3⟩ ⁺						38(10)			62(12)		
2262.69(4)**	2 ⁺ –4						<45	54(14)		23(7)		
2267.620(4)	⟨5⟩ ⁺										80(10)	
2273.6(1)**	2 ⁺ –4 ⁺						x	x		x		
2302.57(3)**	3 ⁻						29(6)	21(1)				
2303.070(16)	6 ⁻											74(18)
2311.07(3)	⟨4⟩ ⁺				78(13)	22(3)						
2323.20(9)	3 ⁻							[52]		[48]		
2336.26(6)	4 ⁺							48(14)		52(14)		<34
2337.126(19)	3 ⁻										[100]	
2348.57(1)**	4,5							31(13)				18(1)
2365.173(13)	⟨5⟩ ⁻										80(11)	7(2)
2365.3(1)**	⟨1⟩ ⁺	65(15)	35(10)									
2368.58(1)	⟨5⟩ ⁺										69(26)	
2392.85(6)**	4 ⁺							10(4)		24(8)	14(5)	35(14)
2393.69(8)*	2 ⁺	22(5)	38(8)	16(5)			11(3)	14(5)				
2402.38(7)	⟨4⟩ ⁻									[100]		
2411.71(6)**	4 ⁻ –6 ⁺										[18]	[76]
2425.76(4)**	2 ⁺	40(8)	40(8)				13(5)	8(3)				
2451.182(6)	⟨5⟩ ⁻									[72]		
2477.13(6)	⟨5⟩ ⁻										29(12)	
2478.7(3)**	3 ⁻			45(10)	32(8)		<20	23(8)				

(continued)

 $^{168}_{68}\text{Er}$

E^* [keV]	J^π	Branching ratios in percentage										
		$E_f^*:$ $J_f^\pi:$	0.0 0 ⁺	79.8 2 ⁺	264 4 ⁺	549 6 ⁺	821 2 ⁺	896 3 ⁺	928 8 ⁺	995 4 ⁺	1094.04 4 ⁻	1117.57 5 ⁺
2484.57(6)	$\langle 3 \rangle^+$			25(6)	47(9)		15(6)	13(6)				
2513.67(5)**	4 ⁻									45(15)		55(20)
2526.582(12)	$\langle 5 \rangle^-$									27(9)	70(27)	
2547.28(7)	4 ⁺				31(15)	23(15)		<55		46(15)		
2561.57(4)	4 ⁺				56(9)	11(4)		18(4)				9(4)
2663.234(21)	$\langle 4 \rangle^+$										26(6)	
2769.58(5)	$\langle 5 \rangle^+$										74(11)	

Energy levels and branching ratios [94Sh13]. Part 4

 $^{168}_{68}\text{Er}$

E^* [keV]	J^π	Branching ratios in percentage										
		$E_f^*:$ $J_f^\pi:$	1193.03 5 ⁻	1217.16 0 ⁺	1263.91 6 ⁺	1276.27 2 ⁺	1311.46 6 ⁻	1358.90 1 ⁻	1396.84 10 ⁺	1403.74 2 ⁻	1411.10 4 ⁺	1422.10 0 ⁺
1311.463(2)	6 ⁻	21(2)										
1411.098(2)	4 ⁺					2.2(3)						
1432.953(3)	7 ⁺				0.75(15)							
1448.957(2)	7 ⁻	79(9)			0.58(13)		9.2(11)					
1541.558(2)	3 ⁻	0.83(2)										
1541.710(3)	4 ⁻									1.1(2)		
1605.853(3)	8 ⁻						95(12)					
1615.343(2)	4 ⁻	48(4)					0.41(7)					
1616.808(2)	6 ⁺				3.8(4)						13(2)	
1624.508(4)	8 ⁺				15(3)				2.4(6)			
1653.549(2)	3 ⁺									0.23(4)		
1707.995(2)	5 ⁻	6.8(7)			4.3(6)		41(4)					
1736.688(2)	4 ⁺	89(10)										
1760.760(3)	$\langle 6 \rangle^-$				7.0(10)							
1773.203(3)	$\langle 6 \rangle^-$	47(6)					16(2)					
1820.134(2)	6 ⁻	13(2)					5.8(10)					
1820.477(3)	5 ⁻				25(4)							
1828.065(2)	3 ⁻							5.8(7)		<3.0		
1839.348(2)	5 ⁺						71(6)					
1848.351(5)	2 ⁺					1.8(5)						
1892.936(2)	4 ⁻	6.9(8)										
1893.102(5)	2 ⁺		2.4(5)			18(3)						
1905.092(3)	4 ⁻	6(1)										
1936.590(9)	1 ⁻							1.7(5)				
1943.3	12 ⁺								100			
1949.638(3)	$\langle 6 \rangle^-$				9.2(16)							
1950.808(2)	7 ⁻						49(12)					
1961.400(2)	6 ⁺	20(5)										
1983.042(3)	5 ⁻	80(10)			1.8(9)		9.0(12)					

(continued)

 $^{168}_{68}\text{Er}$

E^*	J^π	Branching ratios in percentage										
[keV]		E_f^* : J_f^π :	1193.03 5 ⁻	1217.16 0 ⁺	1263.91 6 ⁺	1276.27 2 ⁺	1311.46 6 ⁻	1358.90 1 ⁻	1396.84 10 ⁺	1403.74 2 ⁻	1411.10 4 ⁺	1422.10 0 ⁺
1994.819(4)	$\langle 3 \rangle^+$					2.0(9)						
2001.954(3)	5 ⁻		77(10)				8.9(18)					
2002.471(5)	$\langle 4 \rangle^+$										2.4(4)	
2031.090(8)	4 ⁺										26(4)	
2055.918(8)	4 ⁺		8(2)		1.9(7)							
2080.457(3)	$\langle 4 \rangle^+$										3.7(7)	
2091.270(5)	6 ⁻		21(3)				50(7)					
2118.793(5)	$\langle 6 \rangle^-$		21(4)				71(8)					
2129.243(18)	5 ⁻				7.7(12)							
2133.76(1)**	1 ⁺											13(4)
2148.370(3)	5 ⁻		64(10)									
2169.524(12)	5 ⁺		25(6)		2(1)		9(2)					
2177.79(2)**	$\langle 2^+ \rangle$											17(4)
2188.47(7)**	4 ⁻ -6 ⁺		16(3)									
2238.18(1)**	4 ⁺		4.2(15)									
2246.534(9)	6 ⁺				9(3)							
2255.345(3)	6 ⁻						72(12)					
2267.620(4)	$\langle 5 \rangle^+$		10(3)									
2279.630(5)	4 ⁺		44(8)									
2298.263(4)**	$\langle 5 \rangle^+$		82(11)				12(2)					
2303.070(16)	6 ⁻				15(6)							
2306.883(24)	6 ⁺		43(9)		13(5)		45(8)					
2348.57(1)**	4,5		25(7)									
2365.173(13)	$\langle 5 \rangle^-$		11(5)									
2368.58(1)	$\langle 5^+ \rangle$		28(8)									
2392.85(6)**	4 ⁺		15(4)									
2411.71(6)**	4 ⁻ -6 ⁺		<25				[6]					
2425.76(4)**	2 ⁺			<11								
2474.174(12)	6 ⁻		59(18)									
2477.13(6)	$\langle 5 \rangle^-$		41(18)				30(10)					
2484.57(6)	$\langle 3 \rangle^+$					<14						
2526.582(12)	$\langle 5 \rangle^-$		<88									
2663.234(21)	$\langle 4 \rangle^+$		14(6)									
2769.58(5)	$\langle 5^+ \rangle$		<22				26(11)					

Energy levels and branching ratios [94Sh13]. Part 5

 $^{168}_{68}\text{Er}$

E^*	J^π	Branching ratios in percentage									
[keV]	E^*_f : J^π_f :	1431.47 3 [−]	1432.95 7 ⁺	1448.96 7 [−]	1493.14 2 ⁺	1541.56 3 [−]	1541.71 4 [−]	1569.45 2 [−]	1574.12 5 [−]	1605.85 8 [−]	1615.34 4 [−]
1541.710(3)	4 [−]	0.21(4)									
1605.853(3)	8 [−]	4.7(10)									

(continued)

¹⁶⁸Er
68

E^*	J^π	Branching ratios in percentage										
[keV]		E_f^* : J_f^π :	1431.47 3 ⁻	1432.95 7 ⁺	1448.96 7 ⁻	1493.14 2 ⁺	1541.56 3 ⁻	1541.71 4 ⁻	1569.45 2 ⁻	1574.12 5 ⁻	1605.85 8 ⁻	1615.34 4 ⁻
1615.343(2)	4 ⁻						1.6(3)					
1624.508(4)	8 ⁺			0.9(4)								
1653.549(2)	3 ⁺						0.062(22)		0.62(17)			
1656.273(4)	4 ⁺					<0.53						
1707.995(2)	5 ⁻				0.19(4)		1.2(2)					5.2(8)
1736.688(2)	4 ⁺	0.41(5)						0.08(3)				
1760.760(3)	⟨6⟩ ⁻							10.2(13)		0.8(2)		
1773.203(3)	⟨6⟩ ⁻				0.62(10)							
1820.134(2)	6 ⁻		3.1(7)		40(4)							4(1)
1828.065(2)	3 ⁻						10.1(8)					1.1(2)
1839.348(2)	5 ⁺							0.55(10)		0.14(4)		
1848.351(5)	2 ⁺					0.8(1)			0.35(8)			
1892.936(2)	4 ⁻											0.42(8)
1905.092(3)	4 ⁻						0.29(7)					0.13(4)
1915.504(4)	3 ⁺								0.48(11)			
1949.638(3)	⟨6⟩ ⁻		24(3)									
1950.808(2)	7 ⁻										28(5)	
1961.400(2)	6 ⁺				57(7)							
1972.316(16)	2 ⁻						0.22(7)					
1999.224(3)	3 ⁻						60(6)		21(2)			8(2)
2022.329(6)	3 ⁻							4.1(6)				
2059.976(2)	4 ⁻						1.7(4)					3.4(7)
2089.347(3)	4 ⁻						31(4)					34(4)
2091.270(5)	6 ⁻		6(1)		8(2)							
2097.572(6)	4 ⁻	0.8(3)						0.8(3)		0.36(7)		
2100.363(4)	⟨7 ⁺ ⟩										65(11)	
2118.793(5)	⟨6⟩ ⁻				8.5(12)							
2133.76(1)**	1 ⁺					<11						
2169.524(12)	5 ⁺		3(1)									
2177.79(2)**	⟨2 ⁺ ⟩					<21						
2186.738(4)	⟨3⟩ ⁺						5.5(10)					1.5(5)
2200.421(3)	5 ⁻											39(5)
2210.018(5)	7 ⁻				100							
2230.335(16)	2 ⁻						10(3)		10(2)			14(3)
2246.534(9)	6 ⁺		21(5)									
2262.69(4)**	2 ⁺ -4											8(2)
2302.57(3)**	3 ⁻								10(2)			20(4)
2303.070(16)	6 ⁻									8(3)		
2451.182(6)	⟨5⟩ ⁻							[14]				
2474.174(12)	6 ⁻		21(7)									

Energy levels and branching ratios [94Sh13]. Part 6

¹⁶⁸Er

E^*	J^π	Branching ratios in percentage										
[keV]		E_f^* : J_f^π :	1616.81 6 ⁺	1624.51 8 ⁺	1633.46 3 ⁻	1653.55 3 ⁺	1656.27 4 ⁺	1708.00 5 ⁻	1719.18 4 ⁻	1736.69 4 ⁺	1760.76 ⟨6⟩ ⁻	1773.20 ⟨6⟩ ⁻
1736.688(2)	4 ⁺				0.79(20)	1.4(3)						
1820.134(2)	6 ⁻							12(2)				
1820.477(3)	5 ⁻				0.17(4)							
1839.348(2)	5 ⁺					3.0(6)			0.85(13)	2.5(4)		
1848.351(5)	2 ⁺				0.27(7)	0.25(7)						
1896.377(3)	⟨7⟩ ⁻											100
1902.695(6)	6 ⁺						2.5(4)					
1915.504(4)	3 ⁺				0.21(6)					0.18(4)		
1930.392(4)	2 ⁺					1.2(3)						
1949.638(3)	⟨6⟩ ⁻								0.59(16)			
1950.808(2)	7 ⁻							10(2)				
1961.400(2)	6 ⁺		2.0(3)							11(2)		
1983.042(3)	5 ⁻							0.63(10)				
1994.819(4)	⟨3⟩ ⁺						0.68(13)			1.2(3)		
1999.224(3)	3 ⁻				9.5(12)	0.52(9)			0.64(12)			
2002.471(5)	⟨4⟩ ⁺				1.1(2)	<0.42	0.67(11)					
2059.976(2)	4 ⁻							0.85(13)				
2070.0	10 ⁺		100									
2089.347(3)	4 ⁻				14(2)			8(1)	11(1)			
2108.986(6)	5 ⁺								<0.8			
2122.426(3)	7 ⁻											29(6)
2148.370(3)	5 ⁻							2.7(4)				
2185.090(5)	5 ⁻										<8	
2186.738(4)	⟨3⟩ ⁺					86(10)				7.2(14)		
2188.47(7)**	4 ⁻ -6 ⁺					1.6(3)				0.5(2)		
2200.421(3)	5 ⁻							24(3)	13(2)			
2238.18(1)**	4 ⁺									5.5(8)		
2243.523(19)	⟨3⟩ ⁺						0.5(3)					
2246.534(9)	6 ⁺	25(5)										
2262.69(4)**	2 ⁺ -4				9(2)	5.2(7)						
2279.630(5)	4 ⁺					15(3)				35(4)		
2302.57(3)**	3 ⁻				12(2)				4(1)			
2303.070(16)	6 ⁻										2.8(10)	
2311.07(3)	⟨4⟩ ⁺						0.68(13)					
2331.998(5)**	4 ⁻ -7 ⁻							27(4)				
2348.57(1)**	4,5					4(1)		<8	22(5)			
2392.85(6)**	4 ⁺				2.0(6)			<3.9				
2561.57(4)	4 ⁺	6(2)										
2663.234(21)	⟨4⟩ ⁺					60(8)						

Energy levels and branching ratios [94Sh13]. Part 7

¹⁶⁸Er₆₈

E^*	J^π	Branching ratios in percentage										
[keV]		E_f^* : J_f^π :	1786.11 1 ⁻	1820.13 6 ⁻	1820.48 5 ⁻	1828.07 3 ⁻	1839.35 5 ⁺	1848.35 2 ⁺	1892.94 4 ⁻	1893.10 2 ⁺	1896.38 ⟨7⟩ ⁻	1905.09 4 ⁻
1936.590(9)	1 ⁻	0.3(1)										
1950.808(2)	7 ⁻			13(2)								
1961.400(2)	6 ⁺				0.7(2)		4.1(8)					
1983.042(3)	5 ⁻								<0.34			
1994.819(4)	⟨3⟩ ⁺							0.7(1)				
1999.224(3)	3 ⁻					0.7(2)						
2002.471(5)	⟨4⟩ ⁺						<0.9	0.21(6)				
2022.329(6)	3 ⁻	0.16(6)										
2059.976(2)	4 ⁻					2.6(5)			3.8(5)			3.1(7)
2080.457(3)	⟨4⟩ ⁺						0.8(2)					
2089.347(3)	4 ⁻				0.8(1)				0.5(1)			
2100.363(4)	⟨7 ⁺ ⟩						29(8)					
2108.986(6)	5 ⁺				1.1(2)							
2122.426(3)	7 ⁻										71(11)	
2133.76(1)**	1 ⁺									1.5(3)		
2148.370(3)	5 ⁻								6.2(10)			
2188.47(7)**	4 ⁻ -6 ⁺				0.9(2)		<0.7					
2200.421(3)	5 ⁻			7(2)	11(2)				0.9(2)			
2238.18(1)**	4 ⁺						0.89(17)	<0.67	1.4(3)			1.8(3)
2267.620(4)	⟨5⟩ ⁺						1.5(3)		4.2(7)			4.6(7)
2279.630(5)	4 ⁺						4(1)					
2298.263(4)**	⟨5⟩ ⁺						4.7(8)					
2302.57(3)**	3 ⁻				1.2(2)	1.4(3)			1.2(3)			
2331.998(5)**	4 ⁻ -7 ⁻			30(5)	19(4)							
2365.173(13)	⟨5⟩ ⁻								<2.2			1.5(4)
2368.58(1)	⟨5 ⁺ ⟩											1.0(2)
2474.174(12)	6 ⁻			20(9)								

Energy levels and branching ratios [94Sh13]. Part 8

¹⁶⁸Er₆₈

E^*	J^π	Branching ratios in percentage										
[keV]		$E^*_{\rm f}$: $J^\pi_{\rm f}$:	1913.90 3 [−]	1915.50 3 ⁺	1930.39 2 ⁺	1949.64 ⟨6⟩ [−]	1950.81 7 [−]	1961.40 6 ⁺	1983.04 5 [−]	1999.22 3 [−]	2001.95 5 [−]	2002.47 ⟨4⟩ ⁺
2080.457(3)	⟨4⟩ ⁺				0.09(4)							
2089.347(3)	4 [−]									<0.4		
2091.270(5)	6 [−]					0.6(2)						
2100.363(4)	⟨7 ⁺ ⟩							6(2)				
2108.986(6)	5 ⁺			0.6(2)				0.12(3)				0.6(2)
2129.243(18)	5 [−]		0.12(4)									
2148.370(3)	5 [−]								1.2(3)		3.9(8)	
2185.090(5)	5 [−]		1.1(2)									
2188.47(7)**	4 [−] –6 ⁺							<0.22				

(continued)

¹⁶⁸Er₆₈

E^* [keV]	J^π	Branching ratios in percentage									
		E_f^* : J_f^π :	1913.90 3 [−]	1915.50 3 ⁺	1930.39 2 ⁺	1949.64 ⟨6⟩ [−]	1950.81 7 [−]	1961.40 6 ⁺	1983.04 5 [−]	1999.22 3 [−]	2001.95 5 [−]
2200.421(3)	5 [−]				1.1(2)					0.4(1)	
2210.018(5)	7 [−]					<10		<5.2			
2255.345(3)	6 [−]							14(3)			1.9(5)
2262.69(4)**	2 ⁺ −4								0.7(2)		
2298.263(4)**	⟨5⟩ ⁺										1.1(2)
2331.998(5)**	4 [−] −7 [−]				10(2)	7(1)					
2474.174(12)	6 [−]										<4.8

Energy levels and branching ratios [94Sh13]. Part 9

¹⁶⁸Er₆₈

E^* [keV]	J^π	Branching ratios in percentage							
		E_f^* : J_f^π :	2059.98 4 ⁻	2089.35 4 ⁻	2118.79 ⟨6⟩ ⁻	2148.37 5 ⁻	2200.42 5 ⁻	2255.35 6 ⁻	2267.62 ⟨5⟩ ⁺
2148.370(3)	5 ⁻		1.0(3)						
2200.421(3)	5 ⁻			2.9(5)					
2238.18(1)**	4 ⁺		0.21(4)						
2255.345(3)	6 ⁻				6(1)	5.8(12)			
2279.630(5)	4 ⁺		0.4(1)						
2298.263(4)**	⟨5⟩ ⁺			0.22(8)					
2331.998(5)**	4 ⁻ -7 ⁻						7(1)		
2348.57(1)**	4,5			<0.9					
2368.58(1)	⟨5 ⁺ ⟩					0.26(11)			0.9(2)
2451.182(6)	⟨5⟩ ⁻			[14]				[0.8]	
2526.582(12)	⟨5⟩ ⁻		3.0(7)						

Energy levels and branching ratios [91Sh18].

¹⁶⁹Er₆₈

E^* [keV]	$2J^\pi$	L	I_p	σ (t,p) $\mu\text{b/sr}$	σ (d,p) $\mu\text{b/sr}$	σ (d,t) $\mu\text{b/sr}$	σ (τ,α) $\mu\text{b/sr}$	$T_{1/2}$ or Γ_{cm}	Ref.	Branching ratios in percentage					
										E_f^* : $2J_f^\pi$:	0.0 1 ⁻	64.5 3 ⁻	74.6 5 ⁻	92 ⟨5⟩ ⁻	176 ⟨7⟩ ⁻
0.0	1 ⁻				158	397		9.40(2) d	69Tj01						
64.55(2)	3 ⁻				≈16	≈24			69Tj01	100					
74.6(1)	5 ⁻				≈36	≈62			69Tj01	x	x				
92.1(1)	⟨5⟩ ⁻				10	6		285(20) ns	69Tj01			[85]	>15		
176.4(2)	⟨7⟩ ⁻				280	229			69Tj01					100	
224.2(1)	⟨7 ⁻ ⟩				96	167			69Tj01			51(8)	49(8)		
242.0(2)	⟨9 ⁻ ⟩					11			69Tj01				100		
243.6(2)	7 ⁺	0	100	187				200(10) ns	85Lo19					74	26
284.9(3)	⟨9 ⁻ ⟩				9	7			69Tj01						100

(continued)

¹⁶⁹Er
68

E^*	$2J^\pi$	L	I_p	σ (t,p)	σ (d,p)	σ (d,t)	σ (τ,α)	$T_{1/2}$ or	Ref.	Branching ratios in percentage					
[keV]		(t,p)	rel.	$\mu\text{b/sr}$	$\mu\text{b/sr}$	$\mu\text{b/sr}$	$\mu\text{b/sr}$	Γ_{cm}		E_f^* : $2J_f^\pi$:	0.0 1 ⁻	64.5 3 ⁻	74.6 5 ⁻	92 $\langle 5 \rangle^-$	176 $\langle 7 \rangle^-$
317.2(5)	$\langle 9^+ \rangle$		weak	11	16	54			85Lo19						
413(5)	$\langle 11^+ \rangle$		weak	10					85Lo19						
414(3)	$\langle 11^- \rangle$				6	10			69Tj01						
474(3)	$\langle 11^- \rangle$				7	11			69Tj01						
526(3)	$\langle 13 \rangle^+$		weak	7	32	72	135		72Lo20						
562.0(1)	$\langle 1 \rangle^-$				3						17(4)	65(13)		18(5)	
592(5)				4					85Lo19						
599.3(1)	$\langle 3 \rangle^-$				151	35			69Tj01	42(9)	17(3)	31(6)		10(3)	
654.1(2)	$\langle 5^- \rangle$				83	25			69Tj01		[93]	[6.6]			
714.6(1)	$\langle 3 \rangle^-$					165			69Tj01	57(11)	31(7)	10(2)		1.8(7)	
739.7(7)	$\langle 7^- \rangle$				29	7			69Tj01						
769.6(1)	$\langle 5^- \rangle$				2	6			69Tj01			47(7)	53(9)		
822(3)	$\langle 7^- \rangle$				41				69Tj01						
848(5)	X^+	2		9	44	132	21		72Lo20						
850(3)	$\langle 7^- \rangle$														
853.0(1)	5 ⁻									19(2)	35(4)	17(1)	17(4)	7.0(7)	
860.1(2)	3 ⁺										39(8)	56(13)			
905(5)	7 ⁺	0	31	45					85Lo19						
930(3)	$\langle 9^- \rangle$				41	16	25		72Lo20						
941.0(2)	$\langle 7 \rangle^-$					41			69Tj01		17(3)	35(5)	8(1)	4(1)	
≈ 947	$\langle 9^- \rangle$					≈ 5			69Tj01						
971(5)	$X^{\langle + \rangle}$	$\langle 4 \rangle$		3					85Lo19						
990(3)	$X^{\langle + \rangle}$	$\langle 2 \rangle$		13		8			85Lo19						
1051(5)	$\langle 11^- \rangle$				≈ 3		17		72Lo20						
1052(5)	$\langle 9^- \rangle$					30			69Tj01						
1053.1	1 ⁻ , 3 ⁻														
1056(5)				2					85Lo19						
1076(5)	$\langle 11^- \rangle$					29			69Tj01						
1081.7(3)	$\langle 3^- \rangle$				74				69Tj01					100	
1085(5)				3					85Lo19						
1094.4(2)	1 ⁻ , 3 ⁻					7			69Tj01	58(12)	19(4)	15(3)		8(2)	
1113(5)				9					85Lo19						
1117.1(2)	$\langle 3^- \rangle$					12			69Tj01	[34]		[48]			[18]
1119(5)					≈ 10				69Tj01						
1137(5)	$X^{\langle + \rangle}$	$\langle 4 \rangle$		19					85Lo19						
1142.8(6)	1, 3				167	10			69Tj01						
1144.6(2)	$\langle 5^- \rangle$											[19]			[81]
1150(20)	$\langle 13^+ \rangle$														
1186(5)	$\langle 11^- \rangle$				≈ 3	12			69Tj01						
1215(5)						10			69Tj01						
1221(5)	$X^{\langle + \rangle}$	$\langle 2 \rangle$		14					85Lo19						
1229(5)	$\langle 7^- \rangle$				71	25	31		72Lo20						
1238(4)				4		19			85Lo19						
1276(4)				2		6			85Lo19						
1296(5)				7					85Lo19						

(continued)

 $^{169}_{68}\text{Er}$

E^*	$2J^\pi$	L	I_p	σ (t,p)	σ (d,p)	σ (d,t)	σ (τ,α)	$T_{1/2}$ or	Ref.	Branching ratios in percentage					
[keV]		(t,p)	<i>rel.</i>	$\mu\text{b/sr}$	$\mu\text{b/sr}$	$\mu\text{b/sr}$	$\mu\text{b/sr}$	Γ_{cm}		E_f^* : $2J_f^\pi$:	0.0 1 ⁻	64.5 3 ⁻	74.6 5 ⁻	92 $\langle 5 \rangle^-$	176 $\langle 7 \rangle^-$
1341(5)	$\langle 9^- \rangle$				≈ 7				69Tj01						
1360.1(2)	$1^{\langle + \rangle}$					54			69Tj01	40(10)	<27				
1364					7				69Tj01						
1387.0(2)	$1^-, 3^-$				205				69Tj01	5.4(13)	7.1(16)	8(2)	<4.9		
1394(5)	$\langle 11^- \rangle$					50	128		72Lo20						
1415(5)					63										
1415						13									
1434(5)			3						85Lo19						
1456(4)			4		12				85Lo19						
1457						46			69Tj01						
1470.7(7)	$1^-, 3^-$					38			69Tj01						
1483.9(18)	1,3		4			104			85Lo19						
1488.0(11)	$1^-, 3^-$				362				69Tj01						
1526(5)	$\langle 3^+ \rangle$					229			69Tj01						
1529.6(7)	$1^-, 3^-$														
1535(5)					67				69Tj01						
1548(5)	$11^+, 13^+$		2						85Lo19						
1553.7(7)	$1^-, 3^-$				95		88		72Lo20						
1564(5)						49			69Tj01						
1572.3	$1^-, 3^-$				64				69Tj01						
1601(5)						24			69Tj01						
1608(5)					69				69Tj01						
1622(5)			4		52				85Lo19						
1623						≈ 21			69Tj01						
1647.2(6)	$\langle 1^+ \rangle$					199			69Tj01						
1652(4)			3		67				85Lo19						
1667.5(16)	1,3														
1676(4)			3			109			85Lo19						
1680.0(9)	1,3				16				69Tj01						
1700(4)					38				69Tj01						
1702						31			69Tj01						
1710.1(7)	1,3														
1716(4)					66				69Tj01						
1718						31			69Tj01						
1727(5)					104				69Tj01						
1743(5)			10						85Lo19						
1755(5)					141				69Tj01						
1774(4)			4		20				85Lo19						
1783.6(7)	1,3														
1790(5)						43			69Tj01						
1795.3(9)	1,3														
1806.3(19)	1,3														
1819.7(17)	$1^-, 3^-$														
1823					23				69Tj01						
1826.0(11)	1,3		8			7			85Lo19						

(continued)

¹⁶⁹Er
68

E^* [keV]	$2J^\pi$	L (t,p)	I_p <i>rel.</i>	σ (t,p) $\mu\text{b/sr}$	σ (d,p) $\mu\text{b/sr}$	σ (d,t) $\mu\text{b/sr}$	σ (τ,α) $\mu\text{b/sr}$	$T_{1/2}$ or Γ_{cm}	Ref.	Branching ratios in percentage					
										E_f^* :	0.0	64.5	74.6	92	176
										$2J_f^\pi$:	1 ⁻	3 ⁻	5 ⁻	$\langle 5 \rangle^-$	$\langle 7 \rangle^-$
1839.3(8)	1 ⁻ ,3 ⁻				18				69Tj01						
1848.4(8)	1 ⁻ ,3 ⁻														
1856(4)				11		69			85Lo19						
1867.2(8)	1 ⁻ ,3 ⁻				63				69Tj01						
1886(5)						9			69Tj01						
1897.7(7)	1,3				26				69Tj01						
1904						8			69Tj01						
1913(5)					58				69Tj01						
1924(5)						24			69Tj01						
1928.8(7)	1 ⁻ ,3 ⁻				83				69Tj01						
1948.0(14)	1 ⁻ ,3 ⁻														
1955.3(23)	1 ⁻ ,3 ⁻		9			10			85Lo19						
1966.9	1,3														
1974(5)						13			69Tj01						
1978.9(7)	1,3						8		69Tj01						
1997.0(7)	1,3						60		69Tj01						
2018(5)															
2022.9	1 ⁻ ,3 ⁻														
2029.3(8)	1 ⁻ ,3 ⁻					18			69Tj01						
2047.1(13)	1,3		5						85Lo19						
2055(4)					120				69Tj01						
2057						21			69Tj01						
2063.0(8)	1,3														
2092(5)			5		17				85Lo19						
2098	1,3														
2112.5(9)	1,3														
2125.2(7)	1 ⁻ ,3 ⁻				27				69Tj01						
2141.2(30)	1 ⁻ ,3 ⁻														
2165.5(16)	1 ⁻ ,3 ⁻														
2180.4(7)	1 ⁻ ,3 ⁻														
2185.2(8)	1,3				42				69Tj01						
2204(5)					98				69Tj01						
2219.4(7)	1,3		10						85Lo19						
2225.3(11)	1 ⁻ ,3 ⁻				29				69Tj01						
2237.9(8)	1,3														
2255(5)					69				69Tj01						
2264.5	1,3														
2272(5)					26				69Tj01						
2295(5)					33				69Tj01						
2336(5)					71				69Tj01						
2382(5)					351				69Tj01						
2420(5)					39				69Tj01						
2440(5)					65				69Tj01						
2482(5)			4						85Lo19						

(continued)

 $^{169}_{68}\text{Er}$

E^*	$2J^\pi$	L	I_p	σ (t,p)	σ (d,p)	σ (d,t)	σ (τ,α)	$T_{1/2}$ or	Ref.	Branching ratios in percentage					
[keV]		(t,p)	<i>rel.</i>	$\mu\text{b/sr}$	$\mu\text{b/sr}$	$\mu\text{b/sr}$	$\mu\text{b/sr}$	Γ_{cm}		E_f^* :	0.0	64.5	74.6	92	176
										$2J_f^\pi$:	1 ⁻	3 ⁻	5 ⁻	$\langle 5 \rangle^-$	$\langle 7 \rangle^-$
≈ 3400			85Lo19	85Lo19	69Tj01	69Tj01	72Lo20		Ref.						

Additional data on this isotope can be found in [93Va02, 68Ha10].

Cross sections σ (t,p) [85Lo19], σ (d,p), σ (d,t) [69Tj01], σ (τ,α) [72Lo20] were measured at 30°, 90°, 90° and 40°, respectively.

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

Energy levels and branching ratios [91Sh18]. Part 2

 $^{169}_{68}\text{Er}$

E^*	$2J^\pi$	Branching ratios in percentage								
[keV]		E_f^* :	224.2	242.0	243.6	562.0	599.3	654.1	714.6	1094.4
		$2J_f^\pi$:	$\langle 7^- \rangle$	$\langle 9^- \rangle$	7 ⁺	$\langle 1 \rangle^-$	$\langle 3 \rangle^-$	$\langle 5^- \rangle$	$\langle 3 \rangle^-$	1 ⁻ , 3 ⁻
317.2(5)	$\langle 9^+ \rangle$				100					
769.6(1)	$\langle 5^- \rangle$		<6							
853.0(1)	5 ⁻		4.6(6)							
860.1(2)	3 ⁺				5(2)					
941.0(2)	$\langle 7^- \rangle$		25(2)	7(2)	3(2)					
1144.6(2)	$\langle 5^- \rangle$						<27			
1360.1(2)	1 ⁽⁺⁾					60(17)	<17			
1387.0(2)	1 ⁻ , 3 ⁻						10(7)	68(14)		1.8(6)

Energy levels and branching ratios [02Ba93].

 $^{170}_{68}\text{Er}$

E^*	J^π	Γ_{γ_0}	$I_{s,0}$	Γ_{γ_0}	$B(M1)$	$B(E1)$	$\Gamma_{\text{o}}^{\text{red}}$	σ (d,d')	$T_{1/2}$ or	Ref.
[keV]		[meV]	[eVb]	[meV]	$[\mu_N^2]$	$[10^{-3}e^2fm^2]$	[meV]	$\mu\text{b/sr}$	Γ_{cm}	
0 ^c	0 ⁺							11750	Stable	68Tj02
78.599(22) ^c	2 ⁺							3250	1.891(23) ns	68Tj02
260.148(24) ^c	4 ⁺							101		68Tj02
540.72(6) ^c	6 ⁺							22		68Tj02
890.89(4) ^d	$\langle 0^+ \rangle$							≈ 3		68Tj02
915.02(7) ^c	$\langle 8^+ \rangle$								3.6(3) ps	
934.03(3) ^b	2 ⁺							45	1.81(6) ps	68Tj02
960.00(3) ^d	2 ⁺							2	12.1(15) ps	68Tj02
1010.54(3) ^b	$\langle 3^+ \rangle$									
1103.36(3) ^d	4 ⁺							≈ 25		68Tj02
1127.32(4) ^b	4 ⁺							15		68Tj02
1217.50(3) ^a	3 ⁽⁺⁾									
1236.61(9) ^b	$\langle 5^+ \rangle$									

(continued)

¹⁷⁰Er
68

E^*	J^π	$\Gamma_{\gamma o}$	$I_{s,0}$	$\Gamma_{\gamma o}$	$B(M1)$	$B(E1)$	Γ_o^{red}	σ (d,d')	$T_{1/2}$ or	Ref.
[keV]		[meV]	[eVb]	[meV]	$[\mu_N^2]$	$[10^{-3}e^2fm^2]$	[meV]	$\mu\text{b/sr}$	Γ_{cm}	
1266.64(3)	$\langle 1^- \rangle$									
1268.69(3)	$\langle 4^- \rangle$								42.8 ns	03Wu07
1304	$\langle 3^- \rangle$							12		68Tj02
1304.58(4) ^a	$\langle 4^+ \rangle$									
1305.25(7)	$\langle 2^- \rangle$									
1324.29(5)	$\langle 0^+ \rangle$									
1332.0(7)	2^+							29	4.8(7) ps	68Tj02
1335	$\langle 4^+ \rangle$									
1340.21(4)	3^-									
1350.50(8) ^d	$\langle 6^+ \rangle$									
1370.6(10)	$\langle 3^- \rangle$							9		68Tj02
1372.10(6)	$\langle 5^- \rangle$									03Wu07
1376.6(4) ^c	$\langle 10^+ \rangle$								1.48(10) ps	
1385.41(3)	2^+							10		68Tj02
1401.96(8) ^b	$\langle 6^+ \rangle$							incl		
1413.14(6)	$\langle 5^+ \rangle$									
1416.25(4)	$\langle 2^+ \rangle$									
1422.1(8) ^a	$\langle 5,6^+ \rangle$									
1432.97(4)	$\langle 4^- \rangle$									
1483.36(4)	$\langle 3^+ \rangle$							2		68Tj02
1483.81(9)	$\langle 5^- \rangle$									
1487.91(14)	$\langle 4^+, 5^+ \rangle$									
1496.09(8)	$\langle 6^- \rangle$									03Wu07
1500.87(19)	≤ 4									
1506.23(8)	$\langle 2^- \rangle$									
1526.42(8)	$\langle 4^+ \rangle$									
1539	$\langle 1^- \rangle$							3		68Tj02
1543.48(14) ^a	$\langle 6^+ \rangle$									
1556.76(9) ^b	$\langle 7^+ \rangle$									
1572.61(8)	$\langle 4^+ \rangle$									
1579.16(4)	$\langle 3^- \rangle$							42		68Tj02
1590.77(9)	$\langle 6^- \rangle$									
1631.03(9)	$\langle 6^- \rangle$									
1640.45(9)	$\langle 7^- \rangle$									03Wu07
1676.45(7)	$\langle 4^- \rangle$									
1677.3(6) ^d	$\langle 8^+ \rangle$									
1683.60(8)	$\langle 5^+ \rangle$									
1689.79(10)	$\langle 5^+ \rangle$									
1694.8(7) ^a	$\langle 7^+ \rangle$									
1699.58(9)	$\langle 1^+ \rangle$									
1704.88(19)	$\langle 7^- \rangle$									
1708.18(6)	$\langle 5^- \rangle$							3		68Tj02
1741.88(7)										
1745.90(6)	$\langle 4^- \rangle$									
1769.20(6)										

(continued)

¹⁷⁰Er
68

E^*	J^π	$\Gamma_{\gamma o}$	$I_{s,0}$	$\Gamma_{\gamma o}$	$B(M1)$	$B(E1)$	Γ_o^{red}	σ (d,d')	$T_{1/2}$ or	Ref.
[keV]		[meV]	[eVb]	[meV]	$[\mu_N^2]$	$[10^{-3}e^2fm^2]$	[meV]	$\mu\text{b/sr}$	Γ_{cm}	
1773.1(5) ^b	$\langle 8^+ \rangle$									
1804.4	8^-									03Wu07
1805.18(8)	$\langle 3^+, 4^+ \rangle$									
1819.05(24)	$\langle 6^- \rangle$									
1823.0(4)	$\langle 6^+ \rangle$									
1824.62(6)	1^-	30(3)	41.7(65)	31.8(55)	0.000	14.99(259)	5.9(4)		5.7(5) fs	91Zi01
1867.8(5) ^a	$\langle 8^+ \rangle$									
1899.7(3)										
1918.7(6) ^c	$\langle 12^+ \rangle$								0.57(3) ps	
1935.51(11)	$\langle 3^- \rangle$							26		68Tj02
1963.9(6) ^b	$\langle 9^+ \rangle$									
1973.05(8)	$1^{\langle + \rangle}$									
1982.61(11)	$\langle 1^+, 2^+ \rangle$									
1982.8(3)										
1991.0	9^-									03Wu07
2019.08(17)	$\langle 2^+ \rangle$							4		68Tj02
2039.31(24)	1	2.3(7)							0.10(3) ps	76Me04
2061.7(7) ^a	$\langle 9^+ \rangle$									
2071.3(3)	$\langle 1, 2^+ \rangle$							9		68Tj02
2080.52(13) ^d	2^+									
2080.8(6)	$\langle 10^+ \rangle$									
2112.2(3)	$\langle 2^+ \rangle$							3		68Tj02
2132.97(15)	1	5(1)	9.5(12)	3.8(9)	0.100(25)	1.11(27)			62(9) fs	76Me04
2150.0(3)	$\langle 5^- \rangle$							17		68Tj02
2158.95(12)	$\langle 5^+ \rangle$									98GlZY
2188.3	10^-									03Wu07
2190.18(19)	$\langle 4^+ - 6^- \rangle$							16		68Tj02
2223.3(6) ^b	$\langle 10^+ \rangle$									
2285.6(6) ^a	$\langle 10^+ \rangle$									
2399.04(24)	$\langle 1^+, 2^+ \rangle$							10		68Tj02
2433.8	11^-									03Wu07
2444.9(24) ^b	$\langle 11^+ \rangle$									
2451.57(7)	$\langle 4^+ \rangle$								76(+33-25) fs	
2518.9(7) ^a	$\langle 11^+ \rangle$									
2537.2(11) ^c	$\langle 14^+ \rangle$									
2551.1(7) ^d	$\langle 12^+ \rangle$									
2606								7		68Tj02
2655.6	12^-									03Wu07
2657.4(5)								4		68Tj02
2684.8(3)	$\langle 1, 2^+ \rangle$									
2700.83(24)	1	17(4)	13.4(17)	12.5(25)	0.164(33)				23(3) fs	76Me04
2717.3(3)	$\langle 4^+ - 6^+ \rangle$							10		68Tj02
2720.07(18)	$\langle 3^+, 4^+ \rangle$							incl		68Tj02
2723.7(8) ^a	$\langle 12^+ \rangle$									
2751(2)	$\langle 1 \rangle$	3(1)							≈ 0.15 ps	76Me04

(continued)

 $^{170}_{68}\text{Er}$

E^*	J^π	Γ_{γ_0}	$I_{s,0}$	Γ_{γ_0}	$B(M1)$	$B(E1)$	$\Gamma_{\circ}^{\text{red}}$	σ (d,d')	$T_{1/2}$ or	Ref.
[keV]		[meV]	[eVb]	[meV]	$[\mu_N^2]$	$[10^{-3}e^2fm^2]$	[meV]	$\mu\text{b/sr}$	Γ_{cm}	
2972.8	13^-									03Wu07
2753.3(3)	$\langle 1,2^+ \rangle$									
2790.3(4)	1^+	37(4)	38.5(22)	41.3(39)	0.493(47)				7.7(5) fs	76Me04
2813.3(8) ^b	$\langle 12^+ \rangle$									
2897	1		6.4(13)	4.7(14)	0.050(15)	0.55(16)				96Ma18
2930(2)	1	7(3)	4.5(9)	8.4(27)		0.96(31)			39(9) fs	76Me04
2930.9(3)	$\langle 1,2^+ \rangle$									
2938(2)	1	9(3)	7.6(11)	9.1(26)	0.093(27)				31(5) fs	76Me04
2943.0(6)	$\langle 1,2^+ \rangle$									
2971.5(6)	$1,2^{(+)}$									
2984.4(9) ^a	$\langle 13^+ \rangle$									
2993.5(5)	$\langle 1,2^+ \rangle$									
2995(2)	$1,2^{(+)}$									
3019	1		17.4(14)	13.8(31)	0.130(29)	1.43(32)				96Ma18
3063.4(9)	1	43(7)	15.1(15)	42.8(63)		4.27(63)			3.1(4) fs	76Me04
3073.4(12) ^d	$\langle 14^+ \rangle$									
3073.9(9) ^b	$\langle 13^+ \rangle$									
3084	1		5.0(10)	4.1(12)	0.036(11)	0.40(12)				96Ma18
3178	1		5.5(11)	16.7(52)		1.49(46)			7.9(24) fs	96Ma18
3183	1		4.4(9)	12.4(41)		1.10(36)			11(4) fs	96Ma18
3188.3	14^-									03Wu07
3225.7(14) ^c	$\langle 16^+ \rangle$									
3238	1		8.3(13)	11.5(45)	0.088(34)				27(6) fs	96Ma18
3243	1		31.9(48)	56.5(102)	0.429(78)				4.2(6) fs	96Ma18
3275.9(12) ^a	$\langle 14^+ \rangle$									
3405.9(4)	$\langle 1,2^+ \rangle$									
3405	$1^{(+)}$	145(18)	101.4(36)	149.9(115)	0.984(76)				2.09(10) fs	76Me04
3436.3(10) ^b	$\langle 14^+ \rangle$									
3540	1		35.0(91)	38.0(131)	0.222(77)	2.46(85)				96Ma18
3554	1		12.4(26)	13.6(41)	0.078(24)	0.87(26)				96Ma18
3566	1		41.9(60)	65.6(164)	0.375(94)				4.9(8) fs	96Ma18
3572	1		9.6(27)	10.6(39)	0.060(22)	0.67(24)				96Ma18
3582.7	15^-									03Wu07
3584.9(14) ^a	$\langle 15^+ \rangle$									
3606.4(4)	$\langle 1^+, 2^+ \rangle$									
3623	1		21.5(24)	59.6(274)		3.59(165)			3.3(12) fs	96Ma18
3633.4(14) ^d	$\langle 16^+ \rangle$									
3695*	1		31.0(22)							96Ma18
3713.1(11) ^b	$\langle 15^+ \rangle$									
3791.2	16^-									03Wu07
3892.1(15) ^a	$\langle 16^+ \rangle$									
3978.5(15) ^c	$\langle 18^+ \rangle$									
4132.5(12) ^b	$\langle 16^+ \rangle$									
4232.4(15) ^d	$\langle 18^+ \rangle$									
4249.9(17) ^a	$\langle 17^+ \rangle$									

(continued)

¹⁷⁰Er
68

E^*	J^π	$\Gamma_{\gamma o}$	$I_{s,0}$	$\Gamma_{\gamma o}$	$B(M1)$	$B(E1)$	Γ_o^{red}	σ (d,d')	$T_{1/2}$ or	Ref.
[keV]		[meV]	[eVb]	[meV]	$[\mu_N^2]$	$[10^{-3}e^2fm^2]$	[meV]	$\mu\text{b/sr}$	Γ_{cm}	
4417.2(15) ^b	$\langle 17^+ \rangle$									03Wu07
4446.8	18^-									
4579.1(18) ^a	$\langle 18^+ \rangle$									
4787.2(16) ^c	$\langle 20^+ \rangle$									
4882.6(15) ^d	$\langle 20^+ \rangle$									
4888.7(16) ^b	$\langle 18^+ \rangle$									
4978.3(20) ^a	$\langle 19^+ \rangle$									
5206.6(18) ^b	$\langle 19^+ \rangle$									
5334.8(21) ^a	$\langle 20^+ \rangle$									
5559.0(17) ^d	$\langle 22^+ \rangle$									
5674.9(17) ^c	$\langle 22^+ \rangle$									
6142.9(23) ^a	$\langle 22^+ \rangle$									
6586.6(20) ^c	$\langle 24^+ \rangle$									
7531.4(22) ^c	$\langle 26^+ \rangle$									
		76Me04	96Ma18	96Ma18	96Ma18	96Ma18	91Zi01	68Tj02		Ref.

Additional data on this isotope can be found in [00Wu01, 00Gr33, 00Gr14, 00De59, 98GrZV, 98GlZY, 98GlZX, 97Ko62, 92Be63, 92Be29].

Abundance: 14.910(36) %.

* Parameters could not be evaluated [96Ma18].

a,b,c,d mark four bands assigned in [00Wu01]: $K^\pi=3^+$, γ ($K=2$), $K=0$ and β ($K=0$).

7 positive-parity bands and 5 negative-parity bands are considered in [00Gr14].

Levels of the band built on 4^- state (up to $J=18^-$) are from [03Wu07].

See a survey of dipole transitions from $J=1$ states in [91Zi01].

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

Energy levels and branching ratios [02Ba93]. Part 2

¹⁷⁰Er
68

E^*	J^π	Branching ratios in percentage										
[keV]		E_{f}^* : J_{f}^π :	0 0^+	78.6 2^+	261 4^+	541 6^+	891 $\langle 0^+ \rangle$	915.02 $\langle 8^+ \rangle$	934.03 2^+	960.00 2^+	1010.54 $\langle 3^+ \rangle$	1103.36 4^+
78.599(22) ^c	2^+		100									
260.148(24) ^c	4^+			100								
540.72(6) ^c	6^+				100							
890.89(4) ^d	$\langle 0^+ \rangle$			100								
915.02(7) ^c	$\langle 8^+ \rangle$					100						
934.03(3) ^b	2^+		46.9(13)	52	0.7(2)							
960.00(3) ^d	2^+		28(3)	44(2)	29(1)							
1010.54(3) ^b	$\langle 3^+ \rangle$			87(4)	12.7(7)							
1103.36(3) ^d	4^+			21.4(12)	79(5)							
1127.32(4) ^b	4^+			43(5)	50(4)	6.9(11)			x			
1217.50(3) ^a	$3^{\langle + \rangle}$			76(3)	14.2(8)				9.8(17)			
1236.61(9) ^b	$\langle 5^+ \rangle$				100	≤ 20						

(continued)

 ^{170}Er

E^*	J^π	Branching ratios in percentage										
[keV]		E_f^* : J_f^π :	0 0 ⁺	78.6 2 ⁺	261 4 ⁺	541 6 ⁺	891 ⟨0 ⁺ ⟩	915.02 ⟨8 ⁺ ⟩	934.03 2 ⁺	960.00 2 ⁺	1010.54 ⟨3 ⁺ ⟩	1103.36 4 ⁺
1266.64(3)	⟨1 ⁻ ⟩			100								
1268.69(3)	⟨4 ⁻ ⟩				0.21(7)						82(4)	8.4(6)
1304.58(4) ^a	⟨4 ⁺ ⟩			26(4)	55						10(2)	
1305.25(7)	⟨2 ⁻ ⟩			97(16)					3.1(9)			
1324.29(5)	⟨0 ⁺ ⟩			86(12)					14.2(20)			
1332.0(7)	2 ⁺	53							47			
1340.21(4)	3 ^{⟨-⟩}			28(5)	65(9)					7.4(9)		
1350.50(8) ^d	⟨6 ⁺ ⟩				<61	93(16)						7.1(20)
1370.6(10)	⟨3 ⁻ ⟩			100								
1372.10(6)	⟨5 ⁻ ⟩				27(2)	14(3)						
1376.6(4) ^c	⟨10 ⁺ ⟩							100				
1385.41(3)	2 ⁺	23(3)	51(7)	26(4)								
1401.96(8) ^b	⟨6 ⁺ ⟩				x	100						
1413.14(6)	⟨5 ⁺ ⟩				62(4)	14(3)						
1416.25(4)	⟨2 ⁺ ⟩	[42]	[49]							[9]	≤31	
1422.1(8) ^a	⟨5,6 ⁺ ⟩				x							
1432.97(4)	⟨4 ⁻ ⟩				95(13)						4.8(7)	
1483.36(4)	⟨3 ⁺ ⟩			43(6)	≤36				≤29		41(5)	12(2)
1483.81(9)	⟨5 ⁻ ⟩					[84]						
1487.91(14)	⟨4 ⁺ ,5 ⁺ ⟩					11.0(17)					85(12)	
1500.87(19)	≤4									100		
1506.23(8)	⟨2 ⁻ ⟩										[89]	
1526.42(8)	⟨4 ⁺ ⟩		23(4)	63(9)	7.9(12)							6.0(8)
1543.48(14) ^a	⟨6 ⁺ ⟩			32(5)	68(10)							
1556.76(9) ^b	⟨7 ⁺ ⟩				100			≤85				
1572.61(8)	⟨4 ⁺ ⟩			42(6)					4.0(10)		16(6)	8(1)
1579.16(4)	⟨3 ⁻ ⟩			16(2)					47(7)		≤60	12(2)
1631.03(9)	⟨6 ⁻ ⟩										[100]	
1640.45(9)	⟨7 ⁻ ⟩					56(8)		44(8)				
1676.45(7)	⟨4 ⁻ ⟩			21(3)							9(1)	45(6)
1677.3(6) ^d	⟨8 ⁺ ⟩					x		x				
1683.60(8)	⟨5 ⁺ ⟩			≤57	48(2)							52(2)
1689.79(10)	⟨5 ⁺ ⟩											67(10)
1694.8(7) ^a	⟨7 ⁺ ⟩					x						
1704.88(19)	⟨7 ⁻ ⟩					100						
1708.18(6)	⟨5 ⁻ ⟩				29(5)							
1741.88(7)			100									
1769.20(6)												76(11)
1773.1(5) ^b	⟨8 ⁺ ⟩					x		x				
1805.18(8)	⟨3 ⁺ ,4 ⁺ ⟩		13(2)	22(3)								
1819.05(24)	⟨6 ⁻ ⟩					[100]						
1823.0(4)	⟨6 ⁺ ⟩					4.6(8)						5.0(2)
1824.62(6)	1 ⁻	38.02	62(2)									
1867.8(5) ^a	⟨8 ⁺ ⟩					x		x				
1899.7(3)			63(11)								37(17)	

(continued)

 $^{170}_{68}\text{Er}$

E^*	J^π	Branching ratios in percentage										
[keV]		E_f^* : J_f^π :	0 0 ⁺	78.6 2 ⁺	261 4 ⁺	541 6 ⁺	891 <0 ⁺ >	915.02 <8 ⁺ >	934.03 2 ⁺	960.00 2 ⁺	1010.54 <3 ⁺ >	1103.36 4 ⁺
1935.51(11)	<3 ⁻ >			51(9)	49(9)							
1963.9(6) ^b	<9 ⁺ >							x				
1973.05(8)	1<4 ⁺ >		45(2)	55(2)								
1982.8(3)										56(3)		
2019.08(17)	<2 ⁺ >			92(17)						7.6(17)		
2039.31(24)	1		52(5)	48(5)								
2061.7(7) ^a	<9 ⁺ >							x				
2071.3(3)	<1,2 ⁺ >		17(2)	83(12)								
2080.52(13) ^d	2 ⁺		93(14)								4.3(9)	
2080.8(6)	<10 ⁺ >							x				
2112.2(3)	<2 ⁺ >		81(19)	10(2)					9(2)			
2132.97(15)	1		72	28(5)								
2150.0(3)	<5 ⁻ >				65(12)	35(8)						
2190.18(19)	<4 ⁺ -6 ⁻ >					30(9)						
2223.3(6) ^b	<10 ⁺ >							x				
2399.04(24)	<1 ⁺ ,2 ⁺ >		58(10)									
2451.57(7)	<4 ⁺ >								x		x	
2684.8(3)	<1,2 ⁺ >		51(4)	49(5)								
2700.83(24)	1		68	32(4)								
2717.3(3)	<4 ⁺ -6 ⁺ >					33(21)						15(4)
2720.07(18)	<3 ⁺ ,4 ⁺ >								15(5)			6(2)
2751(2)	<1>		100	≈0								
2753.3(3)	<1,2 ⁺ >			82(20)			18(7)					
2790.3(4)	1 ⁺		67	33(2)								
2897	1		100									
2930(2)	1		53	47(11)								
2930.9(3)	<1,2 ⁺ >			34(7)					66(11)			
2938(2)	1		62	38(8)								
2943.0(6)	<1,2 ⁺ >		29(12)	41(12)			29(9)					
2971.5(6)	1,2<4 ⁺ >		28(7)	72(13)								
2993.5(5)	<1,2 ⁺ >			17(7)			83(14)					
2995(2)	1,2<4 ⁺ >		100									
3019	1		100									
3063.4(9)	1		29.1	71(6)								
3084	1		100									
3178	1		29	71(16)								
3183	1		31	69(17)								
3238	1		66	34(11)								
3243	1		52	48(4)								
3405.9(4)	<1,2 ⁺ >		18(5)	23(6)					59(11)			
3405	1<4 ⁺ >		68	31.55(16)								
3540	1		100									
3554	1		100									
3566	1		70	30(6)								
3572	1		100									

(continued)

 $^{170}_{68}\text{Er}$

E^* [keV]	J^π	Branching ratios in percentage										
		E^*_f : J^π_f :	0 0 ⁺	78.6 2 ⁺	261 4 ⁺	541 6 ⁺	891 <0 ⁺ >	915.02 <8 ⁺ >	934.03 2 ⁺	960.00 2 ⁺	1010.54 <3 ⁺ >	1103.36 4 ⁺
3606.4(4)	<1 ⁺ ,2 ⁺ >						x			x		
3623	1		42	58(2)								
3695*	1		x	x								

Energy levels and branching ratios [02Ba93]. Part 3

 $^{170}_{68}\text{Er}$

E^* [keV]	J^π	Branching ratios in percentage										
		E^*_f : J^π_f :	1127.32 4 ⁺	1217.50 3 ⁽⁺⁾	1236.61 <5 ⁺ >	1268.69 <4 ⁻ >	1304 <3 ⁻ >	1304.58 <4 ⁺ >	1305.25 <2 ⁻ >	1340.21 3 ⁽⁻⁾	1350.50 <6 ⁺ >	1372.10 <5 ⁻ >
1268.69(3)	<4 ⁻ >		3.8(5)	5.6(4)								
1304.58(4) ^a	<4 ⁺ >			8.9(13)								
1372.10(6)	<5 ⁻ >				59							
1401.96(8) ^b	<6 ⁺ >	≤12										
1413.14(6)	<5 ⁺ >			9.0(13)				15(2)				
1483.36(4)	<3 ⁺ >	4(2)										
1483.81(9)	<5 ⁻ >	[16]										
1487.91(14)	<4 ⁺ ,5 ⁺ >				3.8(10)							
1496.09(8)	<6 ⁻ >					50(6)						50(10)
1506.23(8)	<2 ⁻ >			[11.3]								
1543.48(14) ^a	<6 ⁺ >								x			
1556.76(9) ^b	<7 ⁺ >				x							
1572.61(8)	<4 ⁺ >	10(2)			19(3)							
1579.16(4)	<3 ⁻ >	25(3)						≤3.9				
1590.77(9)	<6 ⁻ >											32(6)
1676.45(7)	<4 ⁻ >	10(2)		1.6(3)	11(1)				2.5(7)			
1677.3(6) ^d	<8 ⁺ >										x	
1683.60(8)	<5 ⁺ >				≤14							
1689.79(10)	<5 ⁺ >	33(13)										
1708.18(6)	<5 ⁻ >					52(6)						18(3)
1745.90(6)	<4 ⁻ >					59(8)				41(5)		
1769.20(6)		24(5)										
1805.18(8)	<3 ⁺ ,4 ⁺ >	5(1)			60(9)							
1823.0(4)	<6 ⁺ >	46(6)			40(6)							
1982.61(11)	<1 ⁺ ,2 ⁺ >			[100]								
2080.52(13) ^d	2 ⁺	3.0(9)										
2158.95(12)	<5 ⁺ >			32.3(7)		34	17(2)					8(1)
2190.18(19)	<4 ⁺ -6 ⁻ >	45(10)						25(6)				
2399.04(24)	<1 ⁺ ,2 ⁺ >			42(10)								
2657.4(5)		29(7)						71(19)				
2717.3(3)	<4 ⁺ -6 ⁺ >	52(11)										
2720.07(18)	<3 ⁺ ,4 ⁺ >				79(11)							

Energy levels and branching ratios [02Ba93]. Part 4

¹⁷⁰Er
68

E^*	J^π	Branching ratios in percentage										
[keV]		E_f^* : J_f^π :	1376.6 $\langle 10^+ \rangle$	1401.96 $\langle 6^+ \rangle$	1413.14 $\langle 5^+ \rangle$	1422.1 $\langle 5,6^+ \rangle$	1496.09 $\langle 6^- \rangle$	1500.87 ≤ 4	1543.48 $\langle 6^+ \rangle$	1556.76 $\langle 7^+ \rangle$	1572.61 $\langle 4^+ \rangle$	1677.3 $\langle 8^+ \rangle$
1590.77(9)	$\langle 6^- \rangle$						68(5)					
1694.8(7) ^a	$\langle 7^+ \rangle$				x							
1773.1(5) ^b	$\langle 8^+ \rangle$			x								
1823.0(4)	$\langle 6^+ \rangle$										4.4(12)	
1867.8(5) ^a	$\langle 8^+ \rangle$			x					x			
1918.7(6) ^c	$\langle 12^+ \rangle$	100										
1963.9(6) ^b	$\langle 9^+ \rangle$									x		
1982.8(3)								44(2)				
2080.8(6)	$\langle 10^+ \rangle$	x										x
2158.95(12)	$\langle 5^+ \rangle$				2.4(3)		1.9(2)					
2223.3(6) ^b	$\langle 10^+ \rangle$	x										
2285.6(6) ^a	$\langle 10^+ \rangle$	x										
2444.9(24) ^b	$\langle 11^+ \rangle$	x										
2518.9(7) ^a	$\langle 11^+ \rangle$	x										
2551.1(7) ^d	$\langle 12^+ \rangle$	x										

Energy levels and branching ratios [02Ba93]. Part 5

¹⁷⁰Er
68

E^*	J^π	Branching ratios in percentage										
[keV]		E_f^* : J_f^π :	1694.8 $\langle 7^+ \rangle$	1745.90 $\langle 4^- \rangle$	1773.1 $\langle 8^+ \rangle$	1867.8 $\langle 8^+ \rangle$	1918.7 $\langle 12^+ \rangle$	1963.9 $\langle 9^+ \rangle$	2061.7 $\langle 9^+ \rangle$	2080.52 2^+	2223.3 $\langle 10^+ \rangle$	2285.6 $\langle 10^+ \rangle$
2061.7(7) ^a	$\langle 9^+ \rangle$	x										
2158.95(12)	$\langle 5^+ \rangle$		4.9(3)									
2223.3(6) ^b	$\langle 10^+ \rangle$				x							
2285.6(6) ^a	$\langle 10^+ \rangle$				x	x						
2444.9(24) ^b	$\langle 11^+ \rangle$							x				
2518.9(7) ^a	$\langle 11^+ \rangle$							x	x			
2537.2(11) ^c	$\langle 14^+ \rangle$						x					
2551.1(7) ^d	$\langle 12^+ \rangle$						x			x		
2723.7(8) ^a	$\langle 12^+ \rangle$										x	x
2813.3(8) ^b	$\langle 12^+ \rangle$										x	x

Energy levels and branching ratios [02Ba93]. Part 6

¹⁷⁰Er
68

E^*	J^π	Branching ratios in percentage										
[keV]		E^*_f : J^π_f :	2444.9 $\langle 11^+ \rangle$	2518.9 $\langle 11^+ \rangle$	2537.2 $\langle 14^+ \rangle$	2551.1 $\langle 12^+ \rangle$	2723.7 $\langle 12^+ \rangle$	2813.3 $\langle 12^+ \rangle$	2984.4 $\langle 13^+ \rangle$	3073.4 $\langle 14^+ \rangle$	3073.9 $\langle 13^+ \rangle$	3225.7 $\langle 16^+ \rangle$
2984.4(9) ^a	$\langle 13^+ \rangle$		x	x								
3073.4(12) ^d	$\langle 14^+ \rangle$					x						

(continued)

 $^{170}_{68}\text{Er}$

E^* [keV]	J^π	Branching ratios in percentage										
		E_f^* : J_f^π :	2444.9 $\langle 11^+ \rangle$	2518.9 $\langle 11^+ \rangle$	2537.2 $\langle 14^+ \rangle$	2551.1 $\langle 12^+ \rangle$	2723.7 $\langle 12^+ \rangle$	2813.3 $\langle 12^+ \rangle$	2984.4 $\langle 13^+ \rangle$	3073.4 $\langle 14^+ \rangle$	3073.9 $\langle 13^+ \rangle$	3225.7 $\langle 16^+ \rangle$
3073.9(9) ^b	$\langle 13^+ \rangle$		x	x								
3225.7(14) ^c	$\langle 16^+ \rangle$				x							
3275.9(12) ^a	$\langle 14^+ \rangle$						x					
3436.3(10) ^b	$\langle 14^+ \rangle$						x	x				
3584.9(14) ^a	$\langle 15^+ \rangle$								x			
3633.4(14) ^d	$\langle 16^+ \rangle$									x		
3713.1(11) ^b	$\langle 15^+ \rangle$								x		x	
3978.5(15) ^c	$\langle 18^+ \rangle$											x

Energy levels and branching ratios [02Ba93]. Part 7

 $^{170}_{68}\text{Er}$

E^* [keV]	J^π	Branching ratios in percentage										
		E_f^* : J_f^π :	3275.9 $\langle 14^+ \rangle$	3436.3 $\langle 14^+ \rangle$	3584.9 $\langle 15^+ \rangle$	3633.4 $\langle 16^+ \rangle$	3713.1 $\langle 15^+ \rangle$	3892.1 $\langle 16^+ \rangle$	3978.5 $\langle 18^+ \rangle$	4132.5 $\langle 16^+ \rangle$	4232.4 $\langle 18^+ \rangle$	4249.9 $\langle 17^+ \rangle$
3892.1(15) ^a	$\langle 16^+ \rangle$		x									
4132.5(12) ^b	$\langle 16^+ \rangle$		x	x								
4232.4(15) ^d	$\langle 18^+ \rangle$					x						
4249.9(17) ^a	$\langle 17^+ \rangle$				x							
4417.2(15) ^b	$\langle 17^+ \rangle$						x					
4579.1(18) ^a	$\langle 18^+ \rangle$							x				
4787.2(16) ^c	$\langle 20^+ \rangle$								x			
4882.6(15) ^d	$\langle 20^+ \rangle$								x		x	
4888.7(16) ^b	$\langle 18^+ \rangle$									x		
4978.3(20) ^a	$\langle 19^+ \rangle$											x

Energy levels and branching ratios [02Ba93]. Part 8

 $^{170}_{68}\text{Er}$

E^* [keV]	J^π	Branching ratios in percentage							
		E_f^* : J_f^π :	4417.2 $\langle 17^+ \rangle$	4579.1 $\langle 18^+ \rangle$	4787.2 $\langle 20^+ \rangle$	4882.6 $\langle 20^+ \rangle$	5334.8 $\langle 20^+ \rangle$	5674.9 $\langle 22^+ \rangle$	6586.6 $\langle 24^+ \rangle$
5206.6(18) ^b	$\langle 19^+ \rangle$		x						
5334.8(21) ^a	$\langle 20^+ \rangle$			x					
5559.0(17) ^d	$\langle 22^+ \rangle$				x	x			
5674.9(17) ^c	$\langle 22^+ \rangle$				x	x			
6142.9(23) ^a	$\langle 22^+ \rangle$						x		
6586.6(20) ^c	$\langle 24^+ \rangle$							x	
7531.4(22) ^c	$\langle 26^+ \rangle$								x

Energy levels and branching ratios [02Ba87].

¹⁷¹Er
68

E^*	$2J^\pi$	L	C^2S	σ (d,p)	$T_{1/2}$ or	Ref.	Branching ratios in percentage					
[keV]		(d,p)	(d,p)	$\mu\text{b/sr}$	Γ_{cm}		E_f^* : $2J_f^\pi$:	0.0 5 $^-$	79.1 $\langle 7^- \rangle$	199 1 $^-$	279 $\langle 5^- \rangle$	304 $\langle 11^- \rangle$
0.0	5 $^-$		0.034	10	7.516(2) h	69Tj01						
79.1(1)	$\langle 7^- \rangle$		0.67	204		69Tj01		100				
176(10)	$\langle 9^- \rangle$		≈ 0.15	≈ 8		69Tj01						
198.6(1)	1 $^-$		0.15	≈ 66	210(10) ns	69Tj01		100				
256.9(15)	$\langle 3^- \rangle$		≈ 0.03	< 9		69Tj01			100			
278.9(8)	$\langle 5^- \rangle$		0.15	29		69Tj01		100				
304(10)	$\langle 11^- \rangle$		≈ 0.15	7		69Tj01						
358.3(3)	$\langle 7^+ \rangle$							45(30)	55(8)			
378(10)				8		69Tj01						
417	$\langle 9^+ \rangle$											
420(10)	$\langle 7^- \rangle$		0.25	49		69Tj01						
455(10)	$\langle 9^- \rangle$		0.27	7		69Tj01						
504	$\langle 11^+ \rangle$											x
532.2(1)	$\langle 7^- \rangle$			38		69Tj01		82(6)	18(6)			
615	$\langle 13^+ \rangle$			32		69Tj01						
645(10)	$\langle 9^- \rangle$			44		69Tj01						
674(10)	$\langle 11^- \rangle$		0.15	4		69Tj01						
707.0(9)	$\langle 1^- \rangle$		0.015	12		69Tj01		100				
727.6(1)						90Ch34		100				
736.8(15)	$\langle 3^- \rangle$		0.31	287		69Tj01				100		
794.2(8)	$\langle 5^- \rangle$		0.42	149		69Tj01		49	51			
841.2(2)	$\langle 3^-, 5^-, 7^- \rangle$					90Ch34				100		
880(10)	$\langle 7^- \rangle$		0.20	70		69Tj01						
903.1(2)	$\langle 5^- \rangle$					90Ch34		62(4)	19(4)	17(3)		
904.7(7)	$\langle 3^- \rangle$		0.11	95		69Tj01		100		< 82		
907.1(1)	$\langle 5^- \rangle$					90Ch34		62(7)		38(21)		
970	$\langle 13^+ \rangle$											
972(10)	$\langle 5^- \rangle$		0.48	161		69Tj01						
1061(10)	$\langle 7^- \rangle$		0.21	71		69Tj01						
1106(10)	$\langle 11^- \rangle$		0.054	4		69Tj01						
1171(10)	$\langle 9^- \rangle$		0.20	9		69Tj01						
1220(1)	$\langle 3^- \rangle$			82		69Tj01		24	18	22	36	
1263(1)	1,3			32		69Tj01						
1304(10)				14		69Tj01						
1334(1)	1,3											
1374(2)	1,3			314		69Tj01				100		
1405(10)				440		69Tj01						
1435(10)				24		69Tj01						
1471(10)				152		69Tj01						
1496(2)	1,3									100		
1508(10)				102		69Tj01						
1520(2)	1,3											
1535(10)				49		69Tj01						
1560(20)	$\langle 13^+, 15^- \rangle$											
1570(10)				94		69Tj01						

(continued)

¹⁷¹₆₈Er

<i>E</i> [*]	2 <i>J</i> ^π	<i>L</i>	<i>C</i> ² <i>S</i>	σ (d,p)	<i>T</i> _{1/2} or	Ref.	Branching ratios in percentage					
[keV]		(d,p)	(d,p)	μb/sr	<i>I</i> _{cm}		<i>E</i> _f [*] : 2 <i>J</i> _f ^π :	0.0 5 [−]	79.1 ⟨7 [−] ⟩	199 1 [−]	279 ⟨5 [−] ⟩	304 ⟨11 [−] ⟩
1616(10)				289		69Tj01						
1627(1)	1,3											
1647(10)				41		69Tj01						
1682(10)				27		69Tj01						
1723(2)	1,3			52		69Tj01						
1750(20)	⟨7 [−] ⟩											
1756(2)	1,3											
1766(2)				25		90Ch34			100			
1797(2)	⟨1,3⟩			170		69Tj01						
1823(10)	⟨9 [−] ⟩			≈20		69Tj01						
1857(10)				22		69Tj01						
1925(10)				112		69Tj01						
1962(1)	1,3											
1976(1)	1,3			44		69Tj01						
2037(2)	1,3											
2053(1)	1,3											
2064(1)	1,3											
2087(1)	1,3			70		69Tj01						
2104(1)	1,3							100				
2138(10)				71		69Tj01						
2172(10)				48		69Tj01						
2195(10)				87		69Tj01						
2265(10)				187		69Tj01						
2285(10)				72		69Tj01						
2308(10)				44		69Tj01						
2335(10)				96		69Tj01						
2361(10)				350		69Tj01						
2385(10)				125		69Tj01						
2600(20)	⟨5 [−] ⟩											

Additional data on this isotope can be found in [90Ch34, 68Ha10].
σ (d,p) were measured at 60°, 90° and 125° [69Tj01]; data for 90° are presented here.

Energy levels and branching ratios [02Ba87]. Part 2

¹⁷¹₆₈Er

<i>E</i> [*]	2 <i>J</i> ^π	Branching ratios in percentage						
[keV]		<i>E</i> _f [*] : 2 <i>J</i> _f ^π :	358 ⟨7 ⁺ ⟩	417 ⟨9 ⁺ ⟩	504 ⟨11 ⁺ ⟩	707.0 ⟨1 [−] ⟩	841.2	904.7 ⟨3 [−] ⟩
417	⟨9 ⁺ ⟩		100					
504	⟨11 ⁺ ⟩		x	x				
615	⟨13 ⁺ ⟩			44	56			
903.1(2)	⟨5 [−] ⟩						2(1)	

(continued)

$^{171}_{68}\text{Er}$

E^*	$2J^\pi$	Branching ratios in percentage					
[keV]		$E^*_f:$ $2J^\pi_f:$	358 $\langle 7^+ \rangle$	417 $\langle 9^+ \rangle$	504 $\langle 11^+ \rangle$	707.0 $\langle 1^- \rangle$	841.2 904.7 $\langle 3^- \rangle$
970	$\langle 13^+ \rangle$				100		
1263(1)	1,3					47	53

Energy levels and branching ratios [95Si16].

$^{172}_{68}\text{Er}$

E^*	J^π	L	$d\sigma/d\Omega$	$T_{1/2}$ or	Ref.	Branching ratios in percentage							
[keV]		(t,p)	$\mu\text{b/sr}$	Γ_{cm}		$E^*_f:$ $J^\pi_f:$	0.0 0^+	77 $\langle 2^+ \rangle$	255 $\langle 4^+ \rangle$	834	1034 $\langle 1,2^+ \rangle$	1125	1263
0.0	0^+	0	238	49.3(3) h	80Sh14								
77.0(4)	$\langle 2^+ \rangle$		25		80Sh14		100						
255.0(5)	$\langle 4^+ \rangle$		15		80Sh14			100					
834.2(7)								100					
961.4(4)	$\langle 1,2^+ \rangle$		27		80Sh14		58(13)	42(12)					
1033.7(5)	$\langle 1,2^+ \rangle$		1.5		80Sh14		24(17)	76(20)					
1125.3(7)			6.3		80Sh14					100			
1263.1(5)	$\langle 2^+,3,4^+ \rangle$							20(6)	31(8)		32(8)	17(4)	
1280(3)			7.8										
1322(3)	0^+	0	13										
1390(3)			5.9										
1396.7(5)									10(4)				90
1470(3)	0^+	0	15										
1495(3)			13										
1713(3)			14										
1729(3)			4.8										
1820(3)			3.9										
1843(3)			11										
1906(3)			4.9										
1926(3)			5.2										
1950(3)			2.5										
1983(3)			13										
2004(3)			11										
2234(3)			13		80Sh14								
2253(3)			4.1		80Sh14								
2286(3)			5.0		80Sh14								
2308(3)			4.6		80Sh14								
2382(3)			9.1		80Sh14								
2403(3)	0^+	0	22		80Sh14								
2474(3)			12		80Sh14								
2502(3)			9.0		80Sh14								
2545(3)			8.4		80Sh14								
2635(3)			4.9		80Sh14								
2657(3)			4.3		80Sh14								

$^{172}_{68}\text{Er}$

E^*	J^π	L	$d\sigma/d\Omega$	$T_{1/2}$ or	Ref.	Branching ratios in percentage							
[keV]		(t,p)	$\mu\text{b/sr}$	Γ_{cm}		E_{f}^* : J_{f}^π :	0.0 0^+	77 $\langle 2^+ \rangle$	255 $\langle 4^+ \rangle$	834	1034 $\langle 1,2^+ \rangle$	1125	1263
<hr/>													
2679(3)			4.6		80Sh14								
2697(3)			9.9		80Sh14								
2741(3)			10		80Sh14								
2768(3)			5.3		80Sh14								
2789(3)			9.0		80Sh14								
2807(3)			10		80Sh14								
2827(3)			9.9		80Sh14								
2856(3)			39		80Sh14								

Additional data on this isotope can be found in [91Be04].