Energy levels [90En08, 98En04]. **$^{40}_{21}$Sc**

E^* [keV]	J^π	T	σ (τ,t) *rel.*	$T_{1/2}$ or Γ_{cm}	Ref.
0	4^-	1	1.5	182.3(7) ms	71Sc02
34.3(15)*	$\langle 3^- \rangle$	1	1.6		71Sc02
772.1(16)*	$\langle 2^- \rangle$	1	2.0		71Sc02
893.5(20)*	$\langle 5^- \rangle$	1	5.2		71Sc02
1670.7(19)*	$\langle 1^-,2^- \rangle$	1	1.2		71Sc02
1703.2(22)*		1			
1797.0(24)*	$\langle 3^- \rangle$		1.0		71Sc02
1871(3)					
1933(3)					
2285(8)	1^+				
2370(4)	$\langle 4^- \rangle$		6.1		71Sc02
2754(8)	1^+				
2940(11)	1^+				
3030	$\langle 3^- \rangle$				
3144(17)	1^+				
3230(60)	1^+				
3337(17)	1^+				
3418(60)	1^+				
3494(8)			0.5		71Sc02
3656(9)	1^+				
3790(9)	1^+				
3864(41)					
3900(100)	$\langle 1^-,2^- \rangle$				
4070(22)	1^+				
4132(20)	1^+				
4271(9)	1^+				
4368(8)	0^+				
4526(12)	1^+				
4658(11)	1^+				
4830(19)	1^+				
4904(15)					
5018(21)	1^+				
5086(28)	1^+				
5228(28)					
5362(60)	1^+				
5574(40)	1^+				
5702(23)	1^+				
6012(28)	1^+				
6127(60)	1^+				
6426(60)	1^+				
7500(2500)	$\langle 6^- \rangle$				

(continued) **$^{40}_{21}$Sc**

E^* [keV]	J^π	T	σ (τ,t) *rel.*	$T_{1/2}$ or Γ_{cm}	Ref.
9000(3)	$\langle 0^- – 2^- \rangle$				
			71Sc02		Ref.

Additional data on this isotope can be found in [02Fo09, 00Ha06, 00De54, 84Ta11].
* properties of these states, forming analog multiplets, are considered in [02Fo09].
All levels, except E^*=34 keV, are unbound ($Q_{p\gamma}$=539.1 keV) and correspond to the resonances in the ^{39}Ca + p reaction which are important for a quantitative estimate of the stellar reaction rate [02Fo09, 00Ha06].

Energy levels and branching ratios [90En08, 98En04, 01Ca59]. **$^{41}_{21}$Sc**

E^* [keV]	$2J^\pi$	L	S_N (d,n)	L	C^2S (τ,d)	S_N (τ,d)	S_N (τ,d)	C^2S' (α,t)	σ (^{16}O,^{15}N) μb/sr	C^2S (^{7}Li,^{6}He)	S_N (p,p)	$T_{1/2}$ or Γ_{cm}	Ref.
0	7^-	3	1.12	3	0.96	1.12	0.92	8.88	50	0.75		596(2) ms	91Gu02
1716.4(1)	3^-	1	0.85	1	0.86	0.85	0.91	3.66		0.55	0.83(28)		70Yo01
2095.9(5)	3^+	2	0.09	2		0.067	0.09						70Yo02
2414.8(5)	3^-	1		1		0.091	0.09				0.07(2)		65Bo15
2588.1(1)	5^-												
2666.6(1)	5^+												
2719.2(1)	1^+	0											69Ge05
2882.5(1)	7^+			4		0.013		0.13					70Yo01
2972.1(2)	$7^{\langle - \rangle}$												
3013(4)	$3^- – 7^+$												
3185.1(2)	9^+,5^-			3		0.034							70Yo02
3358.1(7)	$\langle 7 – 11 \rangle$												
3411.5(4)	1^+											1.8(2) keV	
3465(4)	1^-	$\langle 1 \rangle$	73(10)*	1	0.75	0.75					0.85(7)	50(20) keV	70Yo02
3480(5)	1^-											12(2) keV	
3562.7(3)	$\langle 1 – 5 \rangle^+$												
3678(3)	$\langle 3^- – 7^- \rangle$												
3690(130)	$\langle 1 – 5 \rangle^+$												
3696.7(3)	7^+												
3731(3)	1^-			1		0.08					0.10(3)	12(1) keV	70Yo02
3774(3)	3^-											0.7(1) keV	
3780.7(2)	$\langle 5^+ \rangle$												
3788(5)	3^+,5^+											0.2(1) keV	
3810(7)	$\langle 1 – 5 \rangle^+$												
3905(20)													
3968(5)	1^+											4 keV	
4022.8(4)	7^-												
4030.2(6)	7^-			$\langle 3 \rangle$		≈0.01							70Yo02
4245(4)	5^+												

(continued) **$^{41}_{21}$Sc**

E^* [keV]	$2J^\pi$	L	S_N (d,n)	L	C^2S (τ,d)	S_N (τ,d)	S_N (τ,d)	C^2S' (α,t)	σ (^{16}O,^{15}N) μb/sr	C^2S (^{7}Li,^{6}He)	S_N (p,p)	$T_{1/2}$ or Γ_{cm}	Ref.
4328(3)	5^+												
4441(4)	$\langle 3^- – 7\rangle$												
4504(4)	3^+											1.0(2) keV	
4514(4)	9^+			4		0.015							70Yo02
4535(4)	3^-											12(3) keV	
4644(4)	1^-											36(10) keV	
4656(9)	$\langle 1–5\rangle^+$												
4777(4)	3^+											3(1) keV	
4810(3)	$\langle 5^-,9^+\rangle$			$\langle 3\rangle$,		≈0.01							70Yo02
				$\langle 4\rangle$		≈0.001							70Yo02
4869(4)	5^+											2.0(5) keV	
4929(5)	$\langle 1–5\rangle^+$												
4947(4)	5^+											1.0(2) keV	
4951(4)	5^-		1.7(4)*									2.0(4) keV	75Vi05
5011(3)	7^-												
5021(4)	1^+											6(2) keV	
5036.8(5)	9^+		0.4(1)*	4	0.12	0.18					0.17(8)	0.4(1) keV	91Gu02
5074(4)	1^-											3(1) keV	
5083(4)	3^+											0.7(2) keV	
5143(4)	3^-											3(1) keV	
5167(5)													
5200(7)													
5225(9)													
5324(7)													
5356(5)	3^+											3(1) keV	
5376(4)	5^+											7(2) keV	
5396(5)	3^-											4(1) keV	
5419(5)	5^+			2		0.031					0.07(2)	18(5) keV	70Yo02
5490(5)	1^-											12(4) keV	
5494(5)	1^+											1.0(2) keV	
5521(5)	5^-											0.5(2) keV	
5535(4)	3^-											20(5) keV	
5568(9)													
5578(4)	$3^+,5^+$											6(2) keV	
5650(5)	5^-											3(1) keV	
5691(5)	1^-											1.0(3) keV	
5705(5)	1^-											12(4) keV	
5709(5)	5^-		14(3)*	3	0.31	0.15					0.11(5)	12(4) keV	70Yo02
5755(5)	3^-											7(3) keV	
5771(4)	$\langle 1–5\rangle^+$												
5801(8)													
5810(4)													
5838(5)	$3^+,5^+$											8.7 keV	
5861(15)	5^-		9(2)*	3		0.06					0.07(3)		70Yo02
5867(4)	5^+											12.3 keV	

(continued) **$^{41}_{21}$Sc**

E^* [keV]	$2J^\pi$	L	S_N (d,n)	L	C^2S (τ,d)	S_N (τ,d)	S_N (τ,d)	C^2S' (α,t)	σ (^{16}O,^{15}N) μb/sr	C^2S (^{7}Li,^{6}He)	S_N (p,p)	$T_{1/2}$ or Γ_{cm}	Ref.
5886(10)	$\langle 1–5\rangle^+$												
5915(11)													
5939(3)	3^+											55(5) eV	
5971(5)	5^-,7^-		3(1)*									4(2) keV	75Vi05
5986(5)	3^-											8.7 keV	
6013(5)	1^+											26.7 keV	
6036(10)	$\langle 1–5\rangle^+$												
6047(5)	3^-											12.1 keV	
6085(5)	$\langle 1–5\rangle^+$												
6112(11)													
6116(11)													
6131(5)	3^+,5^+											2.9 keV	
6148(5)	5^+											2.9 keV	
6203(5)	3^-											6.5 keV	
6236(5)	5^-,7^-											8.3 keV	
6259(5)	$\langle 1–5\rangle^+$												
6314(5)													
6326(5)													
6335(5)	1^+											27.9 keV	
6361(5)	5^+											2.8 keV	
6399(5)	3^+,5^+											8.1 keV	
6414(5)	5^+											6.0 keV	
6435(5)	5^-											10.4 keV	
6458(5)	$\langle 3^-\rangle$											4.9 keV	
6469(5)	5^-		18(3)*			0.09						12.1 keV	70Yo02
6474(5)	$\langle 1–5\rangle^+$												
6507(5)													
6513(5)	5^+											18.8 keV	
6522(5)													
6533(5)	5^+											1.3 keV	
6572(5)	5^-											4.5 keV	
6585(5)	1^-											4.5 keV	
6589(5)	1^+												
6610(5)	1^+											9.5 keV	
6622(5)	5^+											3.2 keV	
6643(5)													
6651(5)	9^+											4.0 keV	
6673(40)	$\langle 1–5\rangle^+$												
6691(5)	3^-											3.2 keV	
6700(5)	5^+											6.2 keV	
6730(5)													
6741(5)	5^+											7.2 keV	
6752(5)													
6772(5)	$\langle 3^-\rangle$												
6783(5)	5^-											10.4 keV	

(continued) **$^{41}_{21}$Sc**

E^* [keV]	$2J^\pi$	L	S_N (d,n)	L	C^2S (τ,d)	S_N (τ,d)	S_N (τ,d)	C^2S' (α,t)	σ (^{16}O,^{15}N) μb/sr	C^2S (^{7}Li,^{6}He)	S_N (p,p)	$T_{1/2}$ or Γ_{cm}	Ref.
6824(5)	5^+											4.1 keV	
6841(5)	5^-											6.3 keV	
6857(5)	3^-											9.6 keV	
6872(5)	$\langle 1,3\rangle^-$												
6880(5)	9^+											1.3 keV	
6893(28)	$\langle 1–5\rangle^+$												
6895(5)	$\langle 9^+\rangle$											3.4 keV	
6908(5)	5^-											6.9 keV	
6923(5)	$\langle 5\rangle^-$											4.5 keV	
6947(5)	$\langle 1–5\rangle^+$											1.3 keV	
6970(5)	5^+											20 keV	
6996(5)	9^+											1.3 keV	
7004(5)	$\langle 9^+\rangle$											<1.0 keV	
7022(5)													
7033(5)	5^+											3.2 keV	
7069(5)	5^-											9.3 keV	
7078(5)													
7107(5)	5^+											19.8 keV	
7113(5)	$\langle 3,5\rangle^-$											14.0 keV	
7123(5)												7.7 keV	
7142(5)	5^+											12.0 keV	
7177(5)	$1^-,3^+,7^-$												
7182(19)	$\langle 1–5\rangle^+$												
7201(5)	5^+											40 keV	
7206													
7216													
7245(5)	5^-											12 keV	
7264													
7279(5)	5^+											9 keV	
7297(5)	$\langle 7^+\rangle$												
7313													
7333(5)	5^+											23 keV	
7338(5)	5^-												
7347(5)	$\langle 5^+\rangle$											10 keV	
7352(5)	$\langle 9^+\rangle$											8 keV	
7360(19)	$\langle 1–5\rangle^+$												
7382													
7396(5)	$\langle 9^+\rangle$												
7406(5)	$\langle 5\rangle$												
7421													
7469(5)	$\langle 3\rangle^+$												
7474(5)												44 keV	
7489(5)	$\langle 7^-,9^+\rangle$												
7494													
7523(5)	$\langle 7^+\rangle$												

(continued) **$^{41}_{21}$Sc**

E^* [keV]	$2J^\pi$	L (d,n)	S_N (d,n)	L (τ,d)	C^2S (τ,d)	S_N (τ,d)	S_N (τ,d)	C^2S' (α,t)	σ (^{16}O,^{15}N) μb/sr	C^2S (^{7}Li,^{6}He)	S_N (p,p)	$T_{1/2}$ orRef. Γ_{cm}
7538(5)	$3^{\langle+\rangle}$											8 keV
7557(5)	3^-											12 keV
7572(5)	3^+											10 keV
7606(5)	$\langle 5^-\rangle$											
7617(38)	$\langle 1\text{–}5\rangle^+$											
7640(5)	$\langle 9^+\rangle$											30 keV
7650(5)	$\langle 5^+\rangle$											
7660(5)	1^-											30 keV
7718(5)	3^-											20 keV
7742(5)	$\langle 3^+\rangle$											
7777(5)	7^-											35 keV
7815(5)	$\langle 1\rangle$											
7830(5)	5^-											33 keV
7855(5)	$\langle 9\rangle^+$											27 keV
7874(5)	$\langle 1^-\rangle$											20 keV
7894(5)	$\langle 1\text{–}5\rangle^+$											
7903(5)	$\langle 1\rangle$											
7938(5)												
7947(5)												
7962(5)												
7980(60)	$\langle 1\text{–}5\rangle^+$											
7981(5)												
8006(5)	$\langle 3^-\rangle$											25 keV
8089(5)	$\langle 3\rangle^-$											50 keV
8147(5)	$\langle 5^+\rangle$											75 keV
8450(10)	$\langle 9^+\rangle$											
8645(10)	$\langle 9^+\rangle$											
8879(10)	9^+											8 keV
9128(10)	9^+											18 keV
9269(10)	9^+											10 keV
9415(10)	9^+											11 keV
9513(10)	9^+											15 keV
9659(10)	9^+											16 keV
9698(10)	9^+											12 keV
9815(10)	9^+											13 keV
10500												
11100	$\langle 9^+\rangle$											
13400	$\langle 7^+\rangle$											

(continued) **$^{41}_{21}$Sc**

E^*	$2J^\pi$	L	S_N	L	C^2S	S_N	S_N	C^2S'	σ (^{16}O,^{15}N)	C^2S	S_N	$T_{1/2}$ or	Ref.
[keV]			(d,n)		(τ,d)	(τ,d)	(τ,d)	(α,t)	μb/sr	(^{7}Li,^{6}He)	(p,p)	Γ_{cm}	
			69Ge05			70Yo02			73Ko01	73Ko01			Ref.
			75Vi05		91Gu02		65Bo15	70Yo01			70Yo02		Ref.

Additional data on this isotope can be found in [02Mi37, 00Yo09, 90Br25, 86Vi02, 75Vi05, 74Mi16].
* Γ_p in keV from [75Vi05] instead of S_N (d,n) from [69Ge05] in the upper part of this column.
C^2S=0.75 and 0.85(9) for the ground state, C^2S=0.55 and 0.67 for the first excited state and 0.05 for the fourth state were obtained in [86Sa19, 86Vi02, 00Yo09, 69Ge05] from the study of the (^{7}Li,^{6}He), (^{28}Si,^{27}Al) and (d,n) one-proton transfer reactions (in agreement with the data in the Table, taking into account S'=8S_N for the ground state).

Energy levels and branching ratios [90En08, 98En04, 01Ca59]. Part 2 **$^{41}_{21}$Sc**

E^*	$2J^\pi$		Branching ratios in percentage									
		E_f^*:	0	1716	2096	2415	2588	2667	2719	2882	3013	3185
[keV]		$2J_f^\pi$:	7^-	3^-	3^+	3^-	5^-	5^+	1^+	7^+		$\langle 9^+,5^-\rangle$
1716.4(1)	3^-		100									
2414.8(5)	3^-		<5	100	<8							
2588.1(1)	5^-		97.6(3)	2.4(3)	<0.3							
2666.6(1)	5^+		96(8)	4.2(8)	<0.6							
2719.2(1)	1^+		<7	100	<5							
2882.5(1)	7^+		99.9(3)		0.08(3)							
2972.1(2)	$7^{\langle -\rangle}$		100		<0.2							
3013(4)	3^-–7^+		13(5)		87(5)							
3185.1(2)	9^+,5^-		100		<0.2	<0.2	<0.2		<0.3			
3411.5(4)	1^+		<2	100		<3	<2	<3	<3	<3		
3480(5)	1^-		<4	100								
3562.7(3)	$\langle 1$–$5\rangle^+$		<13	100								
3678(3)	$\langle 3^-$–$7^-\rangle$		64(12)	36(12)								
3696.7(3)	7^+		91.7(4)		1.0(1)	<0.1	<0.1	4.1(2)		3.1(4)	<0.1	
3774(3)	3^-		100									
3780.7(2)	$\langle 5^+\rangle$		67(3)	20(1)	2(1)		1(1)	6(1)	1(1)	2(1)	1(1)	
4022.8(4)	7^-		71(1)	2.3(6)	0.5(5)		2.0(5)	24(1)	<0.5	<0.7		
4030.2(6)	7^-		98(1)	2.0(6)	<0.2		<0.3			<0.4		
4245(4)	5^+		17(1)	0.2(2)	51(1)	0.6(2)	0.4(1)	4.3(3)	<0.1	12(1)	15(1)	
4328(3)	5^+		81(1)		<0.6	<0.9	19(2)	<1.0				
4441(4)	$\langle 3^-$–$7\rangle$		39(2)				<1	32(5)	<1	8(2)		21(2)
4514(4)	9^+		x									
4810(3)	$\langle 5^-,9^+\rangle$		x									
4951(4)	5^-		x									
5011(3)	7^-		x									
5036.8(5)	9^+		72(2)							26(2)		
5143(4)	3^-		x									
5376(4)	5^+		x									

(continued) **$^{41}_{21}$Sc**

E^*	$2J^\pi$					Branching ratios in percentage					
		E^*_f:	0	1716	2096	2415	2588	2667	2719	2882	3013	3185
[keV]		$2J^\pi_f$:	7^-	3^-	3^+	3^-	5^-	5^+	1^+	7^+		$\langle 9^+,5^-\rangle$
5578(4)	$3^+,5^+$		x									
5650(5)	5^-		x									
5709(5)	5^-		x									
5939(3)	3^+				<13			17(4)				
5971(5)	$5^-,7^-$		x									
6148(5)	5^+		x									

Energy levels and branching ratios [90En08, 98En04, 01Ca59]. Part 3 **$^{41}_{21}$Sc**

E^*	$2J^\pi$		Branching ratios in percentage			
		E^*_f:	3358	3411	3781	4245
[keV]		$2J^\pi_f$:		1^+	$\langle 5^+\rangle$	5^+
5036.8(5)	9^+		2.7(5)			
5939(3)	3^+			18(5)	5(3)	60(7)

Energy levels and branching ratios [79Vo04, 90En08, 98En04, 01Si10]. **$^{42}_{21}$Sc**

E^*	J^π	T	σ (τ,d)	L	S'	L	σ (α,d)	I_d	S^+_d	σ (τ,t)	$T_{1/2}$ or	Ref.
[keV]			μb/sr	(τ,d)	(τ,d)	(α,d)	int.	(α,d)	(α,d)	arb.u	Γ_{cm}	
0.0	0^+	1	170	3	1.3					84	681(1) ms	79Vo04
611.051(6)	1^+	0	560	3	4.0	6	294	3000	740	170	28(12) fs	79Vo04
616.28(6)	$\langle 7\rangle^+$		2720	3	19				incl	≤10	61.7(4) s	79Vo04
1490.43(4)	3^+		2330	1+3	0.8+6.9				90	68	31(5) ps	79Vo04
1510.10(6)	$\langle 5^+\rangle$		5290	1+3	2.3+11	4	145	611	296	34	45(7) ps	77Na25
1586.31(2)	2^+	1	1190	1+3	0.42+3.4					29	69(21) fs	79Vo04
1704(15)												
1846(2)	$\langle 3^+\rangle$		24						3.3	3.5	<3.5 ns	79Vo04
1873.6(8)	0^+	1	46	3	0.24						<70 fs	79Vo04
1888.9(6)	1^+	0	59	3	0.34				5.8	15	<42 fs	79Vo04
2187.54(5)	$\langle 2,3\rangle^+$	0	510	1+3	0.26+0.5	2	3.8		11.3	≈2	0.54(24) ps	79Vo04
2222.7(6)	$\langle 1\rangle$	0	200	1+3	0.05+0.5				12.1	12	87(35) fs	79Vo04
2223.15(3)	$\langle 2^+,3^+\rangle$	0	incl	incl	incl				incl	incl	0.63(35) ps	79Vo04
2269.13(3)	$\langle 1,2^+\rangle$		58	$\langle 3\rangle$	$\langle 0.26\rangle$				9.9	20	>70 fs	79Vo04
2296.5(21)			100	$\langle 1+3\rangle$	0.03+0.3							79Vo04
2389.06(5)	3^+		270	$\langle 1+3\rangle$	0.04+1.1	2	4.4		13.8	8		79Vo04
2433.33(8)	$\langle 3–5\rangle^+$		210	1	0.11				3.5		>0.14 ps	79Vo04
2455(2)	$\langle 1,2^+\rangle$		45						4.2		0.18(11) ps	79Vo04
2486.6(1)	2^+	1	700	3	3.2					≈35	<50 fs	79Vo04

(continued) **$^{42}_{21}$Sc**

E^* [keV]	J^π	T	σ (τ,d) μb/sr	L (τ,d)	S' (τ,d)	L (α,d)	σ (α,d) int.	I_d (α,d)	S_d^+ (α,d)	σ (τ,t) arb.u	$T_{1/2}$ or Γ_{cm}	Ref.
2507(5)	$\langle 1–3\rangle^+$									3		71Sh16
2535.1(20)	$\langle 1,2^+\rangle$		17						3.7		0.66(28) ps	79Vo04
2586.8(17)	$\langle 1^+–5^+\rangle$								2.0			73Th11
2650.98(8)	$\langle 1^+,2\rangle$	0	130						5.0	8	35(21) fs	79Vo04
2669(5)										17		71Sh16
2726(15)									3.1			73Th11
2795.3(3)	$\langle 5^+–9^+\rangle$		660	$\langle 1+3\rangle$	0.27+1.5				4.8			79Vo04
2815.37(6)	4^+	1	3180	3	9.8					17	35(14) fs	79Vo04
2833.2(11)	$\langle 2^+–4^+\rangle$								4.7		0.21(11) ps	73Th11
2847.6(4)	3^+	0	70			2	2.8		6.8	8	0.20(13) ps	79Vo04
2883(6)									1.1			73Th11
2910.4(4)	$\langle 3–5\rangle^+$		70			4	2.5		20.1	8	>0.8 ps	79Vo04
2964									4.6			73Th11
2995.53(7)	$\langle 3–5\rangle^+$		310			4	3.8		5.2		>0.14 ps	79Vo04
3022.8(2)	$\langle 4\rangle^-$		570	0	0.29				14.1			79Vo04
3089.1(3)	5^+		6480	1+3	3.5+4.2	4	34.5	188		1.6	0.21(4) ps	79Vo04
3146(5)			61									79Vo04
3166(5)	$\langle 3–5\rangle^+$		360	$\langle 1+3\rangle$	0.11+0.7							79Vo04
3182(10)						4	4.4					77Na25
3223.82(6)	$\langle 3^+–5\rangle^+$										>0.21 ps	
3242(4)	$\langle 5–7\rangle^+$	1	4340	3	17					11		79Vo04
3281(4)	$\langle 0–7\rangle^+$		270	3	0.90					8		79Vo04
3321.4(1)	$\langle 1^+–3^+\rangle$			1+3	0.13+2.4	4	3.7			13	>0.14 ps	71Sh16
3322.8(3)	$\langle 3^+–5^+\rangle$	1	860	incl	incl						<35 fs	79Vo04
3345(4)			190							5		79Vo04
3366(5)										10		71Sh16
3392.7(11)	$\langle 1^-3\rangle^+$		4500	1+3	2.4+2.9	2	15.5			15	62(49) fs	79Vo04
3446(5)	$\langle 2\rangle$	$\langle 1\rangle$	200	$\langle 1\rangle$	$\langle 0.11\rangle$							79Vo04
3468(5)			140									79Vo04
3493(5)			180	$\langle 1\rangle$	$\langle 0.10\rangle$							79Vo04
3512(5)			79									79Vo04
3529(5)			74									79Vo04
3580(4)			46							8		79Vo04
3602(5)	$\langle 5–7\rangle^+$		140	$\langle 3\rangle$	$\langle 0.45\rangle$	6	28.0	423				79Vo04
3668.7(3)										5		71Sh16
3687.8(8)	1^+	0	330	3	0.99						<28 fs	79Vo04
3719.3(4)	$\langle 5–7\rangle^+$		110	3	0.28						>70 fs	79Vo04
3754(5)	$\langle 2\rangle$		190	$\langle 1+3\rangle$	0.1+0.2							79Vo04
3775(5)										3		71Sh16
3796(5)	3^+		2400	1+3	1.3+1.3	4	4.9			24		79Vo04
3855(5)			77									79Vo04
3866(5)	1^+		71	$\langle 1\rangle$	$\langle 0.06\rangle$							79Vo04
3887(6)	$\langle 3–5\rangle^+$		250			4	4.0			16		79Vo04
3933.5(14)	$\langle 1–3\rangle^+$		970							16	<52 fs	79Vo04
4022(5)			320									79Vo04

(continued) **$^{42}_{21}$Sc**

E^* [keV]	J^π	T	σ (τ,d) μb/sr	L (τ,d)	S' (τ,d)	L (α,d)	σ (α,d) int.	I_d (α,d)	S_d^+ (α,d)	σ (τ,t) arb.u	$T_{1/2}$ or Γ_{cm}	Ref.
4047.72(6)	⟨2–4⟩	1	130								<14 fs	79Vo04
4067(10)	⟨3–5⟩$^+$					4	2.3					77Na25
4175(5)	⟨3–5⟩$^+$		530	1	0.32							79Vo04
4204(5)	⟨2–5⟩$^+$		1440	1+3	0.56+2.1							79Vo04
4246(5)			170									79Vo04
4262(5)			100									79Vo04
4276(5)			78									79Vo04
4289(5)	⟨2–5⟩$^+$		340	1	0.26			517				79Vo04
4370(5)			83									79Vo04
4391(10)	⟨1–3⟩$^+$					2	18.6	incl				77Na25
4410(5)	⟨2–5⟩$^+$		720	1	0.86							79Vo04
4468.8(4)	⟨2,3⟩$^+$		8510	1	7.9	2	6.3					79Vo04
4548(5)	⟨2–5⟩$^+$	1	2300									79Vo04
4582(5)	⟨2–5⟩$^+$		1220									79Vo04
4604(5)			570									79Vo04
4665(5)	⟨2–5⟩$^+$		480									79Vo04
4704(5)			190									79Vo04
4725(5)	⟨2–5⟩$^+$		860									79Vo04
4755(5)	⟨3–5⟩$^+$		440			4	8.5					79Vo04
4790(7)			240									79Vo04
4808(5)			220									79Vo04
4828(5)	⟨2–5⟩$^+$	1	1140									79Vo04
4875(6)	⟨1–3⟩$^+$		160									79Vo04
4971(5)			60			2	3.6					79Vo04
5001(5)	⟨1–3⟩$^+$		160			2	7.5					79Vo04
5028(5)			260									79Vo04
5048(5)	⟨3–5⟩$^+$		66			4	4.0					79Vo04
5084(5)	⟨4$^+$⟩	⟨1⟩	1940									79Vo04
5120(5)	⟨1–3⟩$^+$	⟨1⟩	4080			2	4.6					77Na25
5140(5)			570									79Vo04
5305(5)			58					353				79Vo04
5326(5)			450					incl				79Vo04
5352(5)			670									79Vo04
5370(5)			330									79Vo04
5380(5)			690									79Vo04
5436(5)			460									79Vo04
5475(5)			180									79Vo04
5520(5)			350									79Vo04
5572(5)			760									79Vo04
5635(5)	⟨2–5⟩$^+$		1690					141				79Vo04
5651(5)	⟨2–5⟩$^+$	⟨1⟩	4180									79Vo04
5771(5)			470									79Vo04
5810(10)												
5865(5)			820									79Vo04
5966(5)			770									79Vo04

(continued) **$^{42}_{21}$Sc**

E^* [keV]	J^π	T	σ (τ,d) μb/sr	L (τ,d)	S' (τ,d)	L (α,d)	σ (α,d) int.	I_d (α,d)	S_d^+ (α,d)	σ (τ,t) arb.u	$T_{1/2}$ or Γ_{cm}	Ref.
5995.8(3)	$\langle 3,4\rangle^+$											
6050(30)								165				
6076.41(8)	$\langle 1^+–4^+\rangle$											
6090(10)												
6174.2(3)	$\langle 3,4\rangle^+$											
6180(10)												
6253.4(2)	$\langle 3^+–5^+\rangle$											
7120(30)								353				
7940(30)								329				
8540(30)								235				
			79Vo04		90En08		77Na25	94Fi01		71Sh16		Ref.
									73Th11			Ref.

Additional data on this isotope can be found in [94Fi01, 69Ba19, 71Sc0A, 71Sh16].

Experimental data on cross section ($d\sigma/d\Omega$) of the ^{41}Ca(^{3}He,d) reaction [79Vo04] are represented by the standard parameters $(2J+1)S_p^+$ in [90En08, 01Si10]; in the original work [79Vo04] values $G_{\ell j}=(2J+1)(2I+1)^{-1}C^2S$ were given; measured cross section was fitted by the sum for two different angular momentum j transfer $d\sigma/d\Omega$=4.42 $G_{\ell j}\sigma_{DWBA}(2j+1)^{-1}$.

Together with data on the (d,p) reaction these estimates were used for a check of an equality of spectroscopic factors in neutron and proton transfer reaction in the case of T=1 isobaric analog states [79Vo04].

For two-nucleon transfer (α,d) reaction approximate values of the deuteron yield I_d in units counts per channel are from [94Fi01]; integral cross section (in mbarn) are from [77Na25] and the relative strength S_d is from [73Th11].

Energy levels and branching ratios [79Vo04, 90En08, 98En04, 01Si10]. Part 2 **$^{42}_{21}$Sc**

E^* [keV]	J^π		Branching ratios in percentage								
		E_f^*:	0.0	611	616	1490	1510	1586	1846	1873.6	1888.9
		J_f^π:	0^+	1^+	$\langle 7\rangle^+$	3^+	$\langle 5^+\rangle$	2^+	$\langle 3^+\rangle$	0^+	1^+
611.051(6)	1^+		100								
1490.43(4)	3^+			100							
1510.10(6)	$\langle 5^+\rangle$				100						
1586.31(2)	2^+		9(1)	91(1)							
1846(2)	$\langle 3^+\rangle$			x				x			
1873.6(8)	0^+			100							
1888.9(6)	1^+		100								
2187.54(5)	$\langle 2,3\rangle^+$			5(2)				95(2)			
2222.7(6)	$\langle 1\rangle$		≈50					≈50			
2223.15(3)	$\langle 2^+,3^+\rangle$					5(2)		95(2)			
2269.13(3)	$\langle 1,2^+\rangle$		20(2)	22(3)				52(5)			6(3)
2296.5(21)								100			
2389.06(5)	3^+					12(4)	88(4)				

(continued) **$^{42}_{21}$Sc**

E^*	J^π	Branching ratios in percentage								
	E_f^*:	0.0	611	616	1490	1510	1586	1846	1873.6	1888.9
[keV]	J_f^π:	0^+	1^+	$\langle 7\rangle^+$	3^+	$\langle 5^+\rangle$	2^+	$\langle 3^+\rangle$	0^+	1^+
2433.33(8)	$\langle 3\text{–}5\rangle^+$				52(3)	48(3)				
2455(2)	$\langle 1,2^+\rangle$	100								
2486.6(1)	2^+		77(5)		23(5)					
2535.1(20)	$\langle 1,2^+\rangle$	100								
2586.8(17)	$\langle 1^+\text{–}5^+\rangle$				x					
2650.98(8)	$\langle 1^+,2\rangle$						90(3)			10(3)
2795.3(3)	$\langle 5^+\text{–}9^+\rangle$			100						
2815.37(6)	4^+				34(2)	61(3)		5(3)		
2833.2(11)	$\langle 2^+\text{–}4^+\rangle$						100			
2847.6(4)	3^+						100			
2910.4(4)	$\langle 3\text{–}5\rangle^+$				x					
3022.8(2)	$\langle 4\rangle^-$					100				
3089.1(3)	5^+			100						
3223.82(6)	$\langle 3^+\text{–}5\rangle^+$					27(3)				
3321.4(1)	$\langle 1^+\text{–}3^+\rangle$		50(10)		50(10)					
3322.8(3)	$\langle 3^+\text{–}5^+\rangle$				43(5)	57(5)				
3687.8(8)	1^+	≈10					≈75		≈15	
3719.3(4)	$\langle 5\text{–}7\rangle^+$			100						
3933.5(14)	$\langle 1\text{–}3\rangle^+$						100			
4468.8(4)	$\langle 2,3\rangle^+$						50(4)			
5995.8(3)	$\langle 3,4\rangle^+$				9(3)	20(2)	10(2)			
6253.4(2)	$\langle 3^+\text{–}5^+\rangle$				8(2)	8(2)				

Energy levels and branching ratios [79Vo04, 90En08, 98En04, 01Si10]. Part 3 **$^{42}_{21}$Sc**

E^*	J^π	Branching ratios in percentage								
	E_f^*:	2187.5	2223.1	2269.1	2389.1	2433.3	2486.6	2651.0	2795.3	2815.4
[keV]	J_f^π:	$\langle 2,3\rangle^+$	$\langle 2^+,3^+\rangle$	$\langle 1,2^+\rangle$	3^+		2^+	$\langle 1^+,2\rangle$	$\langle 5^+\text{–}9^+\rangle$	4^+
2995.53(7)	$\langle 3\text{–}5\rangle^+$		80(10)		20(10)					
3223.82(6)	$\langle 3^+\text{–}5\rangle^+$		32(8)		41(3)					
3392.7(11)	$\langle 1^-3\rangle^+$						x			x
3668.7(3)			x			x				
4047.72(6)	$\langle 2\text{–}4\rangle$				[100]					
5995.8(3)	$\langle 3,4\rangle^+$	2(1)	8(3)			4(1)	4(1)	5(1)		4(1)
6076.41(8)	$\langle 1^+\text{–}4^+\rangle$		30(2)	22(2)	18(2)					
6174.2(3)	$\langle 3,4\rangle^+$			26(2)					4(1)	11(2)
6253.4(2)	$\langle 3^+\text{–}5^+\rangle$	35(2)	≈1			18(2)		18(2)		4(1)

Energy levels and branching ratios [79Vo04, 90En08, 98En04, 01Si10]. Part 4 **$^{42}_{21}$Sc**

E^*	J^π	Branching ratios in percentage						
	E_f^*:	2847.6	2910.4	2995.5	3022.8	3089.1	3223.8	3321.4
[keV]	J_f^π:	3^+			$\langle 4\rangle^-$	5^+		
4468.8(4)	$\langle 2,3\rangle^+$		50(10)					
5995.8(3)	$\langle 3,4\rangle^+$	5(1)			≈1	4(1)	16(2)	
6076.41(8)	$\langle 1^+–4^+\rangle$		4(1)		7(2)			10(2)
6174.2(3)	$\langle 3,4\rangle^+$			8(2)		4(1)	8(2)	
6253.4(2)	$\langle 3^+–5^+\rangle$	5(1)				5(1)		

Energy levels and branching ratios [79Vo04, 90En08, 98En04, 01Si10]. Part 5 **$^{42}_{21}$Sc**

E^*	J^π	Branching ratios in percentage				
	E_f^*:	3322.8	3668.7	3719.3	4047.7	4468.8
[keV]	J_f^π:				$\langle 2,3,4\rangle$	$\langle 2,3\rangle^+$
5995.8(3)	$\langle 3,4\rangle^+$				8(3)	
6076.41(8)	$\langle 1^+–4^+\rangle$		4(1)		4(1)	
6174.2(3)	$\langle 3,4\rangle^+$	10(2)		24(2)		5(1)

Energy levels and branching ratios [90En08, 98En04, 01Ca24]. **$^{43}_{21}$Sc**

E^*	$2J^\pi$	L	S_N	σ (α,p)	L	C^2S'	L	C^2S'	σ (τ,d)	L	L	σ (τ,t)	RCF	$S_p'^+$	Ref.
[keV]			(α,p)	μb/sr		(d,n)		(τ,d)	μb/sr	(p,t)	(τ,t)	μb/sr	(p,α)	eval	
0	7^-	3	0.26*	220	3	4.0	3	4.4	4130	0		28.9	1.2	0.81(12)	81Sm03
151.4(2)	3^+				2	1.1	2	0.95	1280			1.7		0.35(6)	71Bo04
472.3(2)	3^-	1	0.358	31	1	0.31	1	0.39	5350	2		0.8		0.13(3)	71Bo04
845.2(1)	5^-									2		<1.1			71Al19
855.1(3)	1^+				0	0.14	0	0.11	2070			incl		0.08(2)	71Bo04
880.3(2)	5^+											incl			
1158.4(3)	3^+														66Sc17
1178.9(5)	3^-	1		155	1	0.72	1	0.81	14200	2		3.9		0.24(4)	71Bo04
1336.8(2)	7^+														
1408.0(1)	7^-	3	0.024	18						0		1.5			81Sm03
1650.8(3)	5^+														
1810.7(4)	3^-		0.39	210	1	0.40	1	0.45	6700	2		0.8			73Ko01
1829.9(2)	11^-	5	0.17							2		9.2	0.27		81Sm03
1882.6(4)	$\langle 5,9\rangle^-$									2		6.5			71Al19
1931.4(4)	9^+									5					
1962.9(2)	$\langle 3,5\rangle^-$				1	0.04	1	0.04	710						71Bo04
2094.3(3)	3^-						1	0.07	1100						71Bo04
2106.0(4)	$\langle 3,5\rangle$						3	1.6	incl	[5]					71Bo04
2114.3(9)					$\langle 1\rangle$	0.08				[3]					71Bo04

(continued) **$^{43}_{21}$Sc**

E^* [keV]	$2J^\pi$	L	S_N (α,p)	σ (α,p) μb/sr	L	C^2S' (d,n)	L	C^2S' (τ,d)	σ (τ,d) μb/sr	L (p,t)	L (τ,t)	σ (τ,t) μb/sr	RCF (p,α)	S'^+_p eval	Ref.
2141.7(6)	$\langle 3^-,5^+\rangle$														
2242.6(4)	$\langle 3–7\rangle^-$									2		0.6			71Al19
2288.3(1)	5^-	3		33	3	1.3			1410	4		11.6			71Bo04
2335.4(1)	$\langle 5\rangle^-$									2		0.7			71Al19
2382.7(5)	$3^{\langle+\rangle}$														
2458.6(1)	$\langle 5,9\rangle^-$									2		16.7			71Al19
2552.5(6)	$\langle 11^+\rangle$														
2580.0(3)	$\langle 5\rangle$														
2635.4(6)	$\langle 9,11\rangle^-$		0.11							2		6.3			81Sm03
2657(10)	1^+						0	0.06	690						71Bo04
2670.3(5)	3^-				$\langle 0\rangle$	0.05		incl	530	2		1.2			71Bo04
2760.0(1)	$\langle 5,9\rangle^-$									4		4.7			71Al19
2795.2(5)	X^-									2					
2810.7(5)	$\langle 5,7,9\rangle$														
2840.0(5)	$\langle 5,7\rangle^+$				1+3	0.2+0.1				5					92NaZN
2846.2(15)															
2861.0(15)	$\langle 1–5\rangle^+$									3					
2875(2)															
2930	$\langle 3^+,5^+\rangle$				2	0.07,0.05									92NaZN
2984.9(10)	$\langle 3,5\rangle$								80	4		16.3			71Al19
2987.4(2)	15^-	7	0.38										0.67		81Sm03
3123.2(3)	$\langle 19\rangle^-$	9	1.0							6		15.4	1.0		81Sm03
3140.6(7)	$\langle 13\rangle^+$														
3158.8(13)	$\langle 3^–7^+\rangle$														
3197.6(18)	$\langle \leq 7\rangle$									$\langle 4\rangle$					
3259.8(5)	$\langle 7,9\rangle^-$									4		9.9			71Al19
3292.9(11)	7^-									2					
3327.2(12)	$\langle 3–11\rangle$									2		9.6			71Al19
3332(2)	$\langle 1^-,3,5\rangle$				3	0.34,0.28	3	0.25	1240						92NaZN
3375.2(5)	$\langle 7,9\rangle^-$									2					
3451.5(6)	$\langle 5\rangle^+$				2	0.25,0.20				5					71Bo04
3463.3(14)	5^-						3	0.13	270			7.7			71Bo04
3480(10)	$\langle \leq 13\rangle^+$									3					
3503(2)	7^-									0					66Sc17
3613(10)									590						71Bo04
3631.5(10)	$\langle 5^–9^-\rangle$														
3645.4(18)															
3683(2)	$\langle 3,5,7\rangle$				3	0.90	3	0.85	1770	3					71Bo04
3700(10)	$\langle 5–19\rangle^-$									6					
3733.8(18)															
3754.7(8)	$\langle 15\rangle^+$														
3757(2)	$\langle 3^–7^+\rangle$									5					
3806.6(7)	7^-								110	5					71Bo04
3843(2)	$\langle \leq 9\rangle$											7.4			71Al19
3860(2)	$\langle \leq 7\rangle$														

(continued) **$^{43}_{21}$Sc**

E^* [keV]	$2J^\pi$	L	S_N (α,p)	σ (α,p) μb/sr	L	C^2S' (d,n)	L	C^2S' (τ,d)	σ (τ,d) μb/sr	L (p,t)	L (τ,t)	σ (τ,t) μb/sr	RCF (p,α)	S'^+_p eval	Ref.
3894(8)												13.9			71Al19
3939(10)	$5^-,7^-$				3	0.8,0.6	3	0.11	300			7.1			71Bo04
3949(10)	$\langle\leq 13\rangle^+$								150	3					71Bo04
4007(2)	$\langle 3,5\rangle^+$								290	5					66Sc17
4038(2)	7^-									4					
4138(10)	$\langle 3\text{–}17\rangle^+$									5		3.2			71Al19
4157(2)	$\langle 9\text{–}13\rangle^-$									4					
4211(10)	$\langle 9,13\rangle^+$									3					
4236(6)**	7^-				3	2.2	3	2.2	5490	0**	0	46.8			71Bo04
4276(8)												3.5			71Al19
4360	$\langle 17^-\rangle$											3.8	≤0.1		71Al19
4371(2)	$5^-,7^-$						3	0.17	620			18.9			71Bo04
4382(9)	$5^-,7^-$				3	0.8	3	0.24	650						71Bo04
4430(2)															
4455(2)	$\langle 5,9\rangle$														
4511(8)												8.8			71Al19
4555(10)	$\langle 11^+,13^-\rangle$								610				0.34		81Bo37
4584(10)									210						71Bo04
4665(4)	$1^-,3^-$				1	0.13	1	0.15	1840						71Bo04
4700	$\langle 15^+\rangle$														
4720(5)	$1^-,3^-$				1	0.13	1	0.13	1770						71Bo04
4766(5)	$1^-,3^-$						1	0.02	220			8.6			71Bo04
4817(6)***	$1^-,3^-$						1	0.07	760		2	4.4			71Bo04
4875(8)												21.2			71Al19
4895(5)	$1^-,3^-$				$\langle 1\rangle$	0.21	1	0.21	2250						71Bo04
4942(15)															
5022(5)	$1^-,3^-$				1	0.47	1	0.35	4860						71Bo04
5187(10)									760						71Bo04
5200	$\langle 17^+\rangle$														
5236(10)															
5262(7)	$1^-,3^-$				1	0.13	1	0.14	1070						92NaZN
5327(16)									250						71Bo04
5461(15)															
5490(10)	$1^-,3^-$						1	0.07	620						71Bo04
5517.3(10)	$\langle 19\rangle^+$														
5530(10)	$1^-,3^-$				1	0.37	1	0.05	470						71Bo04
5641(5)	$1^-,3^-$				1	0.11	1	0.16	1580						71Bo04
5720(9)	$1^-,3^-$				1	0.16	1	0.31	3120						71Bo04
5822(9)									520						66Sc17
5871(10)									640						71Bo04
5919(2)	3								1520						71Bo04
5976(12)									750						71Bo04
6032(10)	$1^-,3^-$				1	0.08	1	0.16	1350						71Bo04
6079(10)									1400						71Bo04
6105(10)	$3^-,5^+$														

(continued) **$^{43}_{21}$Sc**

E^* [keV]	$2J^\pi$	L	S_N (α,p)	σ (α,p) μb/sr	L	C^2S' (d,n)	L	C^2S' (τ,d)	σ (τ,d) μb/sr	L (p,t)	L (τ,t)	σ (τ,t) μb/sr	RCF (p,α)	S'^+_p eval	Ref.
6143(2)	3^-				1	1.15	1	1.4	10300						71Bo04
6217(2)	$\langle 3^-,5^+\rangle$														
6282(10)															66Sc17
6384(10)									500						71Bo04
6428.7(9)	$\langle 23^+\rangle$														
6444(10)									810						71Bo04
6685(2)	1^-														
6696(2)	5														
6710(2)	1^-						$\langle 1\rangle$		5540						71Bo04
6777					1	0.53,0.48									92NaZN
6811(10)									1200						71Bo04
6917(10)									330						71Bo04
7030					1	0.51,0.55									92NaZN
7160					2	0.19,0.18									92NaZN
7354.9(10)	$\langle 25^+\rangle$														
7380					1	0.35,0.37									92NaZN
7530					1	0.32,0.34									92NaZN
7700					3	0.41,0.30									92NaZN
7900					3	0.20,0.15									92NaZN
8111					3	0.30,0.23									92NaZN
8380					3	0.77,0.57									92NaZN
8690					3	0.35,0.26									92NaZN
8910					3	0.42,0.31									92NaZN
9170					3	0.45,0.33									92NaZN
9450					3	0.56,0.40									92NaZN
9750					3	0.62,0.45									92NaZN
10040					3	0.46,0.34									92NaZN
10230					2	0.18,0.17									92NaZN
10750					3	0.44,0.32									92NaZN
10910					3	0.57,0.42									92NaZN
11260					3	0.58,0.43									92NaZN
11560					3	0.31,0.23									92NaZN
11840					1	0.25,0.27									92NaZN
12090					1	0.30,0.32									92NaZN

(continued) **$^{43}_{21}$Sc**

E^*	$2J^\pi$	L	S_N	σ (α,p)	L	C^2S'	L	C^2S'	σ (τ,d)	L	L	σ (τ,t)	RCF	S'^+_p	Ref.
[keV]			(α,p)	μb/sr		(d,n)		(τ,d)	μb/sr	(p,t)	(τ,t)	μb/sr	(p,α)	eval	
				70Gi10		92NaZN			71Bo04			71Al19		77En02	Ref.
			81Sm03										81Bo37		Ref.

Additional data on this isotope can be found in [00De10, 87Fr09, 68Br08].
* Relative parameter of the (α,p) reaction $S_N \approx \sigma(exp)/\sigma(DWBA)$ is normalized to 1.0 for $19/2^-$ state [81Sm03, 01Ca24].
** The strongest transition in the (τ,t) reaction (ΔT=0) to IAS of ^{43}Ca ground state.
*** Probable IAS of 593 keV ($3/2^-$) state in ^{43}Ca [71Al19, 01Ca24].
The ratio $\sigma(exp)/\sigma(DWBA)$ for (^{6}Li,τ) reaction is given in [74Li01, 01Ca24].
$C^2S'=G_{\ell j}$ – absolute transition strengths from (d,n) and (τ,d) reactions are from [71Bo04].
RCF – Relative Cluster Factor in the (p,α) reaction is normalized to 1.0 for $19/2^-$ 3120 keV state [81Bo37].
Levels with E^*>6.7 MeV from [92NaZN] are not included in evaluation [01Ca24].
S'^+_p are from evaluation [77En02] were data from 3 experimental works were used.
Data for this isotope are considered in vol. LB I/18A.

Energy levels and branching ratios [90En08, 98En04, 01Ca24]. Part 2 **$^{43}_{21}$Sc**

E^*	$2J^\pi$	σ (τ,d)	σ (^{16}O,^{15}N)	$T_{1/2}$ or	Ref.	Branching ratios in percentage							
						E^*_f: 0	151	472	845	855	880	1158	1179
[keV]		μb/sr	μb/sr	Γ_{cm}		$2J^\pi_f$: 7^-	3^+	3^-	5^-	1^+	5^+	3^+	3^-
0	7^-	2500	980	3.891(12) h	81Sm03								
151.4(2)	3^+	600		438 μs	71Bo04	100							
472.3(2)	3^-	2900	80	158(13) ps	71Bo04	96(1)	4(1)						
845.2(1)	5^-			0.15(1) ps	71Al19	100		<5					
855.1(3)	1^+	1000		22(3) ps	71Bo04		80(2)	20(2)					
880.3(2)	5^+			4.6(7) ps		2(1)	98(1)	<5					
1158.4(3)	3^+	7500		4.4(10) ps	66Sc17		54(5)	2(1)	<3.0	24(5)	20(3)		
1178.9(5)	3^-		120	0.30(10) ps	71Bo04	16(2)		71(3)	12(2)		1		
1336.8(2)	7^+			0.83(35) ps		19(2)	63(2)				18(2)		
1408.0(1)	7^-			0.19(6) ps	81Sm03	82(2)		5(1)	13(2)				
1650.8(3)	5^+			0.19(3) ps		14(2)	56(3)			3(1)	7(2)	20(2)	
1810.7(4)	3^-	3100	100	16(6) fs	73Ko01		10(3)	35(4)		16(4)			39(5)
1829.9(2)	11^-			0.20(3) ps	81Sm03	100							
1882.6(4)	$\langle 5,9\rangle^-$			35(17) fs	71Al19	83			<4		17		
1931.4(4)	9^+			2.4(6) ps		1					78(7)		
1962.9(2)	$\langle 3,5\rangle^-$	300		70(11) fs	71Bo04	x		84(2)				3(1)	13(2)
2094.3(3)	3^-			0.29(7) ps	71Bo04		17(3)	11(3)	11(2)	18(2)	10(2)		33(3)
2106.0(4)	$\langle 3,5\rangle$	500		0.20(3) ps	71Bo04		6				62(2)	21(2)	
2114.3(9)					71Bo04		56(5)					44(5)	
2141.7(6)	$\langle 3^-,5^+\rangle$			0.20(4) ps		6(2)	24(2)	16(2)		4(2)	32(3)	5(2)	2(1)
2242.6(4)	$\langle 3–7\rangle^-$			0.19(9) ps	71Al19	18		57	25				
2288.3(1)	5^-	700		<21 fs	71Bo04	95(4)	2.0(4)	0.9(5)	1.2(3)				

(continued)

$^{43}_{21}$Sc

E^*	$2J^\pi$	σ (τ,d)	σ (^{16}O,^{15}N)	$T_{1/2}$ or	Ref.	Branching ratios in percentage							
						E_f^*:	0	151	472	845	855	880	1158	1179
[keV]		μb/sr	μb/sr	Γ_{cm}		$2J_f^\pi$:	7^-	3^+	3^-	5^-	1^+	5^+	3^+	3^-
2335.4(1)	$\langle 5\rangle^-$			28(14) fs	71Al19		100							
2382.7(5)	$3^{\langle +\rangle}$			>0.31 ps							31			
2458.6(1)	$\langle 5,9\rangle^-$			38(14) fs	71Al19		100							
2552.5(6)	$\langle 11^+\rangle$			0.51(7) ps										
2580.0(3)	$\langle 5\rangle$			0.11(3) ps				52(6)				21(4)	27(5)	
2635.4(6)	$\langle 9,11\rangle^-$			0.21(7) ps	81Sm03		60							
2657(10)	1^+				71Bo04									
2670.3(5)	3^-	100			71Bo04				22(3)		49(2)	21(4)		8(2)
2760.0(1)	$\langle 5,9\rangle^-$			<28 fs	71Al19		100							
2795.2(5)	X^-			0.28(16) ps			40	12		35				
2810.7(5)	$\langle 5,7,9\rangle$			<62 fs			19(5)							
2840.0(5)	$\langle 5,7\rangle^+$				92NaZN		32					16		
2846.2(15)							100							
2861.0(15)	$\langle 1–5\rangle^+$							33(3)				44(2)	10(3)	7(2)
2875(2)								x						
2930	$\langle 3^+,5^+\rangle$				92NaZN									
2984.9(10)	$\langle 3,5\rangle$	100		54(11) fs	71Al19			38(3)		22(3)		27(2)		13(3)
2987.4(2)	15^-			5.6(7) ps	81Sm03									
3123.2(3)	$\langle 19\rangle^-$			470(4) ns	81Sm03									
3140.6(7)	$\langle 13\rangle^+$			>0.55 ps										
3158.8(13)	$\langle 3^–7^+\rangle$			<0.42 ps			42	37				21		
3197.6(18)	$\langle \leq 7\rangle$			<0.28 ps					100					
3259.8(5)	$\langle 7,9\rangle^-$			42(24) fs	71Al19		96.0							
3292.9(11)	7^-									30		9		24
3327.2(12)	$\langle 3–11\rangle$				71Al19		x							
3332(2)	$\langle 1^-,3,5\rangle$	100		0.13(10) ps	92NaZN		0.7		9(2)	14(3)			21(2)	47(2)
3375.2(5)	$\langle 7,9\rangle^-$	incl		<62 fs			23							
3451.5(6)	$\langle 5\rangle^+$			<2.1 fs	71Bo04		5(2)	11(1)		9(1)		20		
3463.3(14)	5^-	100			71Bo04			73(3)				27(3)		
3480(10)	$\langle \leq 13\rangle^+$													
3503(2)	7^-	100			66Sc17		50(5)			50(5)				
3613(10)		incl			71Bo04									
3631.5(10)	$\langle 5^–9^-\rangle$						x							
3645.4(18)												24(5)		38(6)
3683(2)	$\langle 3,5,7\rangle$	400			71Bo04			55(4)		31(3)		14(2)		
3700(10)	$\langle 5–19\rangle^-$													
3733.8(18)										x				
3754.7(8)	$\langle 15\rangle^+$													
3757(2)	$\langle 3^–7^+\rangle$						30(5)	70(5)						
3806.6(7)	7^-			<3.5 fs	71Bo04				22(5)			63(3)		
3843(2)	$\langle \leq 9\rangle$				71Al19					x				
3860(2)	$\langle \leq 7\rangle$							x						
3894(8)					71Al19									
3939(10)	$5^-,7^-$				71Bo04									
3949(10)	$\langle \leq 13\rangle^+$				71Bo04									

(continued)

$^{43}_{21}$Sc

E^*	$2J^\pi$	σ (τ,d)	σ (^{16}O,^{15}N)	$T_{1/2}$ or	Ref.	Branching ratios in percentage							
						E_f^*:	0	151	472	845	855	880	1158	1179
[keV]		μb/sr	μb/sr	Γ_{cm}		$2J_f^\pi$:	7^-	3^+	3^-	5^-	1^+	5^+	3^+	3^-
4007(2)	$\langle 3,5\rangle^+$	100			66Sc17			30(5)	15(4)		30(6)	25(6)		
4038(2)	7^-								40(8)					
4138(10)	$\langle 3\text{–}17\rangle^+$				71Al19									
4157(2)	$\langle 9\text{–}13\rangle^-$													
4211(10)	$\langle 9,13\rangle^+$													
4236(6)**	7^-	1500			71Bo04									
4276(8)					71Al19									
4360	$\langle 17^-\rangle$				71Al19									
4371(2)	$5^-,7^-$	200			71Bo04							11(3)		
4382(9)	$5^-,7^-$	incl			71Bo04									
4430(2)												30(4)	30(5)	40(6)
4455(2)	$\langle 5,9\rangle$			<3.5 fs			100							
4511(8)					71Al19									
4555(10)	$\langle 11^+,13^-\rangle$	300			81Bo37									
4584(10)					71Bo04									
4665(4)	$1^-,3^-$	100			71Bo04									
4700	$\langle 15^+\rangle$													
4720(5)	$1^-,3^-$	300			71Bo04									
4766(5)	$1^-,3^-$				71Bo04									
4817(6)***	$1^-,3^-$				71Bo04									
4875(8)					71Al19									
4895(5)	$1^-,3^-$	300			71Bo04									
4942(15)														
5022(5)	$1^-,3^-$	900			71Bo04									
5187(10)					71Bo04									
5200	$\langle 17^+\rangle$													
5236(10)														
5262(7)	$1^-,3^-$	300			92NaZN									
5327(16)					71Bo04									
5461(15)														
5490(10)	$1^-,3^-$	100			71Bo04									
5517.3(10)	$\langle 19\rangle^+$			<62 fs										
5530(10)	$1^-,3^-$				71Bo04									
5641(5)	$1^-,3^-$	100			71Bo04									
5720(9)	$1^-,3^-$				71Bo04									
5822(9)		100			66Sc17									
5871(10)					71Bo04									
5919(2)	3				71Bo04									
5976(12)					71Bo04									
6032(10)	$1^-,3^-$				71Bo04									
6079(10)					71Bo04									
6105(10)	$3^-,5^+$													
6143(2)	3^-	700			71Bo04									
6217(2)	$\langle 3^-,5^+\rangle$													
6282(10)		100			66Sc17									

(continued) **$^{43}_{21}$Sc**

E^* [keV]	$2J^\pi$	σ (τ,d) μb/sr	σ (^{16}O,^{15}N) μb/sr	$T_{1/2}$ or Γ_{cm}	Ref.	Branching ratios in percentage E_f^*: 0 151 472 845 855 880 1158 1179 $2J_f^\pi$: 7^- 3^+ 3^- 5^- 1^+ 5^+ 3^+ 3^-
6384(10)					71Bo04	
6428.7(9)	$\langle 23^+ \rangle$			16.3(15) ps		
6444(10)					71Bo04	
6685(2)	1^-					
6696(2)	5					
6710(2)	1^-				71Bo04	
6777					92NaZN	
6811(10)					71Bo04	
6917(10)					71Bo04	
7030					92NaZN	
7160					92NaZN	
7354.9(10)	$\langle 25^+ \rangle$			0.42(11) ps		
7380					92NaZN	
7530					92NaZN	
7700					92NaZN	
7900					92NaZN	
8111					92NaZN	
8380					92NaZN	
8690					92NaZN	
8910					92NaZN	
9170					92NaZN	
9450					92NaZN	
9750					92NaZN	
10040					92NaZN	
10230					92NaZN	
10750					92NaZN	
10910					92NaZN	
11260					92NaZN	
11560					92NaZN	
11840					92NaZN	
12090					92NaZN	
		66Sc17	73Ko01		Ref.	
					Ref.	

Energy levels and branching ratios [90En08, 98En04, 01Ca24]. Part 3 **$^{43}_{21}$Sc**

E^* [keV]	$2J^\pi$	E_f^*: $2J_f^\pi$:	1337 7^+	1408 7^-	1651 5^+	1811 3^-	1830 11^-	1883 $\langle 5,9 \rangle^-$	1931 9^+	1963 $\langle 3,5 \rangle^-$	2106 $\langle 3,5 \rangle$
			Branching ratios in percentage								
1931.4(4)	9^+		21(7)								
2106.0(4)	$\langle 3,5 \rangle$				11(5)						
2141.7(6)	$\langle 3^-,5^+ \rangle$				12(2)						

(continued) **$^{43}_{21}$Sc**

E^*	$2J^\pi$		Branching ratios in percentage								
		E_f^*:	1337	1408	1651	1811	1830	1883	1931	1963	2106
[keV]		$2J_f^\pi$:	7^+	7^-	5^+	3^-	11^-	$\langle 5,9\rangle^-$	9^+	$\langle 3,5\rangle^-$	$\langle 3,5\rangle$
2288.3(1)	5^-			1.0(2)							
2382.7(5)	$3^{\langle+\rangle}$				69						
2552.5(6)	$\langle 11^+\rangle$		39(3)						61(3)		
2635.4(6)	$\langle 9,11\rangle^-$			23			17				
2795.2(5)	X^-			14							
2810.7(5)	$\langle 5,7,9\rangle$		46(5)								35(4)
2840.0(5)	$\langle 5,7\rangle^+$		37								
2861.0(15)	$\langle 1–5\rangle^+$				6(2)						
2984.9(10)	$\langle 3,5\rangle$		x								
2987.4(2)	15^-						100				
3140.6(7)	$\langle 13\rangle^+$								100		
3259.8(5)	$\langle 7,9\rangle^-$						4.0				
3292.9(11)	7^-					7			30		
3332(2)	$\langle 1^-,3,5\rangle$					6(2)				2.0(10)	
3375.2(5)	$\langle 7,9\rangle^-$		12	30			19	16			
3451.5(6)	$\langle 5\rangle^+$					54					
3645.4(18)					25(5)					13(4)	
3733.8(18)				x							
3806.6(7)	7^-		15(4)								
4038(2)	7^-								60(8)		
4371(2)	$5^-,7^-$		41(4)	20(5)	13(4)						15(3)

Energy levels and branching ratios [90En08, 98En04, 01Ca24]. Part 4 **$^{43}_{21}$Sc**

E^*	$2J^\pi$		Branching ratios in percentage							
		E_f^*:	2288	2383	2552	2987	3123	3141	5517	6429
[keV]		$2J_f^\pi$:	5^-	$3^{\langle+\rangle}$	$\langle 11^+\rangle$	15^-	$\langle 19\rangle^-$	$\langle 13\rangle^+$	$\langle 19\rangle^+$	$\langle 23^+\rangle$
2840.0(5)	$\langle 5,7\rangle^+$			15						
3123.2(3)	$\langle 19\rangle^-$					100				
3733.8(18)			x							
3754.7(8)	$\langle 15\rangle^+$							100		
4157(2)	$\langle 9–13\rangle^-$				100					
5517.3(10)	$\langle 19\rangle^+$						100			
6428.7(9)	$\langle 23^+\rangle$						7.0(10)		93.0(10)	
7354.9(10)	$\langle 25^+\rangle$									100

Energy levels and branching ratios [79Th03, 90En08, 77En02, 99Ca45]. **$^{44}_{21}$Sc**

E^* [keV]	J^π	T	I_p (τ,p)	σ (α,p) μb/sr	σ (τ,d) μb/sr	C^2S (τ,d)	L (τ,d)	S'^+_p eval	S^-_n eval	C^2S (p,d)	L	C^2S (d,t)	C^2S (τ,α)	σ (α,d) μb/sr	Ref.
0	2^+		2.0	36	110	0.28	3	0.60(15)	0.34(5)	0.30	3	0.35	0.35		77En02
67.868(1)	1^-														
146.22(2)	0^-														
234.7(1)	2^-														
270.95(20)	6^+		0.5	75	340	0.73	3	0.63(13)	0.49(7)	0.47	3	0.48	0.50		77En02
349.84(9)	4^+		1.5	59	220	0.023	1	0.03(1)	0.03(1)						77En02
						+0.45	+3	0.57(12)	0.37(5)	0.38	3	0.35	0.37		77En02
424.77(8)	3^-				40	0.004	2	0.17(6)	0.06(2)		2	0.06			77En02
						+0.08									68Sc15
531.2(2)	3				<50										68Sc15
630.94(13)	4^-				590	0.04	0	0.05(2)							77En02
							+2		0.13(4)		2	0.13			77En02
666.7(4)	1^+		24	8	70	0.15	3	0.53(14)	0.33(5)	0.32	3	0.32			77En02
725(15)	$X^{\langle+\rangle}$														
763.1(4)	3^+			17	370	0.055	1	0.08(2)		0.22	3	0.20	0.14	10	77En02
						+0.17	+3	0.25(7)	0.19(3)						77En02
968.0(3)	$\langle 7\rangle^+$			46		1.62				1.36	3	1.29	1.37	400	79Th03
986.7(4)	3^+		2.5		760										68Sc15
1006.3(4)	$3,4^-$										$\langle 0\rangle$	0.01			71Oh01
											$+\langle 2\rangle$	0.03			71Oh01
1050(2)	$\langle 3,5\rangle^+$		3.0	43	1120	0.17					1	0.04		240	79Th03
						+0.34					+3	0.25	0.23		71Oh01
1142(5)															
1185.8(7)	3^+		<0.5	35		0.024					1	0.03		12	79Th03
						+0.49					+3	0.26	0.23		71Oh01
1197.3(1)	$\langle 4^+,5^-\rangle$		<0.5		300										68Sc15
1303(10)															
1326(1)	3^+														
1427(1)	2^-				80	0.010	1				2	0.41	0.20		68Sc15
						+0.07	+3								68Sc15
1507(2)	$\langle 2\text{–}5\rangle^+$				160	0.020	1								68Sc15
						+0.14	+3								68Sc15
1532(2)	5^+		<0.5	54	450	0.038	1				1	0.04		70	79Th03
						+0.76	+3				+3	0.15	0.25		71Oh01
1567(2)	3^-										0	0.05			71Oh01
											+2	0.12			71Oh01
1595(2)	$\langle 2\text{–}5\rangle^+$		<0.5	8	100	0.014	1								79Th03
						+0.04	+3								
1648.3(5)					120	0.014	1								68Sc15
1651.6(5)	X^-										0	0.01			71Oh01
1680.6(5)	$\langle\leq 3\rangle$			9	120	0.17	2				2	0.41	0.32		79Th03
1685(3)	$\langle 4,6\rangle^-$		<0.5	incl							2	0.41	incl	15	79Th03
1731(2)			incl												
1767.6(5)	3^+		<0.5	9	390	0.049	1				2	0.06			79Th03
						+0.10	+3								

(continued) **$^{44}_{21}$Sc**

E^* [keV]	J^π	T	I_p (τ,p)	σ (α,p) μb/sr	σ (τ,d) μb/sr	C^2S (τ,d)	L (τ,d)	$S_p'^+$ eval	S_n^- eval	C^2S (p,d)	L	C^2S (d,t)	C^2S (τ,α)	σ (α,d) μb/sr	Ref.
1811(2)															
1866(2)	$\langle 3,5\rangle^+$				60	0.008	1								68Sc15
1903(2)					<50										68Sc15
1957(4)	$\langle 2–5\rangle^+$			16	490	0.058	1								79Th03
1986(4)	$\langle 3,4\rangle^-$										0	0.05			
2031(2)	4^-			12	330	0.042	1				0	0.02			79Th03
						+0.08	+3				+2	0.05			71Oh01
2104(2)	$\langle 2,4,6\rangle^-$				130	0.016	1				2	0.38	0.30		68Sc15
						+0.03	+3								68Sc15
2115(2)															
2179(2)	$\langle 2,4\rangle^+$			8	150	0.018	1				2	0.05			79Th03
						+0.05	+3								
2213(4)	4^-										0	0.07			71Oh01
											+2	0.17	0.19		71Oh01
2241(4)	2^+			21	130	0.19	3				2	0.04			79Th03
2291(2)	$\langle 2–5\rangle^+$			23	480	0.062	1								79Th03
						+0.06	+3								
2333(2)	$\langle 1–6\rangle^-$			8	<50						2	0.08			79Th03
2383(4)					<50										68Sc15
2424(2)	$\langle 2–5\rangle^+$			6	70	0.007	1								68Sc15
						+0.015	+3								68Sc15
2474(6)	$\langle 2–5\rangle^+$			32	800	0.010	1								68Sc15
						+0.01	+3								68Sc15
2490(3)	4^-										0	0.12			71Oh01
2524(3)	$\langle 1–6\rangle^-$				<50						2	0.12			68Sc15
2556(10)					<50										68Sc15
2582(3)	$\langle 3,4\rangle^-$			19	200	0.024	1				0	0.14	0.12		79Th03
						+0.05	+3								68Sc15
2615(3)	$\langle 3,4\rangle^-$				<50						0	0.04		100	76De24
											+2	0.10			71Oh01
2634(3)				19	50										79Th03
2671.3(4)	$\langle 9\rangle^+$			45	<50										79Th03
2703(3)	$\langle 2–5\rangle^+$				450	0.058	1								68Sc15
						+0.116	+3								68Sc15
2751(10)	$\langle 3,4\rangle^-$			19							0	0.05			79Th03
											+2	0.10			71Oh01
2783(3)	0^+	2	100.0		80	0.11	3				3	0.22	0.10		99Ca45
2845(6)				4											79Th03
2878(9)					<50										68Sc15
2915(3)	$\langle 2,3\rangle^+$		14.5	30	730	0.076	1				1	0.01			79Th03
						+0.23	+3				+3	0.30			71Oh01
2980(3)	$\langle 3,4\rangle^-$										0	0.02			71Oh01
											+2	0.07			71Oh01
2999(3)	$\langle 3,4\rangle^-$			7	<50						0	0.15			79Th03
											+2	0.15	0.20		71Ra09

(continued) **$^{44}_{21}$Sc**

E^* [keV]	J^π	T	I_p (τ,p)	σ (α,p) μb/sr	σ (τ,d) μb/sr	C^2S (τ,d)	L (τ,d)	$S_p'^+$ eval	S_n^- eval	C^2S (p,d)	L	C^2S (d,t)	C^2S (τ,α)	σ (α,d) μb/sr	Ref.
3035(10)					50										68Sc15
3049(10)				35	80										79Th03
3071(8)	$\langle 2^+–5^+\rangle$			incl	130	0.017	1								79Th03
						+0.07	+3								68Sc15
3097(10)	$\langle 2^+–5^+\rangle$			16	250	0.030	1								79Th03
						+0.03	+3								68Sc15
3152(10)	$X^{\langle+\rangle}$		71.5		150										68Sc15
3176(8)					80										68Sc15
3204(7)					<50										68Sc15
3281(15)	$\langle 2^+–5^+\rangle$		5.0	70	840	0.093	1								79Th03
						+0.28	+3								68Sc15
3321(15)				22											79Th03
3370(14)	$\langle 2^+–5^+\rangle$			39	540	0.060	1								79Th03
						+0.06	+3								68Sc15
3427(11)	$\langle 2^+–5^+\rangle$			15	140	0.015	1								79Th03
3439(15)				22											79Th03
3483(12)	$\langle 2^+–5^+\rangle$			21	140	0.014	1								68Sc15
						+0.03	+3								68Sc15
3566.8(4)	$\langle 11\rangle^+$				<50										68Sc15
3568(6)															
3626(10)	$\langle 2^+–5^+\rangle$		77.5		240	0.026	1								68Sc15
						+0.024	+3								68Sc15
3720	$X^{\langle+\rangle}$		46.5												
3851(6)	$\langle 2^+–5^+\rangle$				360	0.41	1								68Sc15
3900	$X^{\langle+\rangle}$														
3967(12)	$X^{\langle+\rangle}$				<50										68Sc15
3975.1(4)	$[2^+]$	[2]	13.5												
4024(13)					70										68Sc15
4038(14)	$X^{\langle+\rangle}$		21.5	8	<50										79Th03
4053(15)					190										68Sc15
4087(7)	$\langle 2^+–5^+\rangle$				480	0.055	1								68Sc15
4113(1)	$\langle 10–12\rangle$														
4150(10)	$X^{\langle+\rangle}$		9.0	46	17										79Th03
4185(10)					<50										68Sc15
4254(11)	$\langle 2^+–5^+\rangle$			11	270	0.034	1								79Th03
4293(15)	$\langle 2^+–5^+\rangle$			25	140	0.015	1								79Th03
						+0.03	+3								68Sc15
4330	$X^{\langle+\rangle}$		10.0												
4363(11)	$\langle 2^+–5^+\rangle$				580	0.176	1								68Sc15
4391(14)	$\langle 0^+–7^+\rangle$				160	0.186	3								68Sc15
4461(14)	$\langle 2^+–5^+\rangle$				420	0.048	1								68Sc15
						+0.05	+3								68Sc15
4500(16)					250										68Sc15
4533(10)	$\langle 2^+–5^+\rangle$				200	0.024	1								68Sc15
4560			4.0												

(continued) **$^{44}_{21}$Sc**

E^* [keV]	J^π	T	I_p (τ,p)	σ (α,p) μb/sr	σ (τ,d) μb/sr	C^2S (τ,d)	L (τ,d)	S'^+_p eval	C^2S (p,d)	L	C^2S (d,t)	C^2S (τ,α)	σ (α,d) μb/sr	Ref.
4595(10)					<50									68Sc15
4622(12)					<50									68Sc15
4645(14)					70									68Sc15
4697(10)	$\langle 2^+–5^+\rangle$		6.5		170	0.022	1							68Sc15
						+0.02	+3							68Sc15
4746(14)	$\langle 1^–6^–\rangle$				80	0.68	2							68Sc15
4762(10)					80									68Sc15
4820(10)	$\langle 2^+–5^+\rangle$				210	0.025	1							68Sc15
5012(15)			15.5		100									68Sc15
5277(10)					<50									68Sc15
5336(6)					<50									68Sc15
5526(13)	$\langle 0^+–7^+\rangle$		21.0		130	0.15	3							68Sc15
5553(11)	$\langle 1^–6^–\rangle$				110	0.14	2							68Sc15
5608(5)			16.5		<50									68Sc15
5716(13)					<50									68Sc15
6260(50)														94Fi01
6490(50)														94Fi01
683(50)														94Fi01
			70Sc22	79Th03	68Sc15	68Sc15			64Ka11		71Oh01	71Ra09	76De24	Ref.
						70Sc22		77En02						Ref.

Additional data on this isotope can be found in [00De10, 94Fi01, 90Be19, 77Cl01, 73Cl11, 72Ma50, 72Gu10].

The first column contains data on $d\sigma/d\Omega$ from the (α,p) reaction [79Th03].

σ (τ,d) and C^2S from the (τ,d) proton transfer reaction [68Sc15] are given together with S'^+_p from the evaluation [77En02]; values S^-_n from this evaluation are given together with data from three experimental works where neutron pickup reactions (p,d) [64Ka11], (d,t) [64Ka11] and (τ,α) [71Ra09, 71Oh01] were measured.

Cross section of the (α,d) reaction [76De24] is given in the last column [99Ca45].

Relative intensity of the (τ,p) reaction and comparison with (τ,d) data can be found in [70Sc22].

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

Energy levels and branching ratios [79Th03, 90En08, 77En02, 99Ca45]. Part 2 **$^{44}_{21}$Sc**

E^* [keV]	J^π	L (τ,p)	L (p,d)	σ (p,d) μb/sr	C^2S (τ,α)	σ (τ,α) μb/sr	L (α,d)	I_d	$T_{1/2}$ or Γ_{cm}	Ref.	Branching ratios in percentage				
											E^*_f: 0	67.9	146	235	271
											J^π_f: 2^+	1^-	0^-	2^-	6^+
0	2^+	2	3	160	0.42	220			3.97(4) h	77En02					
67.868(1)	1^-								154.2(8) ns		100				
146.22(2)	0^-								50.4 μs		0.10(1)	99.9(11)			
234.7(1)	2^-								6.1(2) ns		69(2)	31(2)	<2		
270.95(20)	6^+	4	3	230	0.60	350			58.61(10) h	77En02	100				
349.84(9)	4^+					280			3.13(19) ns	77En02	100				

(continued) **$^{44}_{21}$Sc**

E^*	J^π	L	L	σ (p,d)	C^2S	σ (τ,α)	L	I_d	$T_{1/2}$ or	Ref.	Branching ratios in percentage				
											E_f^*: 0	67.9	146	235	271
[keV]		(τ,p)	(p,d)	μb/sr	(τ, α)	μb/sr		(α,d)	Γ_{cm}		J_f^π: 2^+	1^-	0^-	2^-	6^+
			3	180	0.43					77En02					
424.77(8)	3^-								380(40) ps	77En02	16(2)	58(2)		26(2)	
										68Sc15					
531.2(2)	3								>4 ps	68Sc15	39(2)	10(2)		49(2)	
630.94(13)	4^-								400(25) ps	77En02				42(2)	
										77En02					
666.7(4)	1^+	0+2	3	140	0.38	260			51(12) fs	77En02	100				
725(15)	$X^{\langle+\rangle}$														
763.1(4)	3^+		3	90	0.17	110	2		225(30) fs	77En02	93(2)				
										77En02					
968.0(3)	$\langle7\rangle^+$		3	520	1.66	1090	6	>800	<3.5 ps	79Th03					100
986.7(4)	3^+	2+4				incl		incl	1.4(6) ps	68Sc15	100				
1006.3(4)	$3,4^-$							incl	>6 ps	71Oh01				18(6)	
										71Oh01					
1050(2)	$\langle3,5\rangle^+$	4		120		180	4	incl	165(55) fs	79Th03					
					0.28					71Oh01					
1142(5)															
1185.8(7)	3^+			80		200	2		38(8) fs	79Th03	40(6)				
					0.28					71Oh01					
1197.3(1)	$\langle4^+,5^-\rangle$								>2 ps	68Sc15					31(5)
1303(10)															
1326(1)	3^+								125(25) fs		44(5)				
1427(1)	2^-		$\langle2\rangle$	50	0.24	80			40(20) fs	68Sc15	43(3)	17(2)	<10	16(4)	
										68Sc15					
1507(2)	$\langle2–5\rangle^+$			80						68Sc15					75
										68Sc15					
1532(2)	5^+					240	4	75		79Th03					100
					0.30					71Oh01					
1567(2)	3^-									71Oh01	x				
										71Oh01					
1595(2)	$\langle2–5\rangle^+$									79Th03					
1648.3(5)									125(20) fs	68Sc15		100			
1651.6(5)	X^-		$\langle2\rangle$	70					110(25) fs	71Oh01	100				
1680.6(5)	$\langle\leq3\rangle$			incl		180			95(25) fs	79Th03	<15	100			
1685(3)	$\langle4,6\rangle^-$				0.39	incl	5			79Th03					
1731(2)															
1767.6(5)	3^+								55(12) fs	79Th03	≤50	100			
1811(2)															
1866(2)	$\langle3,5\rangle^+$									68Sc15					
1903(2)										68Sc15					
1957(4)	$\langle2–5\rangle^+$									79Th03					
1986(4)	$\langle3,4\rangle^-$														
2031(2)	4^-									79Th03					

(continued) **$^{44}_{21}$Sc**

E^* [keV]	J^π	L (τ,p)	L (p,d)	σ (p,d) μb/sr	C^2S (τ,α)	σ (τ,α) μb/sr	L	I_d (α,d)	$T_{1/2}$ or Γ_{cm}	Ref.	Branching ratios in percentage E_f^*: 0 67.9 146 235 271 J_f^π: 2^+ 1^- 0^- 2^- 6^+
										71Oh01	
2104(2)	$\langle 2,4,6\rangle^-$				0.18	170				68Sc15	
										68Sc15	
2115(2)											
2179(2)	$\langle 2,4\rangle^+$									79Th03	
2213(4)	4^-					100				71Oh01	
					0.24					71Oh01	
2241(4)	2^+									79Th03	
2291(2)	$\langle 2–5\rangle^+$									79Th03	
2333(2)	$\langle 1–6\rangle^-$									79Th03	
2383(4)										68Sc15	
2424(2)	$\langle 2–5\rangle^+$									68Sc15	
										68Sc15	
2474(6)	$\langle 2–5\rangle^+$									68Sc15	
										68Sc15	
2490(3)	4^-									71Oh01	
2524(3)	$\langle 1–6\rangle^-$									68Sc15	
2556(10)										68Sc15	
2582(3)	$\langle 3,4\rangle^-$					30				79Th03	
										68Sc15	
2615(3)	$\langle 3,4\rangle^-$									76De24	
										71Oh01	
2634(3)										79Th03	
2671.3(4)	$\langle 9\rangle^+$								1.7(3) ps	79Th03	
2703(3)	$\langle 2–5\rangle^+$									68Sc15	
										68Sc15	
2751(10)	$\langle 3,4\rangle^-$					150				79Th03	
										71Oh01	
2783(3)	0^+	0				incl				99Ca45	
2845(6)										79Th03	
2878(9)										68Sc15	
2915(3)	$\langle 2,3\rangle^+$	2				60		95		79Th03	
										71Oh01	
2980(3)	$\langle 3,4\rangle^-$							incl		71Oh01	
										71Oh01	
2999(3)	$\langle 3,4\rangle^-$					140		incl		79Th03	
										71Ra09	
3035(10)										68Sc15	
3049(10)										79Th03	
3071(8)	$\langle 2^+–5^+\rangle$									79Th03	
										68Sc15	
3097(10)	$\langle 2^+–5^+\rangle$									79Th03	
										68Sc15	

(continued) **$^{44}_{21}$Sc**

E^* [keV]	J^π	L (τ,p)	L (p,d)	σ (p,d) μb/sr	C^2S (τ,α)	σ (τ,α) μb/sr	L	I_d (α,d)	$T_{1/2}$ or Γ_{cm}	Ref.	Branching ratios in percentage E_f^*: 0 67.9 146 235 271 J_f^π: 2^+ 1^- 0^- 2^- 6^+
3152(10)	$X^{\langle+\rangle}$	0+2						80		68Sc15	
3176(8)								incl		68Sc15	
3204(7)										68Sc15	
3281(15)	$\langle 2^+–5^+\rangle$									79Th03	
										68Sc15	
3321(15)										79Th03	
3370(14)	$\langle 2^+–5^+\rangle$									79Th03	
										68Sc15	
3427(11)	$\langle 2^+–5^+\rangle$									79Th03	
3439(15)										79Th03	
3483(12)	$\langle 2^+–5^+\rangle$									68Sc15	
										68Sc15	
3566.8(4)	$\langle 11\rangle^+$								48(3) ps	68Sc15	
3568(6)											
3626(10)	$\langle 2^+–5^+\rangle$	0+2								68Sc15	
										68Sc15	
3720	$X^{\langle+\rangle}$	0+2									
3851(6)	$\langle 2^+–5^+\rangle$									68Sc15	
3900	$X^{\langle+\rangle}$										
3967(12)	$X^{\langle+\rangle}$									68Sc15	
3975.1(4)	$[2^+]$	2									
4024(13)										68Sc15	
4038(14)	$X^{\langle+\rangle}$	0+2								79Th03	
4053(15)										68Sc15	
4087(7)	$\langle 2^+–5^+\rangle$									68Sc15	
4113(1)	$\langle 10–12\rangle$								<0.3 ps		
4150(10)	$X^{\langle+\rangle}$	2								79Th03	
4185(10)										68Sc15	
4254(11)	$\langle 2^+–5^+\rangle$									79Th03	
4293(15)	$\langle 2^+–5^+\rangle$							155		79Th03	
										68Sc15	
4330	$X^{\langle+\rangle}$							incl			
4363(11)	$\langle 2^+–5^+\rangle$							incl		68Sc15	
4391(14)	$\langle 0^+–7^+\rangle$									68Sc15	
4461(14)	$\langle 2^+–5^+\rangle$									68Sc15	
										68Sc15	
4500(16)										68Sc15	
4533(10)	$\langle 2^+–5^+\rangle$									68Sc15	
4560											
4595(10)										68Sc15	
4622(12)										68Sc15	
4645(14)										68Sc15	
4697(10)	$\langle 2^+–5^+\rangle$									68Sc15	
										68Sc15	
4746(14)	$\langle 1^–6^-\rangle$									68Sc15	

(continued) **$^{44}_{21}$Sc**

E^*	J^π	L	L	σ (p,d)	C^2S	σ (τ,α)	L	I_d	$T_{1/2}$ or	Ref.	Branching ratios in percentage					
											E_f^*:	0	67.9	146	235	271
[keV]		(τ,p)	(p,d)	μb/sr	(τ, α)	μb/sr		(α,d)	Γ_{cm}		J_f^π:	2^+	1^-	0^-	2^-	6^+
4762(10)										68Sc15						
4820(10)	$\langle 2^+–5^+\rangle$									68Sc15						
5012(15)										68Sc15						
5277(10)										68Sc15						
5336(6)										68Sc15						
5526(13)	$\langle 0^+–7^+\rangle$									68Sc15						
5553(11)	$\langle 1^-–6^-\rangle$									68Sc15						
5608(5)										68Sc15						
5716(13)										68Sc15						
6260(50)								140		94Fi01						
6490(50)								160		94Fi01						
683(50)								220		94Fi01						
				64Ka11						Ref.						
					71Oh01	71Ra09		94Fi01		Ref.						

Energy levels and branching ratios [79Th03, 90En08, 77En02, 99Ca45]. Part 3 **$^{44}_{21}$Sc**

E^*	J^π												
									Branching ratios in percentage				
		E_f^*:	350	425	631	667	763	968.0	986.7	1050	2671.3	3566.8
[keV]		J_f^π:	4^+	3^-	4^-	1^+	3^+	$\langle 7\rangle^+$	3^+	$\langle 3,5\rangle^+$	$\langle 9\rangle^+$	$\langle 11\rangle^+$
531.2(2)	3		2(1)									
630.94(13)	4^-		49(2)	9(1)								
763.1(4)	3^+		7(2)									
1006.3(4)	$3,4^-$		19(8)	34(5)	30(7)							
1050(2)	$\langle 3,5\rangle^+$		100									
1185.8(7)	3^+		60(6)									
1197.3(1)	$\langle 4^+,5^-\rangle$		x	27(8)	42(5)							
1326(1)	3^+		56(5)									
1427(1)	2^-			24(4)								
1507(2)	$\langle 2–5\rangle^+$						25					
1532(2)	5^+		x									
1595(2)	$\langle 2–5\rangle^+$								x	x		
1731(2)										x		
1767.6(5)	3^+		x			x						
2671.3(4)	$\langle 9\rangle^+$							x				
3566.8(4)	$\langle 11\rangle^+$										x	
3975.1(4)	$[2^+]$											x
4113(1)	$\langle 10–12\rangle$											x

Energy levels and branching ratios [92Bu01, 83Bu21]. **$^{45}_{21}$Sc**

E^* [keV]	$2J^\pi$	L	C^2S (τ,d)	σ (τ,d) μb/sr	L	C^2S (d,τ)	C^2S (d,τ)	L (τ,p)	σ (τ,p) μb/sr	σ (α,p) μb/sr	σ (^{16}O,^{15}N) μb/sr	$\beta_L R$ fm	$T_{1/2}$ or Γ_{cm}	Ref.
0.0	7^-	3	0.59	1400	3	1.77(35)	1.43	0+2	92(4)	130	2800		Stable	85Ha08
12.40(5)	3^+	2	⟨1.9⟩	200	2	3.43(70)	2.80			incl			318(7) ms	72Vo18
376.5(1)	3^-	1	0.14	1500	1	0.12(3)	0.23	2	4(1)	26		0.45	43.3(23) ps	66Sc17
543.1(1)	5^+				2	0.12(3)	0.08						5.5(6) ps	79Do12
720.1(1)	5^-			200	3	0.32(7)	0.15	0+2	8(1)			0.38	206(16) fs	79Do12
939.2(2)	1^+	0	0.27	1000	0	1.50(30)	1.55						7.3(3) ps	66Sc17
974.4(2)	7^+												2.54(23) ps	
1067.6(4)	3^-	1	0.14	1800	1	0.07(2)	0.09	2	12(1)	33	270	0.27	0.28(6) ps	73Ko01
1236.7(3)	11^-											0.61	1.80(10) ps	
1303.2(2)	3^+				2	0.90(18)	0.51						2.3(4) ps	79Do12
1408.9(2)	⟨7⟩$^-$			200	⟨3⟩	0.25	0.25	0+2	12(1)				257(20) fs	71Oh02
1433.5(2)	9^+												3.6(18) ps	
1472.5(9)	⟨7$^+$⟩													
1556.2(5)	⟨3⟩$^-$	1	0.07	1600	1	0.04(1)	0.03	2	10(1)				0.3(1) ps	66Sc17
1662.0(4)	9^-											0.38	98(10) fs	
1716(30)														
1800.0(5)	5^+				2	0.39	0.56						65(15) fs	71Oh02
1900.7(3)				200										66Sc17
1930.6(3)	1–5$^+$													
1935(1)													32(11) fs	
1935.5													61(16) fs	
2031.2(7)	11^+												0.71(21) ps	
2090	15^-													
2093.0(5)	5							0+2	18(1)			0.20	8.3(21) fs	74Ha55
2106.2(5)	≤7													
2106.3(1)	15^-												>1.4 ps	
2138.4(5)	3^-,5												0.31(7) ps	
2151.0(5)	⟨1–5⟩												60(12) fs	
2152.0														
2221.8(5)	⟨3^-,5⟩													
2224.2(5)	5^+,7^+													
2288.5(6)	⟨7^-,9⟩												0.21(7) ps	
2303.8(5)	⟨5$^-$⟩			200	[1]	0.04(1)		2	6(1)			0.23	55(17) fs	74Ha55
2321(1)	3^-–7^+												45(7) fs	
2341.0(4)	⟨7$^-$⟩												31(7) fs	
2352.2(5)	3^-,5	⟨1⟩	0.03*	600				2	4(1)					66Sc17
2385(7)														
2531.0(5)	⟨1^+–5⟩													
2563.2(3)	⟨13$^+$⟩												1.4(4) ps	
2590.0(6)	3^-,5,7^-											0.11	35(8) fs	
2601.4(5)	1^+,3,5													
2634(7)														
2700(7)														
2747(1)	5^-,7^-	3	0.14	500				0+2	13(1)			0.16		66Sc17
2778.7(8)	⟨1^-–5⟩													

(continued) **$^{45}_{21}$Sc**

E^* [keV]	$2J^\pi$	L	C^2S (τ,d)	σ (τ,d) μb/sr	L	C^2S (d,τ)	C^2S (d,τ)	L (τ,p)	σ (τ,p) μb/sr	σ (α,p) μb/sr	σ (^{16}O,^{15}N) μb/sr	$\beta_L R$ fm	$T_{1/2}$ or Γ_{cm}	Ref.
2860.7	$\langle 1^- – 5\rangle$													
2895.2(5)	1^+,3,5												7(4) fs	
2903.8(7)	3^+,5^+				2	0.98(20)						0.39		79Do12
2943(7)	$\langle 5\rangle^+$													
2960(30)	9^+,11^-									65				
2964.0(15)	$\langle 3^+,5^+\rangle$									incl				
2979.8(18)	3^-	1	0.14	1300										66Sc17
3025.5(6)	1^-,3^-	1	0.1*	2000				$\langle 2\rangle$						66Sc17
3059(7)														
3092.0(8)	1^+,3,5											0.43		
3104	$\langle 3,5\rangle$			200										66Sc17
3111.2(8)	7^+			200										66Sc17
3136.3(7)	5^-–9^-	3		200				0+2	11(2)			0.19		74Ha55
3159.1(5)												0.12		
3198(9)				200										66Sc17
3224(7)														
3283(7)	$X^{\langle+\rangle}$								5(1)			0.26		74Ha55
3294.8(8)	$\langle 15^+\rangle$													
3329(7)	X^+													
3349(7)	$X^{\langle+\rangle}$											0.39		
3366.4(8)	$\langle 5\rangle^-$			200				0+2	21(2)			incl		74Ha55
3400(8)	1^-,3^-	1	0.02*	400										66Sc17
3443(7)	X^+											0.76		
3457	$\langle 5\rangle^-$									43				70Gi10
3462.1(8)	5^-,7^-													
3475	3^+,5^+			1000				0+2	53(3)					74Ha55
3487.4(8)	3^-	1	0.12	incl										66Sc17
3525.2(8)	3^-,5													
3548.5(8)	1^+–7^+													
3569.8(8)	$\langle 17^-\rangle$													
3581(15)	5^-–9^-							0+2	17(2)					74Ha55
3584(1)	1,3,5^+													
3606(7)	X^+			200					10(1)			0.21		74Ha55
3692.86(14)	$\langle 19^-\rangle$													
3714.3(8)	1,3,5								15(2)			0.23	13(10) fs	74Ha55
3722.3(10)		1	0.05*	800	2	0.93(19)			10(1)					66Sc17
3776(13)	$X^{\langle+\rangle}$			200										66Sc17
3864.0(15)														
3882(11)	$\langle 1^-\rangle$	$\langle 1\rangle$	0.12	900					8(1)	48				66Sc17
3890(30)	X^+											0.36		
3916(7)	1^-,3^-	1	0.1*									incl		66Sc17
3938(15)	5^-–9^-			2200				0+2	36(3)					74Ha55
3982(7)	3^+,5^+			200	2	0.31(7)								79Do12
4031(7)	X^+			200										66Sc17
4034(11)	5^-–9^-	1						0+2	27(2)			0.54		74Ha55

(continued) **$^{45}_{21}$Sc**

E^* [keV]	$2J^\pi$	L	C^2S (τ,d)	σ (τ,d) μb/sr	L	C^2S (d,τ)	C^2S (d,τ)	L (τ,p)	σ (τ,p) μb/sr	σ (α,p) μb/sr	σ (^{16}O,^{15}N) μb/sr	$\beta_L R$ fm	$T_{1/2}$ or Γ_{cm}	Ref.
4084.9(10)	$\langle 1^-,3^-\rangle$							0+2	8(1)					74Ha55
4129(7)		1		300										66Sc17
4178(11)	$[1^+]$	0		300					19(2)					74Ha55
4244(11)				300								0.57		66Sc17
4307(13)	X^-	1		300										66Sc17
4360(15)	$3^+,5^+$			300	2	0.39(7)								79Do12
4424(15)		1		200										66Sc17
4464(15)				200					19(2)					74Ha55
4505(15)	$1^-,3^-$	1	0.04*	700										66Sc17
4546(11)				200										66Sc17
4610(30)	$13^-,15^+$													
4610(11)				200										66Sc17
4662(11)	$\langle 1,3\rangle$	1		300					16(1)					74Ha55
4690(30)	$13^+,15^-$													
4713(15)				200					15(1)					74Ha55
4739(15)				200										66Sc17
4774(15)				200										66Sc17
4801(15)				200										66Sc17
4824(11)				200										66Sc17
4869(15)				200										66Sc17
4919(11)	$\langle 1^-,3^-\rangle$			200				2	10(1)					74Ha55
4950(30)	$\langle 17^+\rangle$													
4965(11)	5^-–9^-	3		200				0+2	30(3)					74Ha55
5009(15)				200										66Sc17
5049(15)				200										66Sc17
5084(15)				200										66Sc17
5125(15)	$[7^-]$	3		200										66Sc17
5169(15)	$[7^-]$	3		200										66Sc17
5219(15)				200										66Sc17
5261(11)				200					48(3)					74Ha55
5299(11)				200					incl					74Ha55
5374(15)				200										66Sc17
5418.8(11)	$\langle 23^-\rangle$													
5419(15)				200										66Sc17
5444(15)				200										66Sc17
5504(15)				200										66Sc17
5574(15)				200										66Sc17
5604(15)				300										66Sc17
5669(12)	$3^+,5^+$			200	2	$\leq$0.4								79Do12
5774(20)		1		400										66Sc17
5810(20)				200										66Sc17
5834(20)				400										66Sc17
5931(20)				200										66Sc17
5964(20)		1		300										66Sc17
5971(20)				200										66Sc17

(continued) **$^{45}_{21}$Sc**

E^* [keV]	$2J^\pi$	L	C^2S (τ,d)	σ (τ,d) μb/sr	L	C^2S (d,τ)	C^2S (d,τ)	L (τ,p)	σ (τ,p) μb/sr	σ (α,p) μb/sr	σ (^{16}O,^{15}N) μb/sr	$\beta_L R$ fm	$T_{1/2}$ or $\Gamma_{\rm cm}$	Ref.
6004(20)				200										66Sc17
6031(20)				200										66Sc17
6119(17)				200										66Sc17
6179(20)				200										66Sc17
6202(20)				200										66Sc17
6244(20)				200										66Sc17
6332(13)	[5$^-$]	3		200										66Sc17
6369(15)	3$^+$,5$^+$				2	0.30(6)								79Do12
6438(12)				200										66Sc17
6476(15)														
6551(15)	5$^-$–9$^-$	3						0+2	27(4)					74Ha55
6609(15)									42(8)					74Ha55
6667(15)	$\langle$5$^-$–9$^-\rangle$							0+2	36(8)					74Ha55
6699(15)	7$^-$	3						0	208(20)					74Ha55
6750	3$^+$,5$^+$				2	$\leq$0.3								79Do12
6751(15)	$\langle$5$^-$–9$^-\rangle$							0+2	56(6)					74Ha55
6820(15)	5$^-$–9$^-$							0+2	26(3)					74Ha55
7650														
7711.0(18)														
7713.2(18)														
7715.7(18)														
7724.9(18)	3$^{\langle-\rangle}$													
7775.1(18)	3$^{\langle+\rangle}$													
8112.3(10)	3$^-$												37(9) eV	
8119													20(8-18) eV	
8128.4(10)	3$^-$												23(7) eV	
8437	3$^-$,5													
8472	5$^+$													
8476.4	$\langle$3$\rangle^-$												12(5) eV	
8485.0	$\langle$3$\rangle^-$												25(7) eV	
8492	3$^-$													
8498.3	3$^-$												80(15) eV	
8503.9	3$^-$												400(40) eV	
8510	3$^-$													
8516.5	3$^-$												60(10) eV	
8519.9	3$^-$												30(7) eV	
8529.0	$\langle$3$\rangle^-$												7(5) eV	
8529.8	$\langle$3$\rangle^-$												5(3) eV	
8533.7	3$^-$												10(5) eV	
8543.8	3$^-$												10(5) eV	
8553.2	$\langle$1$\rangle^-$												10(5) eV	
8580.7	1$^-$												50(10) eV	
8592.0	$\langle$1$\rangle^-$												15(5) eV	
8607	5													
8616.7	1$^-$												40(10) eV	

(continued) **$^{45}_{21}$Sc**

E^* [keV]	$2J^\pi$	L	C^2S (τ,d)	σ (τ,d) μb/sr	L	C^2S (d,τ)	C^2S (d,τ)	L (τ,p)	σ (τ,p) μb/sr	σ (α,p) μb/sr	σ (^{16}O,^{15}N) μb/sr	$\beta_L R$ fm	$T_{1/2}$ or Γ_{cm}	Ref.
8658.7	$\langle 1\rangle^-$												26(7) eV	
8665.5	$\langle 1\rangle^-$												5(3) eV	
8675.1	$\langle 1\rangle^-$												15(5) eV	
8697.0	1^-												36(7) eV	
8712.2	$\langle 1\rangle^-$												15(5) eV	
8716.6	$\langle 1\rangle^-$												26(7) eV	
8736.1	1^-												60(10) eV	
8749.7	$\langle 1\rangle^-$												11(5) eV	
8755.0	1^-												100(15) eV	
8766.8	1^-												52(10) eV	
8794.8	1^-												76(15) eV	
8807.5	1^-												35(7) eV	
8813.9	$\langle 1\rangle^-$												21(5) eV	
8824.7	$\langle 1\rangle^-$												11(5) eV	
8838.2	1^-												400(40) eV	
8845.0	1^-												35(7) eV	
8863.3	1^-												175(20) eV	
8871.1	1^-												241(25) eV	
8886.2	1^-												54(10) eV	
8888.9	1^-												351(35) eV	
8892.2	1^-												64(10) eV	
8908.7	1^-												243(25) eV	
8917.7	1^-												36(7) eV	
8935.5	1^-												64(10) eV	
8948.2	$\langle 1\rangle^-$												20(5) eV	
8949.4	$\langle 1\rangle^-$												16(5) eV	
8961.7	1^-												60(10) eV	
8965.8	1^-												31(7) eV	
8983.0	1^-												49(10) eV	
8996.8	1^-												40(10) eV	
9017.5	$\langle 1\rangle^-$												12(5) eV	
				66Sc17		79Do12	71Oh02		74Ha55	70Gi10	73Ko01	68Pe10		Ref.
			83Bu21											Ref.

Additional data on this isotope can be found in [05Lo06, 01Be12, 00Ke12, 00De10, 96Be39, 85Ha08, 72Vo18, 71Oh02, 64Bj01].

Abundance: 100 %.

* assuming J^π=1/2$^-$

Relative intensity of the (τ,p) reaction and performed in [70Sc22] comparison with (τ,d) data can be found in Supplement.

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

Energy levels and branching ratios [92Bu01, 83Bu21]. Part 2

$^{45}_{21}$Sc

E^*	$2J^\pi$	L	I_p	C^2S'	Ref.		Branching ratios in percentage								
						E_f^*:	0.0	12.4	377	543	720	939	974	1068	1236.70
[keV]		(τ,p)	(τ,p)	(τ,d)		$2J_f^\pi$:	7^-	3^+	3^-	5^+	5^-	1^+	7^+	3^-	11^-
0.0	7^-	0+2	38	5.41	85Ha08										
12.40(5)	3^+			0.89	72Vo18		100								
376.5(1)	3^-		2	0.44	66Sc17		8.4(2)	91.6(2)							
543.1(1)	5^+				79Do12		41.2(4)	58.4(4)	0.4(2)						
720.1(1)	5^-		1		79Do12		96.5(6)	3.5(6)							
939.2(2)	1^+			0.24	66Sc17			82.7(7)	17.3(7)						
974.4(2)	7^+						58.2(3)	31.5(8)		10.3(6)					
1067.6(4)	3^-	2	3	0.37	73Ko01		3.0(6)		74(7)		23(3)				
1236.7(3)	11^-						100								
1303.2(2)	3^+				79Do12			34(6)	21	46(6)					
1408.9(2)	$\langle 7\rangle^-$	0+2	3		71Oh02		89.0(4)		4.4(4)		7(1)				
1433.5(2)	9^+						11(1)			68(9)			18(5)		3
1472.5(9)	$\langle 7^+\rangle$						x				x				
1556.2(5)	$\langle 3\rangle^-$	2	5	0.24	66Sc17				5(1)	<17		8(1)		87(10)	
1662.0(4)	9^-						68(3)				10(5)				13(3)
1716(30)															
1800.0(5)	5^+				71Oh02		8.7(9)	39(1)	9	24(1)	3			3	
1900.7(3)					66Sc17									100	
1930.6(3)	1–5^+											100			
1935(1)							50		50						
1935.5															
2031.2(7)	11^+												47(14)		6(2)
2090	15^-														
2093.0(5)	5	0+2	6		74Ha55		83(2)		7(2)					10(2)	
2106.2(5)	≤ 7													100	
2106.3(1)	15^-														100
2138.4(5)	3^-,5						71(21)								
2151.0(5)	$\langle 1$–$5\rangle$							90(9)							
2152.0										39				21	
2221.8(5)	$\langle 3^-,5\rangle$						32(11)	68(11)							
2224.2(5)	$5^+,7^+$						x	x		29	39				
2288.5(6)	$\langle 7^-,9\rangle$						42(5)						24(5)		34
2303.8(5)	$\langle 5^-\rangle$			0.03	74Ha55			25(5)	32(7)					35(7)	
2321(1)	3^-–7^+			incl			31(8)	69(8)							
2341.0(4)	$\langle 7^-\rangle$						70(21)				30.05				
2352.2(5)	3^-,5			0.01	66Sc17		2.4(5)	25(5)			44(9)			9(2)	
2385(7)															
2531.0(5)	$\langle 1^+$–$5\rangle$							36(7)		50(10)					
2563.2(3)	$\langle 13^+\rangle$														19(7)
2590.0(6)	$3^-,5,7^-$						27(6)		41(8)		7(5)			25(7)	
2601.4(5)	$1^+,3,5$							31(16)	17(4)	11(5)				31(3)	
2634(7)															
2700(7)															
2747(1)	$5^-,7^-$			0.95	66Sc17										
2778.7(8)	$\langle 1^-$–$5\rangle$								68(14)		32(6)				

(continued) **$^{45}_{21}$Sc**

E^*	$2J^\pi$	L	I_p	C^2S'	Ref.	Branching ratios in percentage								
					E_f^*:	0.0	12.4	377	543	720	939	974	1068	1236.70
[keV]		(τ,p)	(τ,p)	(τ,d)		$2J_f^\pi$: 7^-	3^+	3^-	5^+	5^-	1^+	7^+	3^-	11^-
2860.7	$\langle 1^- – 5\rangle$									x				
2895.2(5)	1^+,3,5								100					
2903.8(7)	3^+,5^+				79Do12				38(8)				62(12)	
2943(7)	$\langle 5\rangle^+$													
2960(30)	9^+,11^-													
2964.0(15)	$\langle 3^+,5^+\rangle$										x	x		
2979.8(18)	3^-	2+4	3	0.18	66Sc17			48(10)						
3025.5(6)	1^-,3^-			0.30	66Sc17			70		13(3)				
3059(7)														
3092.0(8)	1^+,3,5								42(8)				58(12)	
3104	$\langle 3,5\rangle$				66Sc17	100								
3111.2(8)	7^+				66Sc17									
3136.3(7)	$5^- – 9^-$			1.1	74Ha55									
3159.1(5)														
3198(9)					66Sc17									
3224(7)														
3283(7)	$X^{\langle +\rangle}$				74Ha55									
3294.8(8)	$\langle 15^+\rangle$													
3329(7)	X^+													
3349(7)	$X^{\langle +\rangle}$													
3366.4(8)	$\langle 5\rangle^-$				74Ha55									
3400(8)	1^-,3^-			0.07	66Sc17									
3443(7)	X^+													
3457	$\langle 5\rangle^-$				70Gi10						x			x
3462.1(8)	5^-,7^-							100						
3475	3^+,5^+				74Ha55									
3487.4(8)	3^-	0+2	21	0.26	66Sc17	38(8)		28(6)		34(7)				
3525.2(8)	3^-,5					70(14)								
3548.5(8)	$1^+ – 7^+$						43(9)		57(11)					
3569.8(8)	$\langle 17^-\rangle$													
3581(15)	$5^- – 9^-$				74Ha55									
3584(1)	1,3,5^+										100			
3606(7)	X^+				74Ha55									
3692.86(14)	$\langle 19^-\rangle$													
3714.3(8)	1,3,5				74Ha55									
3722.3(10)			10	0.16	66Sc17			100						
3776(13)	$X^{\langle +\rangle}$				66Sc17									
3864.0(15)														
3882(11)	$\langle 1^-\rangle$			0.13	66Sc17			56						
3890(30)	X^+													
3916(7)	1^-,3^-				66Sc17									
3938(15)	$5^- – 9^-$	0+2	17	0.42	74Ha55									
3982(7)	3^+,5^+				79Do12									
4031(7)	X^+				66Sc17									
4034(11)	$5^- – 9^-$	0+2	18	0.57	74Ha55									

(continued) **$^{45}_{21}$Sc**

E^* [keV]	$2J^\pi$	L (τ,p)	I_p (τ,p)	C^2S' (τ,d)	Ref.	Branching ratios in percentage								
						E_f^*:	0.0	12.4	377	543	720	939	974	1068	1236.70
						$2J_f^\pi$:	7^-	3^+	3^-	5^+	5^-	1^+	7^+	3^-	11^-
4084.9(10)	$\langle 1^-,3^-\rangle$				74Ha55							100			
4129(7)				0.04	66Sc17										
4178(11)	$[1^+]$		12	0.09	74Ha55										
4244(11)					66Sc17										
4307(13)	X^-			0.01	66Sc17										
4360(15)	$3^+,5^+$				79Do12										
4424(15)				0.03	66Sc17										
4464(15)					74Ha55										
4505(15)	$1^-,3^-$			0.17	66Sc17									39	
4546(11)					66Sc17										
4610(30)	$13^-,15^+$														
4610(11)					66Sc17										
4662(11)	$\langle 1,3\rangle$			0.07	74Ha55				100						
4690(30)	$13^+,15^-$														
4713(15)					74Ha55										
4739(15)		0	20		66Sc17										
4774(15)					66Sc17										
4801(15)					66Sc17										
4824(11)					66Sc17										
4869(15)					66Sc17										
4919(11)	$\langle 1^-,3^-\rangle$				74Ha55										
4950(30)	$\langle 17^+\rangle$														
4965(11)	5^-–9^-		12	0.12	74Ha55										
5009(15)					66Sc17										
5049(15)					66Sc17										
5084(15)				0.03	66Sc17										
5125(15)	$[7^-]$			0.11	66Sc17										
5169(15)	$[7^-]$			0.11	66Sc17										
5219(15)					66Sc17										
5261(11)		0	32		74Ha55										
5299(11)					74Ha55										
5374(15)					66Sc17										
5418.8(11)	$\langle 23^-\rangle$														
5419(15)					66Sc17										
5444(15)					66Sc17										
5504(15)					66Sc17										
5574(15)					66Sc17										
5604(15)					66Sc17										
5669(12)	$3^+,5^+$				79Do12										
5774(20)				0.14	66Sc17										
5810(20)					66Sc17										
5834(20)					66Sc17										
5931(20)					66Sc17										
5964(20)				0.17	66Sc17										
5971(20)					66Sc17										

(continued) **$^{45}_{21}$Sc**

E^*	$2J^\pi$	L	I_p	C^2S'	Ref.	Branching ratios in percentage								
						E_f^*:	0.0	12.4	377	543	720	939	974	1068	1236.70
[keV]		(τ,p)	(τ,p)	(τ,d)		$2J_f^\pi$:	7^-	3^+	3^-	5^+	5^-	1^+	7^+	3^-	11^-
6004(20)					66Sc17										
6031(20)					66Sc17										
6119(17)					66Sc17										
6179(20)					66Sc17										
6202(20)					66Sc17										
6244(20)					66Sc17										
6332(13)	$[5^-]$			0.23	66Sc17										
6369(15)	$3^+,5^+$				79Do12										
6438(12)					66Sc17										
6476(15)															
6551(15)	5^-–9^-			0.17	74Ha55										
6609(15)					74Ha55										
6667(15)	$\langle 5^-$–$9^-\rangle$				74Ha55										
6699(15)	7^-	0+2	100	1.03	74Ha55										
6750	$3^+,5^+$		38		79Do12										
6751(15)	$\langle 5^-$–$9^-\rangle$				74Ha55										
6820(15)	5^-–9^-		15		74Ha55										
7650															
7711.0(18)								7(2)	5(1)	6(1)	10(2)	30(6)		3.0(6)	
7713.2(18)								7(2)	5(1)	6(1)	10(2)	30(6)		3.0(6)	
7715.7(18)								7(2)	5(1)	6(1)	10(2)	30(6)		3.0(6)	
7724.9(18)	$3^{\langle -\rangle}$							1.0(2)	9(2)	15(3)	6(1)	3(1)		3(1)	
7775.1(18)	$3^{\langle +\rangle}$							4(1)	4(1)	4(1)	4(1)	13(3)		3(1)	
8112.3(10)	3^-							11(2)	9		6	5			
8119															
8128.4(10)	3^-							4		6	2				
8437	$3^-,5$						17	17	24	41					
8472	5^+						9	26	9	6		16	15	18	
8476.4	$\langle 3\rangle^-$							22	8	23	8	17		19	
8485.0	$\langle 3\rangle^-$							10		26				64	
8492	3^-						17		43		40				
8498.3	3^-							6	18	8	21	5	5(1)	9	
8503.9	3^-						24	6	6	5	12	33		3	
8510	3^-						7	15	26	3	3	12	1	8	
8516.5	3^-							1	9		12	66			
8519.9	3^-							27	19		45				
8529.0	$\langle 3\rangle^-$							17	8	40	13			22	
8529.8	$\langle 3\rangle^-$							10	19			16			
8533.7	3^-									64		11		25	
8543.8	3^-							3	3	26	16	31		20	
8553.2	$\langle 1\rangle^-$							23	10			18		50	
8580.7	1^-							15				17		67	
8592.0	$\langle 1\rangle^-$							27	27			29		18	
8607	5						27	27	30				15		
8616.7	1^-							24	68						

(continued) **$^{45}_{21}$Sc**

E^*	$2J^\pi$	L	I_p	C^2S'	Ref.		Branching ratios in percentage								
						E_f^*:	0.0	12.4	377	543	720	939	974	1068	1236.70
[keV]		(τ,p)	(τ,p)	(τ,d)		$2J_f^\pi$:	7^-	3^+	3^-	5^+	5^-	1^+	7^+	3^-	11^-
8658.7	$\langle 1\rangle^-$											72		28	
8665.5	$\langle 1\rangle^-$							76	17			8			
8675.1	$\langle 1\rangle^-$							20	10			31		25	
8697.0	1^-							30	15			6		49	
8712.2	$\langle 1\rangle^-$							17	14			17			
8716.6	$\langle 1\rangle^-$							68	18			15			
8736.1	1^-							12	19			18		12	
8749.7	$\langle 1\rangle^-$							88				7			
8755.0	1^-							77	7			4		12	
8766.8	1^-							11	18			29		9	
8794.8	1^-							2	2			3		9	
8807.5	1^-							26				13			
8813.9	$\langle 1\rangle^-$							100							
8824.7	$\langle 1\rangle^-$							22	11			13		27	
8838.2	1^-							15				85			
8845.0	1^-							68	32						
8863.3	1^-							19	31					16	
8871.1	1^-							6	23			24		11	
8886.2	1^-							88							
8888.9	1^-							3	31			32			
8892.2	1^-							18	41			16		20	
8908.7	1^-							11	79					10	
8917.7	1^-							74	5			8			
8935.5	1^-							5				68			
8948.2	$\langle 1\rangle^-$							11	3						
8949.4	$\langle 1\rangle^-$							17	32					22	
8961.7	1^-							74	26						
8965.8	1^-							60	5			35			
8983.0	1^-								54			28		8	
8996.8	1^-							15				70			
9017.5	$\langle 1\rangle^-$							90				10			
			70Sc22		Ref.										
		70Sc22		70Sc22	Ref.										

Energy levels and branching ratios [92Bu01, 83Bu21]. Part 3 **$^{45}_{21}$Sc**

E^*	$2J^\pi$		Branching ratios in percentage									
		E_f^*:	1303.18	1408.87	1433.48	1556.2	1662.0	1800.0	2031.2	2090	2093.0	2106.27
[keV]		$2J_f^\pi$:	3^+	$\langle 7\rangle^-$	9^+	$\langle 3\rangle^-$	9^-	5^+	11^+	15^-	5	15^-
1662.0(4)	9^-			9(2)								
1800.0(5)	5^+		12									
2031.2(7)	11^+				48							

(continued) **$^{45}_{21}$Sc**

E^*	$2J^\pi$		Branching ratios in percentage									
		E_f^*:	1303.18	1408.87	1433.48	1556.2	1662.0	1800.0	2031.2	2090	2093.0	2106.27
[keV]		$2J_f^\pi$:	3^+	$\langle 7\rangle^-$	9^+	$\langle 3\rangle^-$	9^-	5^+	11^+	15^-	5	15^-
2093.0(5)	5		<25									
2138.4(5)	3^-,5					29(9)						
2151.0(5)	$\langle 1$–$5\rangle$		10.0(21)									
2152.0						40						
2224.2(5)	5^+,7^+		10		22							
2303.8(5)	$\langle 5^-\rangle$						9(3)					
2341.0(4)	$\langle 7^-\rangle$			≤70								
2352.2(5)	3^-,5					21(4)						
2531.0(5)	$\langle 1^+$–$5\rangle$		14(3)									
2563.2(3)	$\langle 13^+\rangle$				56(6)				25(6)			
2590.0(6)	3^-,5,7^-					≤14						
2601.4(5)	1^+,3,5					9(2)						
2860.7	$\langle 1^-$–$5\rangle$		x									
2979.8(18)	3^-					52(10)						
3025.5(6)	1^-,3^-										3.7(7)	
3111.2(8)	7^+								100			
3159.1(5)												100
3294.8(8)	$\langle 15^+\rangle$								38(15)			
3366.4(8)	$\langle 5\rangle^-$			100								
3525.2(8)	3^-,5					30(6)						
3569.8(8)	$\langle 17^-\rangle$											100
3692.86(14)	$\langle 19^-\rangle$											78(5)
3714.3(8)	1,3,5					61(12)					39(9)	
3882(11)	$\langle 1^-\rangle$		44									
7711.0(18)			1.0(2)							2.0(4)		
7713.2(18)			1.0(2)								2.0(4)	
7715.7(18)			1.0(2)								2.0(4)	
7724.9(18)	$3^{\langle -\rangle}$		0.5(1)			0.5(1)					6(1)	
7775.1(18)	$3^{\langle +\rangle}$		0.9(2)			3(1)		0.9(2)			2	
8112.3(10)	3^-									20(3)		
8128.4(10)	3^-									18(3)		
8498.3	3^-		5			7						
8503.9	3^-					<1						
8510	3^-		2	4				7				
8616.7	1^-		8									
8675.1	$\langle 1\rangle^-$		13									
8712.2	$\langle 1\rangle^-$		52									
8736.1	1^-		39									
8749.7	$\langle 1\rangle^-$		4									
8766.8	1^-		32									
8794.8	1^-		83									
8807.5	1^-		61									
8824.7	$\langle 1\rangle^-$		28									
8863.3	1^-		34									
8871.1	1^-		36									

(continued) **$^{45}_{21}$Sc**

E^*	$2J^\pi$	Branching ratios in percentage									
	E_f^*:	1303.18	1408.87	1433.48	1556.2	1662.0	1800.0	2031.2	2090	2093.0	2106.27
[keV]	$2J_f^\pi$:	3^+	$\langle 7\rangle^-$	9^+	$\langle 3\rangle^-$	9^-	5^+	11^+	15^-	5	15^-
8886.2	1^-	12									
8888.9	1^-	34									
8892.2	1^-	5									
8917.7	1^-	13									
8935.5	1^-	27									
8948.2	$\langle 1\rangle^-$	86									
8949.4	$\langle 1\rangle^-$	29									
8983.0	1^-	10									
8996.8	1^-	14									

Energy levels and branching ratios [92Bu01, 83Bu21]. Part 4 **$^{45}_{21}$Sc**

E^*	$2J^\pi$	Branching ratios in percentage									
	E_f^*:	2151.0	2152.0	2221.8	2303.8	2341.0	2352.2	2531.0	2563.2	2590.0	2601.4
[keV]	$2J_f^\pi$:	$\langle 1,3,5\rangle$		$\langle 3^-,5\rangle$	$\langle 5^-\rangle$	$\langle 7^-\rangle$	$3^-,5$		$\langle 13^+\rangle$	$3^-,5,7^-$	$1^+,3,5$
3025.5(6)	$1^-,3^-$			13(5)							
3294.8(8)	$\langle 15^+\rangle$								62(8)		
7711.0(18)		1.0(2)	1.0(2)		2.0(4)		1.0(2)	3.0(6)		3.0(6)	1.0(2)
7713.2(18)		1.0(2)	1.0(2)		2.0(4)		1.0(2)	3.0(6)		3.0(6)	1.0(2)
7715.7(18)			1.0(2)	1.0(2)	2.0(4)		1.0(2)	3.0(6)		3.0(6)	1.0(2)
7724.9(18)	$3^{\langle -\rangle}$	3(1)	3(1)		9(2)			5(1)		5(1)	3(1)
7775.1(18)	$3^{\langle +\rangle}$	4(1)	4(1)		3(1)		7(2)	1.9(2)			4(1)
8476.4	$\langle 3\rangle^-$					4					
8498.3	3^-		1			8	2				
8503.9	3^-					5	6				
8510	3^-				2	5					5
8516.5	3^-					11					
8519.9	3^-					9					
8529.8	$\langle 3\rangle^-$					56					

Energy levels and branching ratios [92Bu01, 83Bu21]. Part 5 **$^{45}_{21}$Sc**

E^*	$2J^\pi$	Branching ratios in percentage									
	E_f^*:	2747.0	2778.7	2860.7	2895.2	2903.8	2964.0	2979.8	3025.5	3092.0	3104
[keV]	$2J_f^\pi$:	$5^-,7^-$			$1^+,3,5$	$3^+,5^+$	$\langle 3^+,5^+\rangle$	3^-	$1^-,3^-$	$1^+,3,5$	$\langle 3,5\rangle$
4505(15)	$1^-,3^-$										61
7711.0(18)			7(2)		2.0(4)	1.0(2)		5(1)		1.0(2)	
7713.2(18)			7(2)		2.0(4)	1.0(2)		5(1)			1.0(2)
7715.7(18)			7(2)		2.0(4)	1.0(2)		5(1)			1.0(2)

(continued) **$^{45}_{21}$Sc**

E^*	$2J^\pi$	Branching ratios in percentage									
	E_f^*:	2747.0	2778.7	2860.7	2895.2	2903.8	2964.0	2979.8	3025.5	3092.0	3104
[keV]	$2J_f^\pi$:	5^-,7^-			1^+,3,5	3^+,5^+	$\langle 3^+,5^+\rangle$	3^-	1^-,3^-	1^+,3,5	$\langle 3,5\rangle$
7724.9(18)	$3^{\langle -\rangle}$		8(2)		4(1)					4(1)	
7775.1(18)	$3^{\langle +\rangle}$		0.9(2)		0.9(2)	5(1)	0.9(2)	2	6(1)	0.9(2)	3(1)
8498.3	3^-			2		x	3		<2		
8503.9	3^-								<1		
8510	3^-	x						x			

Energy levels and branching ratios [92Bu01, 83Bu21]. Part 6 **$^{45}_{21}$Sc**

E^*	$2J^\pi$	Branching ratios in percentage									
	E_f^*:	3111.2	3136.3	3366.4	3457	3462.1	3475	3487.4	3525.2	3548.5	3569.8
[keV]	$2J_f^\pi$:	7^+		$\langle 5\rangle^-$	$\langle 5\rangle^-$	5^-,7^-	3^+,5^+	3^-	3^-,5		$\langle 17^-\rangle$
3692.86(14)	$\langle 19^-\rangle$										22(3)
7711.0(18)			2.0(4)					1.0(2)			
7713.2(18)			2.0(4)					1.0(2)			
7715.7(18)			2.0(4)					1.0(2)			
7724.9(18)	$3^{\langle -\rangle}$		3(1)	4(1)							
7775.1(18)	$3^{\langle +\rangle}$	2		0.9(2)		2		3(1)	2	2	
8498.3	3^-				<2						
8503.9	3^-						<1				

Energy levels and branching ratios [92Bu01, 83Bu21]. Part 7 **$^{45}_{21}$Sc**

E^*	$2J^\pi$	Branching ratios in percentage									
	E_f^*:	3584	3692.86	3714.3	3722.3	3864.0	3882	3982	4084.9	4505	4662
[keV]	$2J_f^\pi$:	$1,3,5^+$	$\langle 19^-\rangle$	1,3,5			$\langle 1^-\rangle$	3^+,5^+	$\langle 1^-,3^-\rangle$	1^-,3^-	$\langle 1,3\rangle$
5418.8(11)	$\langle 23^-\rangle$		100								
7711.0(18)					5(1)						
7713.2(18)					5(1)						
7715.7(18)					5(1)						
7724.9(18)	$3^{\langle -\rangle}$				5(1)			3(1)			
7775.1(18)	$3^{\langle +\rangle}$	2		5(1)		3(1)			0.9(2)		
8112.3(10)	3^-						22(3)			12(2)	13(2)
8128.4(10)	3^-						26(4)			24(4)	20(3)
8503.9	3^-				<1						

Energy levels and branching ratios [00Wu08].

$^{46}_{21}$Sc

E^* [keV]	J^π	L (d,p)	S_{dp}	σ (d,p) μb/sr	C^2S' (d,p)	L (d,τ)	$S_{d\tau}$	S_N (t,d)	σ (t,d) μb/sr	I_d (α,d)	σ (t,τ) *rel.*	σ (d,α) μb/sr	$T_{1/2}$ or Γ_{cm}	Ref.
0.0	4^+	3	0.353	320	2.82	3	0.53	0.38	45(8)			22	83.79(4) d	70Le01
						+1	0.07							70Le01
52.011(1)	6^+	3	0.863	800	6.90	3	0.18	0.96	106(9)			21	9.4 μs	70Le01
142.53(1)	1^-		small	≈5		2	0.39						18.75(4) s	66Ra18
227.77(1)	3^+	3	0.358	300	2.86	3	0.45	0.39	53(10)			97	<270 ps	70Le01
						+1	0.06							70Le01
280.70(1)	5^+	3	0.536	710	4.29	⟨3⟩	0.52	0.56	62(10)				<270 ps	70Le01
		+1	0.055		0.44	⟨+1⟩		0.05						92Ro12
289.54(1)	2^-					⟨2⟩	0.38		incl				<380 ps	70Le01
444.14(1)	2^+	3	0.200	150	1.60	⟨3⟩	0.11	0.20	27(5)				<270 ps	70Le01
						⟨+1⟩	0.02							70Le01
584.78(1)	3^-		small	≈2		0	0.52					30	4(2) ps	66Ra18
627.43(2)	4^-		small	≈2		2	0.75						<200 ps	66Ra18
774.02(2)	5^+	3	0.348	360	2.78	3	0.09	0.40	63(11)	137		142		70Le01
835.09(2)	4^+	3	0.210	200	1.68	3		0.20	32(5)				<200 ps	92Ro12
978(2)	7^+	3		480	3.39	3		0.33	49(6)	750		134		93Cr04
991.33(4)	1^+	3		170	1.07					incl	0.48(9)			85Aj03
1006(6)		3	0.134											92Ro12
1088.59(2)	4^+	1	0.016	240	0.13			0.032	27(5)					76Bi02
1121(12)														
1124.23(3)	4^-	0	0.003	55	0.027								1.1(2) ps	92Ro12
1142(4)	3^-,4^-	0	0.005	28	0.036									92Ro12
1270.46(3)	4^-			≈2										92Ro12
1289(12)														
1298(5)														
1321.12(3)	3^+	3	0.049	45	0.39									92Ro12
1394.18(4)	2^+	1	0.006	45	0.045									92Ro12
1427.90(4)	3^+,4^+	0		10	0.071									92Ro12
1429(4)	2^-													
1438(4)	3^-,4^-	0	0.009											92Ro12
1526.74(5)	2^-–4^+			8										92Ro12
1642.68(3)	4^-	0	0.002	33	0.017							253		92Ro12
1676(4)		1	0.020	390	0.16									92Ro12
1692.2(3)	3^-	0	0.002											92Ro12
1707.83(5)	2^-			≈5										92Ro12
1752(4)	2^+–6^+	⟨3⟩	0.074	8	0.59									92Ro12
1763.2(1)	2^+–4^+	1	0.006	120	0.051									92Ro12
1799.44(7)	2^+,3^+	1	0.040	670	0.32									92Ro12
1825(4)														
1852(2)	1^+	1	0.002	37	0.016						0.36(9)	295		92Ro12
1886.06(8)	3^+	3	0.146	190	1.17									92Ro12
1919.88(4)	3^+													
1921.10(5)		1												
2043.45(4)	3^-													
2062.25(5)	⟨4⟩$^-$	⟨0⟩	0.016	31										92Ro12

(continued) **$^{46}_{21}$Sc**

E^* [keV]	J^π	L (d,p)	S_{dp}	σ (d,p) μb/sr	C^2S' (d,p)	L (d,τ)	$S_{d\tau}$	S_N (t,d)	σ (t,d) μb/sr	I_d (α,d)	σ (t,τ) *rel.*	σ (d,α) μb/sr	$T_{1/2}$ or Γ_{cm}	Ref.
2070.31(9)	$\langle 3\rangle^+$	1	0.105	1710	0.84									92Ro12
2084.5(1)														
2114.13(7)	3,4									125				
2119.30(6)	3^+,4^+	1	0.138	2400	1.10					incl				92Ro12
2184.9(10)														
2203.14(6)	3^-													
2210(4)		3	0.019	22	0.15									92Ro12
2221.7(1)	2^+	1	0.029	700	0.23									92Ro12
2252.8(1)														
2291.8(2)														
2302.6(1)	2^+,3^+	1	0.029	430	0.23									92Ro12
2330.2(2)		1	0.618	9880	4.94			5.6	1030(50)					76Bi02
2366.7(2)		$\langle 1\rangle$	0.011	120	0.086									92Ro12
2375.3(2)														
2395.97(9)														
2410.45(4)	3^+	1	0.050	960	0.40					175				92Ro12
2431.2(2)	4^+,5^+									incl				
2442.30(4)	3^+													
2451.1(1)														
2459.64(9)		1	0.125	2300	1.00									92Ro12
2486.3(10)														
2494.5(1)														
2521.7(1)		1	0.081	1500	0.65									92Ro12
2534(4)														
2558.9(1)	4^+													
2568.1(1)	3^+,4^+	1	0.125	2350	1.00									92Ro12
2589.99(5)	3^-,4^-	2	0.016	55	0.13									92Ro12
2643.1(2)	3^-,4^-	$\langle 2\rangle$	0.008	27	0.067									92Ro12
2662.7(1)		1	0.003	48	0.025									92Ro12
2694.6(1)														
2705.24(6)	3^+													
2714.09(9)		1	0.209	4120	1.67									92Ro12
2733(8)	2^+	1	0.04											00Wu08
2760(8)		1	0.004	55	0.032									92Ro12
2783.0(1)	3^-,4^-	0	0.015	430	0.12									92Ro12
2815(6)	1^+	1	0.028	460	0.22									92Ro12
2833.9(2)		$\langle 1\rangle$	0.004	59	0.029									92Ro12
2856.0(1)	2–4													
2863.34(7)	2^+	1	0.271	5090	2.17									92Ro12
2890.6(2)		1	0.028	460	0.22									92Ro12
2940.2(1)	3^-,4^-	0	0.004	93	0.031									92Ro12
2956.7(1)														
2979.67(8)	3^+,4^+	1	0.131	2380	1.05									92Ro12
3002.4(2)														
3017.06(7)	1^+–4^+										0.34(10)			85Aj03

(continued) **$^{46}_{21}$Sc**

E^* [keV]	J^π	L (d,p)	S_{dp}	σ (d,p) μb/sr	C^2S' (d,p)	L (d,τ)	$S_{d\tau}$	S_N (t,d)	σ (t,d) μb/sr	I_d (α,d)	σ (t,τ) *rel.*	σ (d,α) μb/sr	$T_{1/2}$ or Γ_{cm}	Ref.
3032.0(1)		1	0.054	1210	0.43									92Ro12
3056.9(2)		1	0.079	1780	0.63									92Ro12
3081.6(2)														
3094.66(9)	3^+,4^+	1	0.056	1010	0.45									92Ro12
3116(15)	1^+										0.31(8)			85Aj03
3136.32(9)	3^-,4^-	⟨0⟩	0.005	240	0.039									92Ro12
3176.5(1)	4^+	1	0.051	1550	0.41					113				92Ro12
3191.8(1)	2^-,3^+									incl				
3204.9(1)										incl				
3229.8(2)														
3242(5)	0^+,1^+	1	0.75	1300	0.60									92Ro12
3260.4(2)														
3278.8(1)	2^+,3^+			22										92Ro12
3314.10(7)	4^+													
3338(11)		1	0.040	670	0.32									92Ro12
3381.5(1)	[1^+]										0.46(7)			85Aj03
3396.7(1)	2^+,3^+	1	0.065	1140	0.52									92Ro12
3414.3(1)	2^+–4^+													
3424.54(8)	3^+	1	0.065	0.94	0.52									92Ro12
3443.3(1)	2^+–4^+	1	0.069	1200	0.55									92Ro12
3474.22(8)	3^+–4^+	1	0.030	590	0.24									92Ro12
3493.24(7)	2^+													
3512(6)	[1^+]	1	0.031	550	0.25						0.61(12)			92Ro12
3550.3(1)	2^+–4^+	1	0.081	1570	0.65					100				92Ro12
3597.1(1)	2^+–4^+			30						incl				
3605.3(3)		1		1770	0.72									92Ro12
3620.4(2)		1	0.090											00Wu08
3632.0(1)	2^+–5^+													
3654.8(2)		1	0.018	310	0.14									92Ro12
3675.47(8)	2^+–4^+													
3707.4(2)	3^+,4^+	1	0.026	430	0.21									92Ro12
3721.4(2)		⟨1⟩	0.005	79	0.038									92Ro12
3766.70(9)	3^+	1	0.103	1790	0.82					300				92Ro12
3785.36(8)	4^+	1	0.025	440	0.20					incl				92Ro12
3813.8(2)		1	0.028	500	0.22					incl				92Ro12
3841.1(1)	3^+,4^+	1	0.005	100	0.042									92Ro12
3868.6(1)														
3876.6(1)	3^+,4^+	1	0.036	640	0.29									92Ro12
3937.3(1)		1	0.018	310	0.14									92Ro12
3945.3(4)														
3961(6)		1	0.093	78	0.074									92Ro12
3983(6)		1	0.013	10	0.10									92Ro12
4008(6)		1	0.020	400	0.16									92Ro12
4040(1)		1	0.004	150	0.04									92Ro12
4075(1)		⟨1⟩	0.004	110	0.04									92Ro12

(continued) **$^{46}_{21}$Sc**

E^* [keV]	J^π	L (d,p)	S_{dp}	σ (d,p) μb/sr	C^2S' (d,p)	L (d,τ)	$S_{d\tau}$	S_N (t,d)	σ (t,d) μb/sr	I_d (α,d)	σ (t,τ) *rel.*	σ (d,α) μb/sr	$T_{1/2}$ or Γ_{cm}	Ref.
4081.1(2)		⟨1⟩	0.039	1410	0.31									92Ro12
4103.8(3)				530										92Ro12
4131.9(1)														
4142.6(1)		2	0.065	290	0.52									92Ro12
4186(7)	0^+,1^+			400										92Ro12
4200(7)														
4229(7)		3	0.194	210	1.55									92Ro12
4249(7)														
4261.5(1)														
4294.6(1)		1	0.019	280	0.15									92Ro12
4319.1(2)		1	0.021	250	0.17									92Ro12
4330(7)				490										92Ro12
4350(7)		3	0.016											00Wu08
4362(10)		1	0.032	210	0.13									92Ro12
4383.1(1)		1	0.101	1840	0.81									92Ro12
4399(7)														
4414(10)														
4432.8(2)														
4447.8(2)														
4467.1(2)		1	0.054	1060	0.43									92Ro12
4498(7)		1	0.046	960	0.37									92Ro12
4522.7(1)		1	0.034	810	0.27									92Ro12
4528.5(1)														
4560(7)		1	0.026	640	0.21									92Ro12
4575(7)														
4587.2(1)				1100										92Ro12
4606.4(1)		1	0.038	820	0.30									92Ro12
4649(7)		1	0.030	180	0.24									92Ro12
4666(7)		1	0.033	520	0.26									92Ro12
4694.6(1)		1	0.065	1020	0.52									92Ro12
4701.0(1)														
4719.6(2)														
4732(7)														
4754.3(1)		1	0.044	1190	0.35									92Ro12
4761.1(1)					0.06									92Ro12
4776(7)	1^+	1	0.008											92Ro12
4787.3(1)	0^+,1^+													
4794(7)	3^-,4^-	0	0.019	580	0.15					150				92Ro12
4818(7)				380						incl				92Ro12
4846(7)		1	0.096	2020	0.77									92Ro12
4873.4(5)														
4882.6(1)														
4896(7)		1	0.081	1171	0.65									92Ro12
4927(7)		2	0.105	500	0.84									92Ro12
4961.4(1)				700	0.25									92Ro12

(continued) **$^{46}_{21}$Sc**

E^* [keV]	J^π	L (d,p)	S_{dp}	σ (d,p) μb/sr	C^2S' (d,p)	L (d,τ)	$S_{d\tau}$	S_N (t,d)	σ (t,d) μb/sr	I_d (α,d)	σ (t,τ) *rel.*	σ (d,α) μb/sr	$T_{1/2}$ or Γ_{cm}	Ref.
4972(7)		1	0.031											00Wu08
5010(7)		1	0.035	810	0.28									92Ro12
5022(5)	0^+													
5049(1)		1	0.014	360	0.11									92Ro12
5061(8)														
5093(1)		1	0.045	1010	0.36									92Ro12
		+3	0.828		6.62									92Ro12
5113(8)		1	0.040	890	0.32									92Ro12
5135(8)														
5149(8)	3^-,4^-	0	0.023	970	0.18									92Ro12
5165(8)		1	0.046	1020	0.37									92Ro12
5192(8)														
5207(8)		1	0.091											00Wu08
5235(8)														
5250(8)		3	0.075	220	0.60									92Ro12
5272(8)														
5301.8(1)				940										92Ro12
5327(8)														
5346.2(1)	3^-,4^-	0	0.016	670	0.13									92Ro12
5364(8)				339										92Ro12
5376(8)														
5388(8)														
5404(8)		1	0.086	1450	0.69									92Ro12
5427(12)		1	0.038	1000	0.30									92Ro12
5445(8)		1	0.014	240	0.11									92Ro12
5465(8)				400										
5491(12)		$\langle 3 \rangle$	0.065	120	0.52					125				92Ro12
5514(8)		1	0.038	620	0.30					incl				92Ro12
5541.5(4)										incl				
5563(8)	3^-,4^-	0	0.015	670	0.12									92Ro12
5595(8)		1	0.028	620	0.22									92Ro12
5620(8)		1	0.039	710	0.31									92Ro12
5644(12)														
5659(8)		1	0.045	990	0.36									92Ro12
5694(8)				1700										92Ro12
5727(8)				940										92Ro12
5753(8)		3	0.123	490	0.98									92Ro12
5772(8)		1	0.016	460	0.13									92Ro12
5796(8)														
5814(8)		1	0.031	880	0.25									92Ro12
5837(8)		1	0.033	980	0.26									92Ro12
5878(8)		1	0.023	570	0.18									92Ro12
5908(8)				180										92Ro12
5928(8)		1	0.020	630	0.16									92Ro12
5955(8)				230										92Ro12

(continued) **$^{46}_{21}$Sc**

E^*	J^π	L	S_{dp}	σ (d,p)	C^2S'	L	$S_{d\tau}$	S_N	σ (t,d)	I_d	σ (t,τ)	σ (d,α)	$T_{1/2}$ or	Ref.
[keV]		(d,p)		μb/sr	(d,p)	(d,τ)		(t,d)	μb/sr	(α,d)	*rel.*	μb/sr	Γ_{cm}	
5979(8)		$\langle 1\rangle$	0.013	340	0.10									92Ro12
6004(12)		1	0.033	880	0.26									92Ro12
6037(14)		1	0.016	360	0.13									92Ro12
		+3	0.218		1.74									92Ro12
6061(14)		1	0.021	520	0.17									92Ro12
6083(14)		1	0.016	510	0.13									92Ro12
6110(14)		1	0.014	390	0.11									92Ro12
6134(14)														
6145(14)		1	0.025	500	0.20									92Ro12
6159(14)		1	0.026	900	0.21									92Ro12
6191(14)		3	0.323	760	2.58									92Ro12
6230(30)										413				94Fi01
6253(14)				120										92Ro12
6276(14)		1	0.025	680	0.20									92Ro12
6295(14)		3	0.149	350	1.19									92Ro12
6327(14)				350										92Ro12
6362(14)		1	0.014	290	0.11									92Ro12
6380(14)		1	0.008	170	0.063									92Ro12
6405(14)		3	0.180	360	1.44									92Ro12
6429(14)		1	0.015	210	0.12									92Ro12
6454(14)		1	0.009	220	0.073									92Ro12
6469(14)		1	0.018	440	0.14									92Ro12
6482(14)				210										92Ro12
6497(14)		1	0.008	140	0.064									92Ro12
6525(14)		1	0.011	220	0.085									92Ro12
6549(14)		1	0.011	420	0.089									92Ro12
6568(14)				120										92Ro12
6593(14)				150										92Ro12
6612(14)		1	0.018	540	0.14									92Ro12
6650(14)		1	0.018	490	0.14									92Ro12
6682(14)														
6698(14)														
6728(14)				360										92Ro12
6762(14)				250										92Ro12
6810(14)														
6853(14)														
6874(14)														

(continued) **$^{46}_{21}$Sc**

E^*	J^π	L	S_{dp}	σ (d,p)	C^2S'	L	$S_{d\tau}$	S_N	σ (t,d)	I_d	σ (t,τ)	σ (d,α)	$T_{1/2}$ or	Ref.
[keV]		(d,p)		μb/sr	(d,p)	(d,τ)		(t,d)	μb/sr	(α,d)	*rel.*	μb/sr	Γ_{cm}	
			00Wu08	92Ro12				76Bi02		94Fi01	85Aj03	93Cr04		Ref.
					92Ro12		70Le01		76Bi02					Ref.

Additional data on this isotope can be found in [77Cl01, 72Gu10, 66Ra18].

Relative intensity of the (τ,p) reaction I_p and performed in [70Sc22] comparison with data from (d,p) reaction can be found in Supplement.

Values S_{dp} are calculated [00Wu08] from $(2J+1)S$ and σ (d,p) (in μb/sr) given in [92Ro12] with inclusion of data from [66Ra18]. Many levels without stripping patterns were identified [92Ro12, 00Wu08].

For two-nucleon transfer (α,d) reaction approximate values of the deuteron yield I_d in units counts per channel are from [94Fi01].

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

Energy levels and branching ratios [00Wu08]. Part 2 **$^{46}_{21}$Sc**

E^*	J^π	L	I_p	$G_{\ell j}$	Ref.	Branching ratios in percentage									
					E_f^*:	0.0	52.0	143	228	281	289	444	585	627.4	774.0
[keV]		(τ,p)	(τ,p)	(d,p)	J_f^π:	4^+	6^+	1^-	3^+	5^+	2^-	2^+	3^-	4^-	5^+
0.0	4^+		1	0.58	70Le01										
					70Le01										
52.011(1)	6^+		1	1.33	70Le01	100									
142.53(1)	1^-				66Ra18	100									
227.77(1)	3^+	≥2	1	0.62	70Le01	100									
					70Le01										
280.70(1)	5^+		3	0.10	70Le01	6(1)	94(1)								
					92Ro12										
289.54(1)	2^-		incl	incl	70Le01			99.5(1)	0.5(1)						
444.14(1)	2^+	≥2	4	0.31	70Le01			0.09(2)	99.91						
					70Le01										
584.78(1)	3^-				66Ra18	32(1)		1.3(3)	0.5(1)		66(1)				
627.43(2)	4^-				66Ra18	92(1)			8.2(5)						
774.02(2)	5^+		1	0.61	70Le01	55(1)	45(1)			x					
835.09(2)	4^+			0.32	92Ro12	16(1)				84(1)					
978(2)	7^+		0	0.50	93Cr04										
991.33(4)	1^+				85Aj03							100			
1006(6)					92Ro12										
1088.59(2)	4^+			0.03	76Bi02	2.5(4)			36(1)	57(1)					4.9(7)
1121(12)															
1124.23(3)	4^-				92Ro12					15(1)			83(1)	2(1)	
1142(4)	3^-,4^-			0.03	92Ro12										
1270.46(3)	4^-				92Ro12	41(1)							21.2(10)	38(1)	
1289(12)															
1298(5)															

(continued) **$^{46}_{21}$Sc**

E^*	J^π	L	I_p	$G_{\ell j}$	Ref.	Branching ratios in percentage									
						E_f^*:	0.0	52.0	143	228	281	289	444	585	627.4	774.0
[keV]		(τ,p)	(τ,p)	(d,p)		J_f^π:	4^+	6^+	1^-	3^+	5^+	2^-	2^+	3^-	4^-	5^+
1321.12(3)	3^+			0.04	92Ro12		x									
1394.18(4)	2^+		2	0.06	92Ro12				x	79(1)						
1427.90(4)	3^+,4^+				92Ro12				100							
1429(4)	2^-															
1438(4)	3^-,4^-				92Ro12											
1526.74(5)	2^-–4^+				92Ro12								51(2)	x	49(2)	
1642.68(3)	4^-		8		92Ro12									56.3(9)	43.7(9)	
1676(4)				0.03	92Ro12											
1692.2(3)	3^-				92Ro12										100	
1707.83(5)	2^-				92Ro12		21(4)							71(4)		
1752(4)	2^+–6^+				92Ro12											
1763.2(1)	2^+–4^+				92Ro12		100									
1799.44(7)	2^+,3^+				92Ro12		33(2)					x				
1825(4)																
1852(2)	1^+	0	19	0.01	92Ro12											
1886.06(8)	3^+				92Ro12		49(3)			51(3)						
1919.88(4)	3^+													100		
1921.10(5)				0.02						94(1)						
2043.45(4)	3^-								63(1)			35(1)			2.3(8)	
2062.25(5)	$\langle 4\rangle^-$			0.02	92Ro12											x
2070.31(9)	$\langle 3\rangle^+$			0.10	92Ro12											
2084.5(1)											100					
2114.13(7)	3,4						100									
2119.30(6)	3^+,4^+		9	0.17	92Ro12							100				
2184.9(10)																
2203.14(6)	3^-									17(3)		14(2)		58(8)		
2210(4)					92Ro12											
2221.7(1)	2^+				92Ro12							17(5)	83(5)			
2252.8(1)									100							
2291.8(2)							54(4)								46(4)	
2302.6(1)	2^+,3^+		15	0.06	92Ro12											
2330.2(2)				0.80	76Bi02			100								
2366.7(2)			20	0.01	92Ro12											100
2375.3(2)											100					
2395.97(9)									17(5)			83(5)				
2410.45(4)	3^+			0.06	92Ro12		19(2)				10(1)					
2431.2(2)	4^+,5^+							36(1)		64(1)						
2442.30(4)	3^+						9(2)							51.3(12)	35.8(10)	3.7(8)
2451.1(1)											43(4)					
2459.64(9)				0.18	92Ro12				29(3)		36(3)					
2486.3(10)																
2494.5(1)																
2521.7(1)				0.11	92Ro12											
2534(4)																
2558.9(1)	4^+									100						

(continued)

$^{46}_{21}$Sc

E^*	J^π	L	I_p	$G_{\ell j}$	Ref.	Branching ratios in percentage									
						E_f^*:	0.0	52.0	143	228	281	289	444	585	627.4	774.0
[keV]		(τ,p)	(τ,p)	(d,p)		J_f^π:	4^+	6^+	1^-	3^+	5^+	2^-	2^+	3^-	4^-	5^+
2568.1(1)	3^+,4^+			0.16	92Ro12						43(8)				41(10)	
2589.99(5)	3^-,4^-		3		92Ro12								9(5)	65(3)	9.5(11)	
2643.1(2)	3^-,4^-				92Ro12		100									
2662.7(1)			21		92Ro12		100									
2694.6(1)									56(8)							44(8)
2705.24(6)	3^+									46(2)						
2714.09(9)					92Ro12								46(7)			
2733(8)	2^+				00Wu08											
2760(8)					92Ro12											
2783.0(1)	3^-,4^-				92Ro12						100					
2815(6)	1^+				92Ro12											
2833.9(2)					92Ro12								100			
2856.0(1)	2–4									77(3)						
2863.34(7)	2^+	0	66	0.31	92Ro12					88(4)			12(4)			
2890.6(2)			incl	0.04	92Ro12							100				
2940.2(1)	3^-,4^-				92Ro12				100							
2956.7(1)												100				
2979.67(8)	3^+,4^+		44		92Ro12								17(9)		83(9)	
3002.4(2)											100					
3017.06(7)	1^+–4^+				85Aj03					24(3)			13(5)			63(5)
3032.0(1)					92Ro12											
3056.9(2)					92Ro12								35(13)			
3081.6(2)														100		
3094.66(9)	3^+,4^+				92Ro12							42(3)				
3116(15)	1^+				85Aj03											
3136.32(9)	3^-,4^-				92Ro12		9(2)			21(4)						54(5)
3176.5(1)	4^+				92Ro12						67(9)				21(10)	
3191.8(1)	2^-,3^+									53(10)					21(13)	
3204.9(1)													15(3)			
3229.8(2)										59(18)						
3242(5)	0^+,1^+	0	45		92Ro12											
3260.4(2)									100							
3278.8(1)	2^+,3^+				92Ro12								33(4)	52(4)	15(3)	
3314.10(7)	4^+							29(5)								
3338(11)					92Ro12											
3381.5(1)	[1^+]				85Aj03			100								
3396.7(1)	2^+,3^+		23		92Ro12		83(5)								17(5)	
3414.3(1)	2^+–4^+									18(5)		37(5)				
3424.54(8)	3^+				92Ro12			8(4)	34(11)				12(5)	23(6)		
3443.3(1)	2^+–4^+				92Ro12		100									
3474.22(8)	3^+–4^+				92Ro12										23(7)	
3493.24(7)	2^+									36(2)			21(3)			
3512(6)	[1^+]				92Ro12											
3550.3(1)	2^+–4^+				92Ro12								38(5)			
3597.1(1)	2^+–4^+						53(3)						20(2)		17(4)	

(continued)

$^{46}_{21}$Sc

E^*	J^π	L	I_p	$G_{\ell j}$	Ref.	Branching ratios in percentage									
						E_f^*:	0.0	52.0	143	228	281	289	444	585	627.4	774.0
[keV]		(τ,p)	(τ,p)	(d,p)		J_f^π:	4^+	6^+	1^-	3^+	5^+	2^-	2^+	3^-	4^-	5^+
3605.3(3)					92Ro12		52(9)	29(8)								
3620.4(2)					00Wu08				59(12)							
3632.0(1)	2^+–5^+										100					
3654.8(2)					92Ro12										72(12)	
3675.47(8)	2^+–4^+							100								
3707.4(2)	3^+,4^+				92Ro12							56(17)			44(2)	
3721.4(2)					92Ro12		100									
3766.70(9)	3^+				92Ro12								23(1)			
3785.36(8)	4^+				92Ro12					8(1)	5(3)	7(3)		7(2)		60(3)
3813.8(2)					92Ro12							53(9)				
3841.1(1)	3^+,4^+		12		92Ro12										48(12)	52(12)
3868.6(1)							18(3)			25(4)		10(3)	24(5)		13(6)	
3876.6(1)	3^+,4^+				92Ro12								38(5)		21(8)	30(5)
3937.3(1)					92Ro12										95(2)	
3945.3(4)										100						
3961(6)					92Ro12											
3983(6)			30		92Ro12											
4008(6)			incl		92Ro12											
4040(1)					92Ro12						3(1)	18(2)				
4075(1)					92Ro12				100							
4081.1(2)					92Ro12											
4103.8(3)					92Ro12			100								
4131.9(1)																
4142.6(1)					92Ro12						38(5)					
4186(7)	0^+,1^+	0	64		92Ro12											
4200(7)																
4229(7)			22		92Ro12											
4249(7)																
4261.5(1)																
4294.6(1)					92Ro12						27(8)					
4319.1(2)			16		92Ro12			22.5(10)								36(8)
4330(7)					92Ro12											
4350(7)					00Wu08											
4362(10)					92Ro12											
4383.1(1)					92Ro12							34(5)	12(3)			
4399(7)																
4414(10)																
4432.8(2)							10(5)									
4447.8(2)											100					
4467.1(2)					92Ro12										44(5)	35(4)
4498(7)					92Ro12											
4522.7(1)					92Ro12		17(2)									
4528.5(1)													35(6)			
4560(7)					92Ro12											
4575(7)																

(continued)

$^{46}_{21}$Sc

E^*	J^π	L	I_p	$G_{\ell j}$	Ref.	Branching ratios in percentage									
						E_f^*:	0.0	52.0	143	228	281	289	444	585	627.4	774.0
[keV]		(τ,p)	(τ,p)	(d,p)		J_f^π:	4^+	6^+	1^-	3^+	5^+	2^-	2^+	3^-	4^-	5^+
4587.2(1)					92Ro12		4(2)	20(2)					5(3)			25(2)
4606.4(1)			23		92Ro12		11(3)							70(4)		
4649(7)					92Ro12											
4666(7)			33		92Ro12											
4694.6(1)			incl		92Ro12				13(4)					61(5)		
4701.0(1)							10(3)									
4719.6(2)								44(10)						56(10)		
4732(7)																
4754.3(1)					92Ro12					39(4)						
4761.1(1)					92Ro12											
4776(7)	1^+	0	41		92Ro12											
4787.3(1)	0^+,1^+						7(2)									
4794(7)	3^-,4^-				92Ro12											
4818(7)					92Ro12											
4846(7)			13		92Ro12											
4873.4(5)							20(7)					18(8)				
4882.6(1)																
4896(7)			30		92Ro12											
4927(7)			16		92Ro12											
4961.4(1)			incl		92Ro12											
4972(7)			incl		00Wu08											
5010(7)					92Ro12											
5022(5)	0^+	0	100													
5049(1)			incl		92Ro12											
5061(8)																
5093(1)					92Ro12		9(2)									
					92Ro12											
5113(8)					92Ro12											
5135(8)																
5149(8)	3^-,4^-				92Ro12											
5165(8)					92Ro12											
5192(8)																
5207(8)					00Wu08											
5235(8)																
5250(8)					92Ro12											
5272(8)																
5301.8(1)					92Ro12						3(2)				12(3)	
5327(8)																
5346.2(1)	3^-,4^-				92Ro12				14(4)	11(4)						5(3)
5364(8)					92Ro12											
5376(8)																
5388(8)																
5404(8)					92Ro12											
5427(12)					92Ro12											
5445(8)					92Ro12											

(continued) **$^{46}_{21}$Sc**

E^*	J^π	L	I_p	$G_{\ell j}$	Ref.	Branching ratios in percentage									
						E_f^*:	0.0	52.0	143	228	281	289	444	585	627.4	774.0
[keV]		(τ,p)	(τ,p)	(d,p)		J_f^π:	4^+	6^+	1^-	3^+	5^+	2^-	2^+	3^-	4^-	5^+
5465(8)																
5491(12)					92Ro12											
5514(8)					92Ro12											
5541.5(4)																
5563(8)	3^-,4^-				92Ro12											
5595(8)					92Ro12											
5620(8)					92Ro12											
5644(12)																
5659(8)					92Ro12											
5694(8)					92Ro12											
5727(8)					92Ro12											
5753(8)					92Ro12											
5772(8)					92Ro12											
5796(8)																
5814(8)					92Ro12											
5837(8)					92Ro12											
5878(8)					92Ro12											
5908(8)					92Ro12											
5928(8)					92Ro12											
5955(8)					92Ro12											
5979(8)					92Ro12											
6004(12)					92Ro12											
6037(14)					92Ro12											
					92Ro12											
6061(14)					92Ro12											
6083(14)					92Ro12											
6110(14)					92Ro12											
6134(14)																
6145(14)					92Ro12											
6159(14)					92Ro12											
6191(14)					92Ro12											
6230(30)					94Fi01											
6253(14)					92Ro12											
6276(14)					92Ro12											
6295(14)					92Ro12											
6327(14)					92Ro12											
6362(14)					92Ro12											
6380(14)					92Ro12											
6405(14)					92Ro12											
6429(14)					92Ro12											
6454(14)					92Ro12											
6469(14)					92Ro12											
6482(14)					92Ro12											
6497(14)					92Ro12											
6525(14)					92Ro12											

(continued) **$^{46}_{21}$Sc**

E^*	J^π	L	I_p	$G_{\ell j}$	Ref.	Branching ratios in percentage									
						E_f^*:	0.0	52.0	143	228	281	289	444	585	627.4	774.0
[keV]		(τ,p)	(τ,p)	(d,p)		J_f^π:	4^+	6^+	1^-	3^+	5^+	2^-	2^+	3^-	4^-	5^+
6549(14)					92Ro12											
6568(14)					92Ro12											
6593(14)					92Ro12											
6612(14)					92Ro12											
6650(14)					92Ro12											
6682(14)																
6698(14)																
6728(14)					92Ro12											
6762(14)					92Ro12											
6810(14)																
6853(14)																
6874(14)																
			70Sc22		Ref.											
					Ref.											

Energy levels and branching ratios [00Wu08]. Part 3 **$^{46}_{21}$Sc**

E^*	J^π	Branching ratios in percentage										
	E_f^*:	835.1	991.3	1088.6	1124.2	1270.5	1321.1	1394.2	1427.9	1429	1526.7	
[keV]	J_f^π:	4^+	1^+	4^+	4^-	4^-	3^+	2^+		2^-		
1321.12(3)	3^+	100										
1394.18(4)	2^+		20.8(13)									
1642.68(3)	4^-				x							
1707.83(5)	2^-					8.1(17)						
1799.44(7)	2^+,3^+			67(2)			x					
1919.88(4)	3^+		x									
1921.10(5)							6.2(9)					
2062.25(5)	$\langle 4\rangle^-$	100										
2070.31(9)	$\langle 3\rangle^+$	46(3)					54(3)					
2203.14(6)	3^-						11(2)					
2221.7(1)	2^+			x								
2410.45(4)	3^+	46(2)		24(1)								
2451.1(1)				57(4)								
2459.64(9)								35(3)				
2494.5(1)				100								
2568.1(1)	3^+,4^+						16(5)					
2589.99(5)	3^-,4^-						x		16.5(12)			
2705.24(6)	3^+	54(2)										
2714.09(9)		12(4)										
2856.0(1)	2–4	23(3)										
3032.0(1)		100										
3094.66(9)	3^+,4^+	16(4)			42(3)							

(continued) **$^{46}_{21}$Sc**

E^*	J^π					Branching ratios in percentage						
		E_f^*:	835.1	991.3	1088.6	1124.2	1270.5	1321.1	1394.2	1427.9	1429	1526.7
[keV]		J_f^π:	4^+	1^+	4^+	4^-	4^-	3^+	2^+		2^-	
3136.32(9)	3^-,4^-		16(2)									
3176.5(1)	4^+											12(5)
3191.8(1)	2^-,3^+			26(7)								
3204.9(1)				27(3)								
3229.8(2)					41(2)							
3414.3(1)	2^+–4^+		45(7)									
3474.22(8)	3^+–4^+							36(4)	41(5)			
3493.24(7)	2^+				28(2)							15(1)
3550.3(1)	2^+–4^+		62(5)									
3620.4(2)					41(12)							
3654.8(2)			28(12)									
3766.70(9)	3^+				31(6)							
3785.36(8)	4^+				13(2)							
3868.6(1)					10(4)							
3876.6(1)	3^+,4^+						11(6)					
4040(1)					48(4)	10(4)						
4081.1(2)				32(4)								
4142.6(1)						31(8)						
4261.5(1)					7(3)		61(4)					
4294.6(1)				32(2)	40(12)							
4522.7(1)				11(3)								41(3)
4528.5(1)						26(6)						
4587.2(1)									26(3)		15(2)	
4606.4(1)				19(3)								
4694.6(1)						11(4)						
4701.0(1)								13(3)		16(1)		
4754.3(1)									61(4)			
4761.1(1)				8(4)		57(14)				34(2)		
4787.3(1)	0^+,1^+						33(6)					
4961.4(1)			17(6)									
5049(1)						42(7)						
5093(1)							91(2)					
5301.8(1)						19(7)			4(2)			
5346.2(1)	3^-,4^-			44(4)			26(3)					
5541.5(4)							100					

Energy levels and branching ratios [00Wu08]. Part 4 **$^{46}_{21}$Sc**

E^*	J^π	Branching ratios in percentage									
	E_f^*:	1642.7	1707.8	1799.4	1886.1	1921.1	2043.4	2062.2	2070.3	2084.5	2114.1
[keV]	J_f^π:	4^-	2^-	2^+,3^+	3^+,$\langle 2^+\rangle$		3^-,$\langle 2^-\rangle$	$\langle 4\rangle^-$	$\langle 3\rangle^+$		3,4,$\langle 2\rangle$
2521.7(1)							100				
2714.09(9)								42(6)			
3056.9(2)											65(13)
3204.9(1)									58(3)		
3314.10(7)	4^+							71(5)			
3605.3(3)										19(6)	
3766.70(9)	3^+		46(8)								
4081.1(2)			68(4)								
4261.5(1)						32(4)					
4319.1(2)									41(8)		
4383.1(1)		12(6)								42(8)	
4432.8(2)						90(5)					
4522.7(1)			31(3)								
4528.5(1)		39(7)									
4587.2(1)		5(3)									
4694.6(1)						15(5)					
4701.0(1)				31(5)							
4873.4(5)			62(9)								
4961.4(1)		37(19)			17(7)						

Energy levels and branching ratios [00Wu08]. Part 5 **$^{46}_{21}$Sc**

E^*	J^π	Branching ratios in percentage										
	E_f^*:	2119.3	2203.1	2221.7	2252.8	2330.2	2375.3	2431.17	2442.3	2494.5	2590.0
[keV]	J_f^π:	3^+,4^+	3^-	2^+				$\langle 4^+,5^+\rangle$	3^+		3^-,4^-
2833.9(2)									x		
3424.54(8)	3^+									23(4)	
3597.1(1)	2^+–4^+			10(3)							
3813.8(2)				47(9)							
4040(1)				21(2)							
4142.6(1)											31(4)
4467.1(2)								21(6)			
4787.3(1)	0^+,1^+		60(6)								
4882.6(1)							58(12)				
4961.4(1)				12(9)	17(7)						
5049(1)		58(7)									
5301.8(1)						7(3)		42(5)			

Energy levels and branching ratios [00Wu08]. Part 6 **$^{46}_{21}$Sc**

E^*	J^π			Branching ratios in percentage			
		E^*_f:	2783.0	3056.9	3191.8	3278.8	3620.4
[keV]		J^π_f:	3^-,4^-		$\langle 2^-,3^+\rangle$	2^+,3^+	
3937.3(1)				5(2)			
4701.0(1)					17(3)	12(2)	
4882.6(1)			42(12)				
5301.8(1)							13(2)

Energy levels and branching ratios [95Bu05]. **$^{47}_{21}$Sc**

E^*	$2J^\pi$	L	C^2S'	σ (τ,d)	C^2S	L	C^2S	L	C^2S	σ (α,p)	σ (^{16}O,^{15}N)	$T_{1/2}$ or	Ref.
[keV]			(τ,d)	μb/sr	(d,τ)		(d,τ)		(t,α)	μb/sr	μb/sr	Γ_{cm}	
0.0	7^-	3	7.3	1890	1.95	3	2.07	3	1.83	80	3500	3.3492(6) d	67Sc07
766.83(9)	$\langle 3\rangle^+$	2	0.39	240	3.93	2	3.54(30)	2	3.47	24		272(8) ns	71Oh02
807.89(8)	3^-	1	0.57	2040	0.24	1	0.23(10)	1	0.22	incl	740	15(4) ps	71Oh02
1123(12)													
1145(2)					≈0.2								71Oh02
1147.0(1)	11^-											3.2(11) ps	
1297.1(1)	5^-							$\langle 3\rangle$	≈0.04			62(21) fs	71Ba53
1316(3)													
1391.3(3)	1^+	0	0.09	550	1.90	0	1.71	0	1.73			9(3) ps	67Sc07
1404.4(3)	5^+											0.97(28) ps	
1639(12)													
1717(12)													
1745(20)													
1797.6(3)	$3,5^-,7^-$											0.21(6) ps	
1798(6)	1^+							0	0.02		310		71Ba53
1857.1(3)	$5^-,7^{\langle+\rangle}$											0.30(6) ps	
1878.2(7)	9^-											0.12(6) ps	
2002.3(3)	3^+					2	0.34	2	0.19			0.40(9) ps	79Do12
2148.2(5)												>2 ps	
2207.5(3)	$\langle 7^-\rangle$							3	0.17			0.08(4) ps	71Ba53
2232(5)	7^-												
2381.3(8)	5^+					2	0.60	2	0.34			<0.2 ps	79Do12
2408.6(16)	7^-,9											0.21(11) ps	
2410.3(10)													
2499.4(7)	7^-	3	0.62	310								<0.2 ps	67Sc07
2529.4(9)	1^+							0	0.06			<0.2 ps	71Ba53
2641.9(5)												0.3(1) ps	
2650(2)													
2810(2)	$1^-,3^-$	1	0.29	1800				1	0.06				67Sc07
2836(2)	$1^-,3^-$	1	0.10	650		1	≤0.1	$\langle 1\rangle$	0.03				67Sc07
2909(2)										40			70Gi10
2941(2)													

(continued) **$^{47}_{21}$Sc**

E^* [keV]	$2J^\pi$	L	C^2S' (τ,d)	σ (τ,d) μb/sr	C^2S (d,τ)	L	C^2S (d,τ)	L	C^2S (t,α)	σ (α,p) μb/sr	σ (^{16}O,^{15}N) μb/sr	$T_{1/2}$ or Γ_{cm}	Ref.
3070(7)													
3102(2)	X^-												
3135(8)	$X^{\langle-\rangle}$		small	<100									67Sc07
3205(2)	1^-,3^-	1	0.86	5990				1	0.04				67Sc07
3250(5)	7^-												
3256(3)	1^-,3^-	1	0.43	2740				1	0.10		470		67Sc07
3262(2)	1^-,3^-										incl		73Ko01
3290(2)													
3302.5(10)												0.07(3) ps	
3320										79			70Gi10
3413(2)	X^-												
3484(4)	$X^{\langle-\rangle}$												
3537(4)	7^-												
3576(2)													
3656(2)													
3728(2)													
3804(4)	3^+,5^+							2	0.14				71Ba53
3860(5)	1^+							0	0.07				71Ba53
3867.0(11)												0.21(6) ps	
3958(5)	3^+,5^+					2	0.72	2	0.17				67Hi09
4008(6)	X^-												
4019(2)								$\langle2\rangle$	0.4				86Bu04
4031(5)	5^-,7^-	3	1.0	550				$\langle3\rangle$	≈0.1				67Sc07
4085(2)	3^-	1	0.02	140				$\langle1\rangle$	0.03				67Sc07
4099(2)			small	<100									67Sc07
4111(3)													
4191(2)													
4257(3)													
4275(5)	1^-,3^-	1	0.07	620									67Sc07
4291(7)													
4355(2)	7^-												
4378(5)	1^-,3^-	1	0.03	270									67Sc07
4389(5)	3^+,5^+			<100		2	0.38						79Do12
4408(2)													
4475(2)													
4505(9)								$\langle1\rangle$	≈0.01				86Bu04
4515(5)	1^-,3^-	1	0.04	320									67Sc07
4553(2)	3^+,5^+							2	≈0.13				71Ba53
4609(2)	1^+	0	0.04	420									67Sc07
4617(3)	7^-							0	≈0.12				71Ba53
4631(2)	1^-,3^-	1	0.04	350		2	0.44						67Sc07
4690(2)													
4721(2)													
4753(7)													
4792(2)													

(continued) **$^{47}_{21}$Sc**

E^* [keV]	$2J^\pi$	L	C^2S' (τ,d)	σ (τ,d) μb/sr	C^2S (d,τ)	L	C^2S (d,τ)	L	C^2S (t,α)	σ (α,p) μb/sr	σ (^{16}O,^{15}N) μb/sr	$T_{1/2}$ or Γ_{cm}	Ref.
4802(2)													
4810(5)	7^-												
4817(5)	3^+,5^+	2	0.20	190									67Sc07
4831(2)													
4860(7)													
4908(10)	5^-,7^-	3	0.17	120									67Sc07
4956(2)													
4998(2)								$\langle 1\rangle$	≈0.07				86Bu04
5030(10)	1^-,3^-	1	0.09	760									67Sc07
5050(8)													
5108(6)													
5151(2)	X^-												
5252(3)													
5306(5)								$\langle 1\rangle$	≈0.01				86Bu04
5317(7)	7^-												
5319(10)	1^-,3^-	1	0.12	950									67Sc07
5361(5)													
5381(3)	7^-												
5415(10)	1^-,3^-	1	0.06	470									67Sc07
5473(5)													
5509(2)													
5525(10)	1^-,3^-	1	0.11	860									67Sc07
5542(6)													
5561(4)	7^-												
5571(7)	1^-,3^-	1	0.05	440				$\langle 1\rangle$	≈0.05				67Sc07
5600(2)													
5659(6)													
5685(4)													
5719(4)				<100									
5760(6)								$\langle 2\rangle$	≈0.23				86Bu04
5824(2)	1^-,3^-	1	0.08	710									67Sc07
5855(3)													
5893(4)	X^-												
5946(4)	3^+,5^+	2	0.19	290				$\langle 2\rangle$	≈0.09				86Bu04
5987(9)													
6010(6)	7^-												
6040(10)	3^+,5^+	2	0.18	240		2	0.45	$\langle 2\rangle$	≈0.29				67Sc07
6096(5)	7^-												
6133(9)													
6184(3)													
6223(5)													
6262(8)	7^-			320									
6339(3)													
6361(4)													
6383(2)													

(continued) **$^{47}_{21}$Sc**

E^* [keV]	$2J^\pi$	L	C^2S' (τ,d)	σ (τ,d) μb/sr	C^2S (d,τ)	L	C^2S (d,τ)	L	C^2S (t,α)	σ (α,p) μb/sr	σ (^{16}O,^{15}N) μb/sr	$T_{1/2}$ or Γ_{cm}	Ref.
6410(2)													
6441(6)													
6486(3)						2	0.21						79Do12
6523(5)	1^-,3^-	1	0.06	350									67Sc07
6546(5)													
6584(2)													
6621(8)													
6686(7)													
6724(2)													
6786(7)													
6801(4)													
6863(3)													
6876(6)													
6964(5)	3^+,5^+					2	$\leq$0.2						79Do12
7117(5)													
7427(6)													
7523(10)	1^-,3^-	1	0.08	600									67Sc07
7683(7)													
7807(5)													
8400	$\langle 7^- \rangle$												
10300(5)	$\langle 3^- \rangle$												
10302(5)	$\langle 3^- \rangle$												
10305(5)	$\langle 3^- \rangle$												
		67Sc07	67Sc07	67Sc07			79Do12		71Ba53	70Gi10	73Ko01		Ref.
					71Oh02								Ref.

Additional data on this isotope can be found in [82Ab03, 67Hi09].

Energy levels and branching ratios [95Bu05]. Part 2 **$^{47}_{21}$Sc**

E^*	$2J^\pi$		Branching ratios in percentage									
		E_f^*:	0.0	767	809	1147	1297	1391	1404	1798	1798	1878
[keV]		$2J_f^\pi$:	7^-	$\langle 3 \rangle^+$	3^-	11^-	5^-	1^+	5^+	$3,5^-,7^-$	1^+	9^-
766.83(9)	$\langle 3 \rangle^+$		100									
807.89(8)	3^-		100	0.09(1)								
1147.0(1)	11^-		100									
1297.1(1)	5^-		92	0.12(1)	8.1(5)							
1391.3(3)	1^+			14(4)	86(4)							
1404.4(3)	5^+		71(33)	21(2)	9(2)							
1797.6(3)	$3,5^-,7^-$				52(7)		48(7)					
1857.1(3)	$5^-,7^{\langle + \rangle}$		89(4)	9(4)					2.0(15)			
1878.2(7)	9^-		69(4)			31(4)	x					
2002.3(3)	3^+				58(8)		20(6)		22(6)			

(continued) **$^{47}_{21}$Sc**

E^*	$2J^\pi$	Branching ratios in percentage									
	E_f^*:	0.0	767	809	1147	1297	1391	1404	1798	1798	1878
[keV]	$2J_f^\pi$:	7^-	$\langle 3\rangle^+$	3^-	11^-	5^-	1^+	5^+	$3,5^-,7^-$	1^+	9^-
2148.2(5)					100						
2207.5(3)	$\langle 7^-\rangle$	40(10)		44(15)		9(6)					7(4)
2381.3(8)	5^+	38(10)	44(10)	18(12)							
2408.6(16)	$7^-,9$	76(5)			24(5)						
2410.3(10)			39(18)	61(18)							
2499.4(7)	7^-	27(5)				52(6)					21(5)
2529.4(9)	1^+		31(12)	69(12)							
2641.9(5)											<32
10300(5)	$\langle 3^-\rangle$	2	1	2		6	2	3		4	
10302(5)	$\langle 3^-\rangle$	15	1	4		2	8	1	6		
10305(5)	$\langle 3^-\rangle$	4	3	5		5	6	2		2	

Energy levels and branching ratios [95Bu05]. Part 3 **$^{47}_{21}$Sc**

E^*	$2J^\pi$	Branching ratios in percentage									
	E_f^*:	2002	2148	2207	2499	2529	2650	2810	2836	2909	2941
[keV]	$2J_f^\pi$:	3^+		$\langle 7^-\rangle$	7^-	1^+		$1^-,3^-$	$1^-,3^-$		
2641.9(5)			[100]								
3302.5(10)			100								
10300(5)	$\langle 3^-\rangle$	1		2				3	4	2	3
10302(5)	$\langle 3^-\rangle$	2		1	1	2	2	1	1	1	4
10305(5)	$\langle 3^-\rangle$	3		5	2	1	1	5	2	3	3

Energy levels and branching ratios [95Bu05]. Part 4 **$^{47}_{21}$Sc**

E^*	$2J^\pi$	Branching ratios in percentage									
	E_f^*:	3135	3205	3262	3290	3302.5	3576	3728	4019	4085	4099
[keV]	$2J_f^\pi$:	$X^{\langle -\rangle}$	$1^-,3^-$	$1^-,3^-$						3^-	
3867.0(11)						100					
10300(5)	$\langle 3^-\rangle$	5	2	1	2		3	2	2	2	1
10302(5)	$\langle 3^-\rangle$	2	2		1		1		2	1	1
10305(5)	$\langle 3^-\rangle$	2	1	3	1		2	1	2	2	1

Energy levels and branching ratios [95Bu05]. Part 5 **$^{47}_{21}$Sc**

E^*	$2J^\pi$		Branching ratios in percentage									
		E^*_f:	4408	4475	4553	4609	4631	4690	4721	4792	4802	4831
[keV]		$2J^\pi_f$:			$3^+,5^+$	1^+	$1^-,3^-$					
10300(5)	$\langle 3^- \rangle$			1	8	3		1	5			1
10302(5)	$\langle 3^- \rangle$		0	1		2	1	2	1	2	2	2
10305(5)	$\langle 3^- \rangle$		1	0	1	2	3	2		1	3	2

Energy levels and branching ratios [95Bu05]. Part 6 **$^{47}_{21}$Sc**

E^*	$2J^\pi$		Branching ratios in percentage							
		E^*_f:	4956	4998	5151	5509	5600	6383	6584	6724
[keV]		$2J^\pi_f$:			X^-					
10300(5)	$\langle 3^- \rangle$		3	3	2	2	3	4	3	5
10302(5)	$\langle 3^- \rangle$		1	9	3	2	3	3	1	1
10305(5)	$\langle 3^- \rangle$		3	2	3	2	4	3	1	2

Energy levels and branching ratios [93Bu04]. **$^{48}_{21}$Sc**

E^*	J^π	L	σ (τ,p)	σ (α,d)	L	σ (τ,t)	L	C^2S	L	I_α	σ (τ,α)	σ (α,d)	$T_{1/2}$ or	Ref.
[keV]		(τ,p)	*rel.*	μb/sr	(τ,t)	μb		(d,τ)	(d,α)	*rel.*	*rel.*	μb/sr	Γ_{cm}	
0.0	6^+		20	16	6	100	3	0.61	6	9.1		16	43.7(1) h	72Fl01
130.94(4)*	5^+		20	130	4,6	120	3	0.79	4	94.0				72Fl01
252.35(6)*	4^+		30	11	4	200	3	0.48	4	8.8		11		72Fl01
388(20)														
622.64(8)*	3^+	2	70	55	2,4	300	3	0.21	2	50.0				72Fl02
1096(2)*	7^+		40	500	6	130	3	0.18	6	144				72Fl01
1142.6(2)*	2^+	2	140	8	2	500	3	0.07		3.0		8		72Fl02
1401.70(16)	2^-				3	5	2	0.75	1	71.8				70Oh04
1432(15)														
1891.07(20)	3^-						0	0.61	$\langle 3 \rangle$	27.0				70Oh04
2064.1(5)	5^+		200											72Fl01
2103.6(3)	4^-				5	5	0	1.03	3					70Oh04
2165(2)	$4^-,5^-$						2	0.75	5					70Oh04
2190.46(21)	3^+													
2196(15)	$\langle 5^+ \rangle$				4,5,6	4						220		72Ri06
2202(15)	$\langle 2,3 \rangle^+$	2	950	220										72Fl02
2275.49(24)	2^+	2	450	40	$\langle 2 \rangle$	7						40		72Fl02
2310(7)												50		72Ri06
2390(20)	2^+													
2390.7(6)	3,4													
2517.3(4)*	1^+	0	250	20	0,2	400			0+2					72Fl02

(continued) **$^{48}_{21}$Sc**

E^* [keV]	J^π	L (τ,p)	σ (τ,p) *rel.*	σ (α,d) μb/sr	L (τ,t)	σ (τ,t) μb	L	C^2S (d,τ)	L (d,α)	I_α *rel.*	σ (τ,α) *rel.*	σ (α,d) μb/sr	$T_{1/2}$ or Γ_{cm}	Ref.
2560.2(5)	$\langle 3^- \rangle$						$\langle 0 \rangle$	$\langle 0.1 \rangle$						70Oh04
2619.6(6)	$\langle 4,5 \rangle$													
2626(2)														
2640.1(4)	$1,2^-$													
2670.3(3)	$1^-,2^-$													
2729.0(8)	$4^+,5^+$		130				3	0.31						72Fl01
2739(10)	2^-													
2783.3(4)	2^+													
2811.2(4)	1,2,3													
2891.3(4)	$2^-,3^-$				3	30			1					85Al14
2924.0(5)	2,3													
2973(3)														
2980.8(3)	1^+	0	1080	50	2,3,4	30			0		0.27(6)			72Fl02
3026.2(3)	$\langle 2,3 \rangle$													
3056.5(3)	1^+	0	1650	55	3,4,5	55			0+2		0.29(8)	55		72Fl02
3149.9(4)	1^+	0	950	40										72Fl02
3151(15)	$\langle 3^+ \rangle$	[0]	[130]		4	60						40		72Fl02
3216.1(6)	≤ 3											140		72Ri06
3219	$\langle 4^+ \rangle$			[140]	4	40								72Ri06
3258(6)														
3289(15)	$\langle 5^+ \rangle$			[50]								50		72Ri06
3295.6(6)	≤ 4													
3301.9(3)	≤ 3													
3327.8(4)	$\langle 4^- \rangle$				3,4,5	115								72Ri07
3353(10)														
3372(5)														
3392(4)									1					85Al14
3438(17)														
3480(4)	$3,4^+$				3,4	130								72Ri07
3496(5)	$2^-,1^-$													
3514(7)	$\langle 2,3 \rangle^+$	2												72Fl02
3568(5)														
3619(5)														
3650(10)					3,4,5	100								72Ri07
3671(4)						incl								
3690(5)												130		72Ri06
3711(4)	1^+	0	600	[130]							0.69(14)			85Aj03
3742(3)														
3776(4)									4					85Al14
3806(4)					1,2	90								72Ri07
3838(7)														
3879(8)														
3957(5)														
3974(5)														
3988(5)														

(continued) **$^{48}_{21}$Sc**

E^* [keV]	J^π	L (τ,p)	σ (τ,p) *rel.*	σ (α,d) μb/sr	L (τ,t)	σ (τ,t) μb	L (d,τ)	C^2S	L (d,α)	I_α *rel.*	σ (τ,α) *rel.*	σ (α,d) μb/sr	$T_{1/2}$ or Γ_{cm}	Ref.
4024(5)														
4064(4)		0	600											72Fl02
4091(5)														
4141(4)														
4174(11)	$\langle 3^+ \rangle$				2,4,5	25								
4175(15)	1^+	0	2700	60								60		72Fl02
4236(15)					1,2	150								85Aj03
4282(7)														
4322(20)	$1^+,0^+$	0	550											72Fl02
4396(8)														
4437(13)					1,2	45								72Ri07
4560(12)					2	40								72Ri07
4676(11)	1^+	0	850		6	22								72Fl02
4735(15)														
4778(15)	1^+	0	1000											72Fl02
4862(15)	$\langle 2,3 \rangle^+$	2	400											72Fl02
5016(13)	$\langle 2,3 \rangle^+$	2	300											72Fl02
5202(12)	$\langle 2,3 \rangle^+$	2	500		3,4	48								72Fl02
5333(12)	$\langle 2,3 \rangle^+$	2	800											72Fl02
5454(32)	1^+	0	350											72Fl02
5512(20)	$2^+,3^+$	2	450		2,3	26								72Fl02
5591(17)	$2^+,3^+$	2	450		2,3	40								72Fl02
5742(15)	1^+	0	900											72Fl02
5880					4	16								72Ri07
5975(25)														
5990					3	20								72Ri07
6187(25)														
6242(15)	$2^+,3^+$	2	800		2	35								72Fl02
6677(2)**	0^+	0	2100		6	500								72Fl02
6832(20)	1^+–3^+	2	500											72Fl02
6952(15)	1^+–3^+	2	900											72Fl02
≈7780														
≈10600														
13800(500)													2200(500) keV	
16810(50)	$\langle 1^+ \rangle$													
17800(1000)													6030(100) keV	
			72Fl02			85Al14	70Oh04			85Aj03		72Ri06		Ref.
			72Fl01			72Ri07								Ref.

Additional data on this isotope can be found in [80Ga04, 77Cl01, 69Br04].
* Member of $(f_{7/2})^2$ octuplet with $J^\pi=0^+$–7^+ and large peak cross section [72Ri07].
** T=4; Isobar-analog state (IAS) of ^{48}Ca ground state [80Ga04].
Peak cross section σ (τ,t) from [85Al14, 72Ri07], other data can be found in [80Ga04, 69Br04].
For the (τ,p) reaction the maximum observed cross section is given; $\Sigma\sigma$ can be found in [72Fl02].
Data for this isotope are considered in vol. LB I/18A.

Energy levels and branching ratios [93Bu04]. Part 2 **$^{48}_{21}$Sc**

E^*	J^π				Branching ratios in percentage					
		E_f^*:	0.0	130.9	252.3	622.6	1143	1402	1891	2190
[keV]		J_f^π:	6^+	5^+	4^+	3^+	2^+	2^-	3^-	3^+
130.94(4)*	5^+		100							
252.35(6)*	4^+			100						
622.64(8)*	3^+				100					
1142.6(2)*	2^+					100				
1401.70(16)	2^-					96(1)	4(1)			
1891.07(20)	3^-				51(1)	6(1)	7(1)	36(1)		
2064.1(5)	5^+		76(1)		24(1)					
2103.6(3)	4^-			26(1)	23(1)	51(2)				
2190.46(21)	3^+				78(1)	22(1)				
2275.49(24)	2^+					30(1)	70(1)			
2310(7)					100					
2390.7(6)	3,4				47(2)	53(3)				
2517.3(4)*	1^+						100			
2560.2(5)	$\langle 3^- \rangle$				42(6)		58(5)			
2619.6(6)	$\langle 4,5 \rangle$			56(2)	44(2)					
2640.1(4)	$1,2^-$							100		
2670.3(3)	$1^-,2^-$							100		
2729.0(8)	$4^+,5^+$				100					
2783.3(4)	2^+					7(4)		34(2)	59(1)	
2811.2(4)	1,2,3							100		
2891.3(4)	$2^-,3^-$					45(2)	55(2)			
2924.0(5)	2,3				37(1)	63(1)				
2980.8(3)	1^+						100			
3026.2(3)	$\langle 2,3 \rangle$					36(2)	10(2)	8(2)		46(3)
3056.5(3)	1^+						100			
3149.9(4)	1^+						100			
3295.6(6)	≤ 4						100			
3327.8(4)	$\langle 4^- \rangle$			15(1)	28(2)	35(2)	22(2)			

Energy levels and branching ratios [93Bu04]. Part 3 **$^{48}_{21}$Sc**

E^*	J^π			Branching ratios in percentage			
		E_f^*:	2517	2670	2811	2981	3056
[keV]		J_f^π:	1^+	$1^-,2^-$	1,2,3	1^+	1^+
3216.1(6)	≤ 3		100				
3301.9(3)	≤ 3			49(2)	x	28(2)	23(2)
6677(2)**	0^+		100				

Energy levels and branching ratios [95Bu23]. **$^{49}_{21}$Sc**

E^* [keV]	$2J^\pi$	L	C^2S' (τ,d)	σ (τ,d) μb/sr	σ (α,p) μb/sr	L	σ (^{16}O,^{15}N) μb/sr	L	C^2S (^{7}Li,^{6}He)	C^2S (d,τ)	σ (τ,d) μb/sr	S' (τ,d)	L (τ,d)	Ref.
0.0	7^-	3	6.72	980	88	4	4000	4	1.06	1.91(20)	1900	8.0	3	85Ha08
2228.1(3)	1^+	0	0.03	530	<3					1.40(10)	150	0.15		80Fo11
2371.3(3)	3^+	2	0.05	35	<3					3.62(20)	40	0.008		79Do12
3084.5(1)	3^-	1	2.08	24200	156	2	1050	2	0.54		14300	2.4	1	80Ke12
3300														
3516.2(5)	3^-			35	<6				weak					80Ke12
3550**	$\langle 3^+,5^+\rangle$									0.35				79Do12
3581(10)	7^-													
3755(8)**	$3^+,5^+$	2	0.01	11						0.30				80Fo11
3808.4(5)	7^-	3	0.53	230	<6				0.05		300	0.6	3	66Er02
3914.9	$\langle 9^-\rangle$			18	28						30			80Fo11
3951(10)														
3991.3(16)	1^+	0	0.02	430	<6					0.22	100			80Fo11
4046.0	$\langle 9^-\rangle$													01Br35
4072.07(10)	5^-	3	0.98	450	26				0.224		400	0.8	3	80Ke12
4192(10)	$\langle 11^-\rangle$													
4239.6				10										01Br35
4267(10)	$\langle 15^-\rangle$													
4285(8)	$\langle 5^+\rangle$			9										80Fo11
4333(8)	5^-	3	0.44	220	<9				0.080					80Ke12
4426(10)														
4459(10)														
4493.43(23)	1^-	1	1.04	14200	147	2	350		0.47		9600	1,1	1	73Ko01
4579(8)	$1^-,3^-$	1	0.02	280	23									80Fo11
4711(8)	$1^-,3^-$	1	0.01	140										80Fo11
4738.45(20)	5^-	3	0.70	470	9				0.143		300	0.4	3	80Ke12
4810(8)	$5^-,7^-$	3	0.03	13										80Fo11
4948(8)	$\langle 1^-,3^-\rangle$	$\langle 1\rangle$	0.001	16										80Fo11
4987(10)**	$\langle 3^+,5^+\rangle$									[0.43]				79Do12
5015(8)	$1^-,3^-$	1	0.19	2300	<6						2000	0.21	1	80Fo11
5022(10)	$\langle 1^+\rangle$	0	0.20											80Fo12
5030	3^-								0.040					80Ke12
5077(8)	5^-	3	1.99	1500	23				0.38		1000	1.4	3	80Ke12
5142(10)					96									83El08
5229(10)	$\langle 9^-,11^-\rangle$	$\langle 5\rangle$	0.006											80Fo12
5230(8)**	$3^+,5^+$	2	0.02	40						0.20				80Fo11
5269(10)														
5376.3(5)	5^-	3	0.81	600	<10				0.098		400	0.6	3	80Ke12
5438(8)				58										80Fo11
5460(10)														
5562(10)	$\langle 9^-,11^-\rangle$	5	0.21											80Fo12
5578(8)**	$3^+,5^+$	2	0.05	110						0.20				80Fo11
5632(10)	$\langle 17^+\rangle$													
5663(8)	3^-	1	0.39	5500	<10				0.056		4800	0.47	1	80Ke12
5735(10)	$\langle 15^-\rangle$													

(continued) **$^{49}_{21}$Sc**

E^* [keV]	$2J^\pi$	L	C^2S' (τ,d)	σ (τ,d) μb/sr	σ (α,p) μb/sr	L	σ (^{16}O,^{15}N) μb/sr	L	C^2S (^{7}Li,^{6}He)	C^2S (d,τ)	σ (τ,d) μb/sr	S' (τ,d)	L (τ,d)	Ref.
5815(8)	1^-	1	0.08	1200					0.041		1200	0.12	1	80Ke12
5845(8)				200										80Fo11
5930														
5979(10)														
6010.7(11)					27									83El08
6014(20)				150										80Fo11
6069(20)	$\langle 3^+,5^+\rangle$	$\langle 2\rangle$	0.02	38							70			80Fo11
6180(20)	$3^+,5^+$	2	0.08	200							200	0.01		80Fo11
6212(10)														
6250(20)	$\langle 7^+\rangle$			120										80Fo11
6266(20)				incl										80Fo11
6306(2)	5^-			80										80Fo11
6330(10)**										≤0.3				79Do12
6414.7(4)	7^-	3	0.14	250							200	0.6		80Fo11
6451(10)**										≤0.5				79Do12
6502.1(5)	3													
6527(20)*		1	0.03	710							500	0.05	1	80Fo11
		+4	0.20											80Fo11
6624(10)														
6685(20)														80Fo11
6728(2)	3^-	1	0.06	880							600	0.06	1	80Fo11
6745(10)														
6816(20)	$1^-,3^-$	1	0.13	2200							1700	0.17	1	80Fo11
6829(10)	$5^-,7^-$	3	0.20		24						incl			80Fo12
6867(10)														
6910(20)	$\langle 1^+\rangle$	$\langle 0\rangle$	0.02	280							1700	0.12	$\langle 0\rangle$	80Fo11
6917(10)														
6939(10)														
6984.8(4)	5^-	3	0.14	240										80Fo11
7026(20)	$1^-,3^-$	1	0.04	550							100			80Fo11
7041(10)											incl			
7059(20)	$7^+,9^+$	4	0.41	1800							incl			80Fo11
7063.1(5)	1^-	1	0.08											80Fo11
7151(20)	$5^-,7^-$			83										
7172(10)											1500	0.15		
7186(20)	$7^+,9^+$	$\langle 4\rangle$	0.01	61							incl			80Fo11
7193(2)	5													
7228.2(22)	5													
7253(20)	$1^-,3^-$	1	0.01	190										80Fo11
7293(10)**										0.42				79Do12
7320(20)	$1^-,3^-$	1	0.06	980										80Fo11
7342(20)	$5^-,7^-$	3	0.22	260										80Fo11
7375(20)	$5^-,7^-$	3	0.18	280										80Fo11
7421(20)	$5^-,7^-$	3	0.08	170										80Fo11
7442(20)	$1^-,3^-$	1	0.01	170										80Fo11

(continued) **$^{49}_{21}$Sc**

E^* [keV]	$2J^\pi$	L	C^2S' (τ,d)	σ (τ,d) μb/sr	σ (α,p) μb/sr	L	σ (^{16}O,^{15}N) μb/sr	L	C^2S (^{7}Li,^{6}He)	C^2S (d,τ)	σ (τ,d) μb/sr	S' (τ,d)	L (τ,d)	Ref.
7483(20)	5^-,7^-	3	0.14	270										80Fo11
7500(20)	1^-,3^-	1	0.03	440										80Fo11
7529(20)	$\langle 7^+,9^+\rangle$	$\langle 4\rangle$	0.09	90										80Fo11
7583(20)	$\langle 3^+,5^+\rangle$			80						0.29				79Do12
7653(20)	1^-,3^-	1	0.03	560										80Fo11
7678(20)	$\langle 7^+,9^+\rangle$	$\langle 4\rangle$	0.14	130										80Fo11
7723(20)	1^-,3^-	1	0.05	880										80Fo11
7746(20)	$\langle 7^+,9^+\rangle$	$\langle 4\rangle$	0.08	90										80Fo11
7795(20)	$\langle 7^+,9^+\rangle$	$\langle 4\rangle$	0.10	110										80Fo11
7832(20)	1^-,3^-	1	0.03	530										80Fo11
7890(20)	1^-,3^-	1	0.18	3200										80Fo11
7940(20)														
7998(20)	1^-,3^-	1	0.05											80Fo11
8029(20)														
8094(20)	1^-,3^-	1	0.08	1400										80Fo11
8147(20)	1^-,3^-	1	0.07	1300										80Fo11
8177(20)	$\langle 7^+,9^+\rangle$	4	0.07	110										80Fo11
8200(20)	1^-,3^-	1	0.02	270										80Fo11
8246(20)				90										
8289(20)	1^-,3^-	1	0.02	410										80Fo11
8330(20)	5^-,7^-	3	0.14	380										80Fo11
8355(20)	1^-,3^-	1	0.04	650										80Fo11
8434(20)	1^-,3^-	1	0.04	720										80Fo11
8465(20)	5^-,7^-	3	0.08	220										80Fo11
8625(20)				220										
8693(20)**	3^+,5^+	2	0.01	250						0.19				79Do12
8721(20)	1^-,3^-	1	0.02	270										80Fo11
8751(20)*		1	0.003											80Fo11
		+$\langle 4\rangle$	0.08	180										80Fo11
8781(20)	1^-,3^-	1	0.02	380										80Fo11
8813(20)	1^-,3^-	1	0.04	700										80Fo11
8848(20)	1^-,3^-	1	0.01	230										80Fo11
8900(20)	3^+,5^+	2	0.04	700										80Fo11
8929(20)	5^-,7^-	3	0.08	300										80Fo11
8971(20)	7^+,9^+	$\langle 4\rangle$	0.04											80Fo11
9008(20)	3^+,5^+	2	0.02	300										80Fo11
9066(20)	5^-,7^-	3	0.03	120										80Fo11
9117(20)**	3^+,5^+	2	0.02	400						0.19				79Do12
9145(20)	1^-,3^-	$\langle 1\rangle$	0.01	240										80Fo11
9185(20)	5^-,7^-	$\langle 3\rangle$	0.07	250										80Fo11
9218(20)														
9247(20)	1^-,3^-	1	0.05											80Fo11
9295(20)	1^-,3^-	1	0.04											80Fo11
9335(20)														
9385(20)	1^-,3^-	1	0.05	600										80Fo11

(continued) **$^{49}_{21}$Sc**

E^* [keV]	$2J^\pi$	L	C^2S' (τ,d)	σ (τ,d) μb/sr	σ (α,p) μb/sr	L	σ (^{16}O,^{15}N) μb/sr	L	C^2S (^{7}Li,^{6}He)	C^2S (d,τ)	σ (τ,d) μb/sr	S' (τ,d)	L (τ,d)	Ref.
9449(20)	5^-,7^-	3	0.11	370										80Fo11
9514(20)	5^-,7^-	3	0.08	280										80Fo11
9575(20)	1^-,3^-	1	0.02	310										80Fo11
9634(20)	1^-,3^-	1	0.05	700										80Fo11
9675(20)	1^-,3^-	1	0.03	540										80Fo11
9726(20)	1^-,3^-	1	0.08											80Fo11
9790(20)	1^-,3^-	1	0.03											80Fo11
9843(20)	1^-,3^-	1	0.09											80Fo11
9873(20)	1^-,3^-	1	0.04	810										80Fo11
9923(20)	1^-,3^-	1	0.08	1200										80Fo11
9956(20)	5^-,7^-	3	0.07	300										80Fo11
9991(20)	1^-,3^-	1	0.01	160										80Fo11
10059(20)	1^-,3^-	1	0.05	600										80Fo11
10155(20)	5^-,7^-	3	0.04	170										80Fo11
10212(20)*		1	0.02	520										80Fo11
		+⟨3⟩	0.07											80Fo11
10413(20)	1^-,3^-	1	0.13											80Fo11
10473(20)	1^-,3^-	1	0.07											80Fo11
10569														
10617(20)	1^-,3^-	1	0.07	960										80Fo11
10690(20)	1^-,3^-	1	0.07	840										80Fo11
10787(20)	1^-,3^-	⟨1⟩	0.10	1300										
10870(20)	1^-,3^-	⟨1⟩	0.06	780										
10957(20)	1^-,3^-		0.07	800										
11021(20)	1^-,3^-		0.04	450										
11030(20)	1^-,3^-		0.04	550										
11138(20)	1^-,3^-		0.06	690										
11271(20)	1^-,3^-		0.17	1900										
11425(20)	3^+,5^+	2	0.03	520										80Fo11
11510(20)		⟨3,4⟩	0.08	400										80Fo11
11525(4)	1^-													
11534(4)	1^+													
11536(3)	⟨3^-⟩													
11543(3)														
11546(3)	3^-													
11548(3)														
11550(3)	3^-	1												
11563.6(4)***	3^-	1	0.53	5600										80Fo11
11568(3)	⟨3^-⟩													
11577(3)	⟨3^-⟩													
11582(3)	⟨3^-⟩													
11665(20)	1^-,3^-	1	0.08											80Fo11
11735(20)														
11806(20)														
11911(20)	1^-,3^-	1	0.09	480										80Fo11

(continued) **$^{49}_{21}$Sc**

E^* [keV]	$2J^\pi$	L	C^2S' (τ,d)	σ (τ,d) μb/sr	σ (α,p) μb/sr	L	σ (^{16}O,^{15}N) μb/sr	L	C^2S (^{7}Li,^{6}He)	C^2S (d,τ)	σ (τ,d) μb/sr	S' (τ,d)	L (τ,d)	Ref.
11976(20)	1^-,3^-	1	0.05	290										80Fo11
12040(40)	1^-,3^-	1	0.07	480										80Fo11
12098(40)	$\langle 5,7\rangle^-$, $\langle 9,7\rangle^+$	$\langle 3,4\rangle$	0.09 0.11	470										80Fo11
12160(40)	$\langle 5,7\rangle^-$, $\langle 9,7\rangle^+$	$\langle 3,4\rangle$	0.04 0.05	230										80Fo11
12216(40)	$\langle 5,7\rangle^-$, $\langle 9,7\rangle^+$	$\langle 3,4\rangle$	0.03 0.04	190										80Fo11
12281(40)	$\langle 5,7\rangle^-$, $\langle 9,7\rangle^+$	$\langle 3,4\rangle$	0.03 0.04	210										80Fo11
12340(40)	$\langle 5,7\rangle^-$, $\langle 9,7\rangle^+$	$\langle 3,4\rangle$	0.03 0.04	160										80Fo11
12390(40)	$\langle 5,7\rangle^-$, $\langle 9,7\rangle^+$	$\langle 3,4\rangle$	0.03 0.03	150										80Fo11
12497(40)	$\langle 1,3\rangle^-$, $\langle 5,3\rangle^+$	$\langle 1,2\rangle$	0.17 0.04	530										80Fo11
12607(40)	$\langle 5,7\rangle^-$, $\langle 9,7\rangle^+$	$\langle 3,4\rangle$	0.05 0.06	250										80Fo11
12732(40)	$\langle 5,7\rangle^-$, $\langle 9,7\rangle^+$	$\langle 3,4\rangle$	0.10 0.11	510										80Fo11
12829(40)	$\langle 5,7\rangle^-$, $\langle 9,7\rangle^+$	$\langle 3,4\rangle$	0.05 0.06	270										80Fo11
12893(40)	$\langle 5,7\rangle^-$, $\langle 9,7\rangle^+$	$\langle 3,4\rangle$	0.03 0.03	130										80Fo11
12992(40)	$\langle 5,7\rangle^-$, $\langle 9,7\rangle^+$	$\langle 3,4\rangle$	0.11 0.12	620										80Fo11
13119(40)	$\langle 5,7\rangle^-$, $\langle 9,7\rangle^+$	$\langle 3,4\rangle$	0.12 0.15	740										80Fo11
13204(40)	$\langle 5,7\rangle^-$, $\langle 9,7\rangle^+$	$\langle 3,4\rangle$	0.04 0.04	200										80Fo11
13308(40)	$\langle 5,7\rangle^-$, $\langle 9,7\rangle^+$	$\langle 3,4\rangle$	0.08 0.09	560										80Fo11
13358(40)	$\langle 5,7\rangle^-$, $\langle 9,7\rangle^+$	$\langle 3,4\rangle$	0.03 0.03	140										80Fo11
13412(40)	$\langle 5,7\rangle^-$, $\langle 9,7\rangle^+$	$\langle 3,4\rangle$	0.05 0.06	280										80Fo11
13487(30)***	$\langle 1^-\rangle$	$\langle 1\rangle$	0.10	400										86Bu09
13557(40)***	$\langle 1\rangle^-$	1	0.09	350										86Bu09
13571(5)***	$\langle 1\rangle^-$	$\langle 1\rangle$	0.05	200										86Bu09
15107(10)***	5^-	3	0.06	400										86Bu09
15480(10)	$\langle 3\rangle^-$													
15544(4)														
15562(6)***	5^-	3	0.32	2300										86Bu09
15583(4)	3^-													
15600(4)														

(continued) **$^{49}_{21}$Sc**

E^* [keV]	$2J^\pi$	L	C^2S' (τ,d)	σ (τ,d) μb/sr	σ (α,p) μb/sr	L	σ (^{16}O,^{15}N) μb/sr	L	C^2S (^{7}Li,^{6}He)	C^2S (d,τ)	σ (τ,d) μb/sr	S' (τ,d)	L (τ,d)	Ref.
15620(6)***	9^+	4	0.27	1800										86Bu09
15662(4)														
15876(10)	3^+													
16023(10)	5^+													
16507(10)	7^+													
16992(10)***	9^+	4	0.06	350										86Bu09
17661(10)	5^+													
18151	3^+,5^+													
18346	3^+,5^+													
			80Fo11	80Fo11	83El08		73Ko01		80Ke12	79Do12	66Er02	66Er02	66Er02	Ref.

Additional data on this isotope can be found in [01Br35, 85Ha08, 76Br36, 67Hi09, 68Gr09, 64Ar09].
* Doublet or possible doublet.
** It is suggested in [86Bu09] that these or some neighbouring states have $J^\pi=5/2^+$.
*** Isobar analog (IAS) of low-lying ^{49}Ca states.
The first column contains combined data from one-proton transfer (d,n) [83WaZW], (τ,d) [80Fo11] and (α,t) [80Fo12] reactions compared and evaluated in [86Bu09].
It is noticed [89Wa17] that values C^2S=0.72 and 0.37 for the ground state and the level at E^*=3.08 MeV are less than C^2S=1.73 and 0.76 in the similar work on the (d,n) reaction [80Iw02].
Data for this isotope are considered in vol. LB I/18A.

Energy levels and branching ratios [95Bu23]. Part 2 **$^{49}_{21}$Sc**

E^* [keV]	$2J^\pi$	$T_{1/2}$ or Γ_{cm}	Ref.	E^*_f: $2J^\pi_f$:	0.0 7^-	2228 1^+	2371 3^+	3084 3^-	3516 3^-	3808 7^-	3991 1^+	4072 5^-	4738 5^-
					Branching ratios in percentage								
0.0	7^-	57.2(2) m	85Ha08										
2228.1(3)	1^+	29.9(11) ns	80Fo11		100								
2371.3(3)	3^+	1.40(9) ns	79Do12		93(18)	7.1(18)							
3084.5(1)	3^-	48(29) fs	80Ke12		100	0.14(3)							
3300													
3516.2(5)	3^-		80Ke12			40(15)	60(15)						
3550**	$\langle 3^+,5^+\rangle$		79Do12										
3581(10)	7^-												
3755(8)**	3^+,5^+		80Fo11										
3808.4(5)	7^-	21(19) fs	66Er02		100								
3914.9	$\langle 9^-\rangle$		80Fo11										
3951(10)													
3991.3(16)	1^+	$\geq$0.7 ns	80Fo11			x	x						
4046.0	$\langle 9^-\rangle$		01Br35										
4072.07(10)	5^-	28(14) fs	80Ke12		99(11)			1.0(4)					
4192(10)	$\langle 11^-\rangle$												
4239.6			01Br35										

(continued) **$^{49}_{21}$Sc**

E^*	$2J^\pi$	$T_{1/2}$ or	Ref.	Branching ratios in percentage								
				E_f^*:	0.0	2228	2371	3084	3516	3808	3991	4072	4738
[keV]		Γ_{cm}		$2J_f^\pi$:	7^-	1^+	3^+	3^-	3^-	7^-	1^+	5^-	5^-
4267(10)	$\langle 15^- \rangle$												
4285(8)	$\langle 5^+ \rangle$		80Fo11										
4333(8)	5^-		80Ke12										
4426(10)													
4459(10)													
4493.43(23)	1^-	≤23 fs	73Ko01					100					
4579(8)	$1^-,3^-$		80Fo11										
4711(8)	$1^-,3^-$		80Fo11										
4738.45(20)	5^-	≤14 fs	80Ke12		100								
4810(8)	$5^-,7^-$		80Fo11										
4948(8)	$\langle 1^-,3^- \rangle$		80Fo11										
4987(10)**	$\langle 3^+,5^+ \rangle$		79Do12										
5015(8)	$1^-,3^-$		80Fo11										
5022(10)	$\langle 1^+ \rangle$		80Fo12										
5030	3^-		80Ke12										
5077(8)	5^-		80Ke12										
5142(10)			83El08										
5229(10)	$\langle 9^-,11^- \rangle$		80Fo12										
5230(8)**	$3^+,5^+$		80Fo11										
5269(10)													
5376.3(5)	5^-	21(10) fs	80Ke12		x								
5438(8)			80Fo11										
5460(10)													
5562(10)	$\langle 9^-,11^- \rangle$		80Fo12										
5578(8)**	$3^+,5^+$		80Fo11										
5632(10)	$\langle 17^+ \rangle$												
5663(8)	3^-		80Ke12										
5735(10)	$\langle 15^- \rangle$												
5815(8)	1^-		80Ke12										
5845(8)			80Fo11										
5930													
5979(10)													
6010.7(11)		≤50 fs	83El08		x								
6014(20)			80Fo11										
6069(20)	$\langle 3^+,5^+ \rangle$		80Fo11										
6180(20)	$3^+,5^+$		80Fo11										
6212(10)													
6250(20)	$\langle 7^+ \rangle$		80Fo11										
6266(20)			80Fo11										
6306(2)	5^-		80Fo11		x			x					
6330(10)**			79Do12										
6414.7(4)	7^-	21(9) fs	80Fo11		100								
6451(10)**			79Do12										
6502.1(5)	3					35(31)						65(26)	
6527(20)*			80Fo11										

(continued)

$^{49}_{21}$Sc

E^* [keV]	$2J^\pi$	$T_{1/2}$ or Γ_{cm}	Ref.	E_f^*:	0.0	2228	2371	3084	3516	3808	3991	4072	4738
				$2J_f^\pi$:	7^-	1^+	3^+	3^-	3^-	7^-	1^+	5^-	5^-
			80Fo11										
6624(10)													
6685(20)			80Fo11										
6728(2)	3^-		80Fo11					100					
6745(10)													
6816(20)	$1^-,3^-$		80Fo11										
6829(10)	$5^-,7^-$		80Fo12										
6867(10)													
6910(20)	$\langle 1^+ \rangle$		80Fo11										
6917(10)													
6939(10)													
6984.8(4)	5^-	$\leq$14 fs	80Fo11		21(10)		79(21)						
7026(20)	$1^-,3^-$		80Fo11										
7041(10)													
7059(20)	$7^+,9^+$		80Fo11										
7063.1(5)	1^-		80Fo11				52(22)	48(22)					
7151(20)	$5^-,7^-$												
7172(10)													
7186(20)	$7^+,9^+$		80Fo11										
7193(2)	5												
7228.2(22)	5				100								
7253(20)	$1^-,3^-$		80Fo11										
7293(10)**			79Do12										
7320(20)	$1^-,3^-$		80Fo11										
7342(20)	$5^-,7^-$		80Fo11										
7375(20)	$5^-,7^-$		80Fo11										
7421(20)	$5^-,7^-$		80Fo11										
7442(20)	$1^-,3^-$		80Fo11										
7483(20)	$5^-,7^-$		80Fo11										
7500(20)	$1^-,3^-$		80Fo11										
7529(20)	$\langle 7^+,9^+ \rangle$		80Fo11										
7583(20)	$\langle 3^+,5^+ \rangle$		79Do12										
7653(20)	$1^-,3^-$		80Fo11										
7678(20)	$\langle 7^+,9^+ \rangle$		80Fo11										
7723(20)	$1^-,3^-$		80Fo11										
7746(20)	$\langle 7^+,9^+ \rangle$		80Fo11										
7795(20)	$\langle 7^+,9^+ \rangle$		80Fo11										
7832(20)	$1^-,3^-$		80Fo11										
7890(20)	$1^-,3^-$		80Fo11										
7940(20)													
7998(20)	$1^-,3^-$		80Fo11										
8029(20)													
8094(20)	$1^-,3^-$		80Fo11										
8147(20)	$1^-,3^-$		80Fo11										
8177(20)	$\langle 7^+,9^+ \rangle$		80Fo11										

(continued) **$^{49}_{21}$Sc**

E^* [keV]	$2J^\pi$	$T_{1/2}$ or Γ_{cm}	Ref.	Branching ratios in percentage								
			E_f^*:	0.0	2228	2371	3084	3516	3808	3991	4072	4738
			$2J_f^\pi$:	7^-	1^+	3^+	3^-	3^-	7^-	1^+	5^-	5^-
8200(20)	1^-,3^-		80Fo11									
8246(20)												
8289(20)	1^-,3^-		80Fo11									
8330(20)	5^-,7^-		80Fo11									
8355(20)	1^-,3^-		80Fo11									
8434(20)	1^-,3^-		80Fo11									
8465(20)	5^-,7^-		80Fo11									
8625(20)												
8693(20)**	3^+,5^+		79Do12									
8721(20)	1^-,3^-		80Fo11									
8751(20)*			80Fo11									
			80Fo11									
8781(20)	1^-,3^-		80Fo11									
8813(20)	1^-,3^-		80Fo11									
8848(20)	1^-,3^-		80Fo11									
8900(20)	3^+,5^+		80Fo11									
8929(20)	5^-,7^-		80Fo11									
8971(20)	7^+,9^+		80Fo11									
9008(20)	3^+,5^+		80Fo11									
9066(20)	5^-,7^-		80Fo11									
9117(20)**	3^+,5^+		79Do12									
9145(20)	1^-,3^-		80Fo11									
9185(20)	5^-,7^-		80Fo11									
9218(20)												
9247(20)	1^-,3^-		80Fo11									
9295(20)	1^-,3^-		80Fo11									
9335(20)												
9385(20)	1^-,3^-		80Fo11									
9449(20)	5^-,7^-		80Fo11									
9514(20)	5^-,7^-		80Fo11									
9575(20)	1^-,3^-		80Fo11									
9634(20)	1^-,3^-		80Fo11									
9675(20)	1^-,3^-		80Fo11									
9726(20)	1^-,3^-		80Fo11									
9790(20)	1^-,3^-		80Fo11									
9843(20)	1^-,3^-		80Fo11									
9873(20)	1^-,3^-		80Fo11									
9923(20)	1^-,3^-		80Fo11									
9956(20)	5^-,7^-		80Fo11									
9991(20)	1^-,3^-		80Fo11									
10059(20)	1^-,3^-		80Fo11									
10155(20)	5^-,7^-		80Fo11									
10212(20)*			80Fo11									
			80Fo11									
10413(20)	1^-,3^-		80Fo11									

(continued)

$^{49}_{21}$Sc

E^* [keV]	$2J^\pi$	$T_{1/2}$ or Γ_{cm}	Ref.	Branching ratios in percentage								
				E_f^*:	0.0	2228	2371	3084	3516	3808	3991	4072	4738
				$2J_f^\pi$:	7^-	1^+	3^+	3^-	3^-	7^-	1^+	5^-	5^-
10473(20)	1^-,3^-		80Fo11										
10569						x							
10617(20)	1^-,3^-		80Fo11										
10690(20)	1^-,3^-		80Fo11				x						
10787(20)	1^-,3^-												
10870(20)	1^-,3^-												
10957(20)	1^-,3^-												
11021(20)	1^-,3^-												
11030(20)	1^-,3^-												
11138(20)	1^-,3^-												
11271(20)	1^-,3^-												
11425(20)	3^+,5^+		80Fo11										
11510(20)			80Fo11										
11525(4)	1^-												
11534(4)	1^+												
11536(3)	$\langle 3^- \rangle$												
11543(3)													
11546(3)	3^-					5(1)	11(4)	2(1)	1(1)			6(2)	7(2)
11548(3)													
11550(3)	3^-					3.0(4)	8(3)	2.9(4)	2(1)		2(1)	6(1)	4(1)
11563.6(4)***	3^-	1.5(3) keV	80Fo11		3.3(3)	2.1(2)	1.5(4)	0.9(4)	2(1)	4(2)	4(1)	7(1)	5(1)
11568(3)	$\langle 3^- \rangle$												
11577(3)	$\langle 3^- \rangle$	0.29(14) keV											
11582(3)	$\langle 3^- \rangle$	0.17(8) keV											
11665(20)	1^-,3^-		80Fo11										
11735(20)													
11806(20)													
11911(20)	1^-,3^-		80Fo11										
11976(20)	1^-,3^-		80Fo11										
12040(40)	1^-,3^-		80Fo11										
12098(40)	$\langle 5,7 \rangle^-$, $\langle 9,7 \rangle^+$		80Fo11										
12160(40)	$\langle 5,7 \rangle^-$, $\langle 9,7 \rangle^+$		80Fo11										
12216(40)	$\langle 5,7 \rangle^-$, $\langle 9,7 \rangle^+$		80Fo11										
12281(40)	$\langle 5,7 \rangle^-$, $\langle 9,7 \rangle^+$		80Fo11										
12340(40)	$\langle 5,7 \rangle^-$, $\langle 9,7 \rangle^+$		80Fo11										
12390(40)	$\langle 5,7 \rangle^-$, $\langle 9,7 \rangle^+$		80Fo11										
12497(40)	$\langle 1,3 \rangle^-$, $\langle 5,3 \rangle^+$		80Fo11										
12607(40)	$\langle 5,7 \rangle^-$,		80Fo11										

(continued) **$^{49}_{21}$Sc**

E^* [keV]	$2J^\pi$	$T_{1/2}$ or Γ_{cm}	Ref.	Branching ratios in percentage								
				E_f^*:	0.0	2228	2371	3084	3516	3808	3991	4072	4738
				$2J_f^\pi$:	7^-	1^+	3^+	3^-	3^-	7^-	1^+	5^-	5^-
	$\langle 9,7\rangle^+$												
12732(40)	$\langle 5,7\rangle^-$, $\langle 9,7\rangle^+$		80Fo11										
12829(40)	$\langle 5,7\rangle^-$, $\langle 9,7\rangle^+$		80Fo11										
12893(40)	$\langle 5,7\rangle^-$, $\langle 9,7\rangle^+$		80Fo11										
12992(40)	$\langle 5,7\rangle^-$, $\langle 9,7\rangle^+$		80Fo11										
13119(40)	$\langle 5,7\rangle^-$, $\langle 9,7\rangle^+$		80Fo11										
13204(40)	$\langle 5,7\rangle^-$, $\langle 9,7\rangle^+$		80Fo11										
13308(40)	$\langle 5,7\rangle^-$, $\langle 9,7\rangle^+$		80Fo11										
13358(40)	$\langle 5,7\rangle^-$, $\langle 9,7\rangle^+$		80Fo11										
13412(40)	$\langle 5,7\rangle^-$, $\langle 9,7\rangle^+$		80Fo11										
13487(30)***	$\langle 1^-\rangle$		86Bu09										
13557(40)***	$\langle 1\rangle^-$		86Bu09										
13571(5)***	$\langle 1\rangle^-$	226(3) keV	86Bu09										
15107(10)***	5^-	12.8(13) keV	86Bu09										
15480(10)	$\langle 3\rangle^-$	19.3(20) keV			x								
15544(4)					x								
15562(6)***	5^-	31(8) keV	86Bu09		85(26)		6.9(25)	>8					
15583(4)	3^-				x								
15600(4)					x								
15620(6)***	9^+	18(5) keV	86Bu09		100								
15662(4)					x								
15876(10)	3^+	19.8(20) keV											
16023(10)	5^+	25.6(26) keV											
16507(10)	7^+	14.8(15) keV											
16992(10)***	9^+	18.8(19) keV	86Bu09										
17661(10)	5^+	108(11) keV											
18151	3^+,5^+												
18346	3^+,5^+												
			Ref.										

Energy levels and branching ratios [95Bu23]. Part 3 **$^{49}_{21}$Sc**

E^*	$2J^\pi$		Branching ratios in percentage								
		E^*_f:	6306	6415	6502	6728	6985	7059	7063	7193	7228
[keV]		$2J^\pi_f$:	5^-	7^-	3	3^-	5^-	7^+,9^+	1^-	5	5
11546(3)	3^-		5(3)	11(3)	9(3)	9(3)	15(4)		12(3)	7(3)	
11550(3)	3^-		5(1)	12(2)	9(2)	12(2)	18(2)		10(1)	8(2)	
11563.6(4)***	3^-		2(1)	7(1)	14(2)	11(2)	16(1)	9(1)		6(1)	6.9(2)

Energy levels and branching ratios [95Bu09]. **$^{50}_{21}$Sc**

E^*	J^π	σ (^{16}O,^{14}N)	L	S_N	S_N	σ (τ,p)	σ (τ,p)	L	σ (t,τ)	σ (τ,p)	I_d	Ref.
[keV]		μb	(τ,p)	(τ,p)	(τ,p)	μb/sr	μb	(t,τ)	*rel.*	arb.u	(α,d)	
0.0	5^+	147	4	0.93	0.76	48(8)	166(30)	4+6		420	520	78Ko01
256.89(1)	2^+,3^+		2	1.1	1.1	36(6)	146(25)	2+4		620		69La02
328.45(2)	3^+	89	2	4.3	1.3	76(10)	280(40)	2+4		1120	220	78Ko01
756(8)	4^+	32	4	0.92	0.95	36(6)	86(14)	4		180	20	78Ko01
1847.77(2)	1^+	23	0+2		5.0	114(12)	610(60)	0+2	1.20(12)	10800	80	78Ko01
2227(5)	$\langle 3\rangle^+$		2		3.0	98(10)	250(25)	$\langle$2+4$\rangle$		1100	180	69La02
2331(8)	3^+		4		1.1	50(4)	124(12)	2+4		220	incl	69La02
2527(10)	1							1,0+2				85Aj03
2614(10)	1^+							0+2	3.1(5)			85Aj03
3028(15)												85Aj03
3090(5)			0		3.6	22(6)	110(25)			3100		69La02
3259(7)			$\langle 2\rangle$		6.6	96(10)	318(32)			1300		69La02
3287(5)			$\langle 2\rangle$				incl			1560		69La02
3363(15)*										300	460	85Aj03
3497(15)*										200		85Aj03
3556(15)*												85Aj03
3610(10)*										530		85Aj03
3682(5)			$\langle$0+2$\rangle$			122(12)	378(38)			1850		69La02
3731(10)												
3940(20)			2			122(12)	378(38)			1000	220	69La02
3950										600	incl	72Fl01
4140(20)			2							200		72Fl01
4240(20)							310(31)			300		69La02
4320(20)			2				incl			280	1240	69La02
4460(20)			2			60(12)	182(30)			370		69La02
4530(20)												
4590(20)												
4640(7)			0+2				548(55)			1400		69La02
4660(20)							incl			1000	200	72Fl01
4740(20)							incl			300		72Fl01
4830(20)			2							300		69La02
4879(7)			2			58(8)	276(40)			2050		69La02
4980(7s)			2							1000		69La02

(continued) **$^{50}_{21}$Sc**

E^*	J^π	σ (^{16}O,^{14}N)	L	S_N	S_N	σ (τ,p)	σ (τ,p)	L	σ (t,τ)	σ (τ,p)	I_d	Ref.
[keV]		μb	(τ,p)	(τ,p)	(τ,p)	μb/sr	μb	(t,τ)	*rel.*	arb.u	(α,d)	
5073(10)			2			168(18)	540(54)			1800		69La02
5160(20)										300		72Fl01
5220(20)										200		72Fl01
5290(20)										1800		72Fl01
5370(20)			2			206(22)	730(73)			1600	76	69La02
5460(20)			2			66(14)	372(70)			1050		69La02
5570(20)			[2]			62(14)	264(50)			400		69La02
5630(20)			[2]			incl				800		69La02
5730(20)			$\langle 0 \rangle$			72(18)						69La02
5840(20)			$\langle 2+4 \rangle$			50(18)	242(70)					69La02
5890(20)			2									69La02
6014(30)			4			186(28)	488(50)				600	69La02
6118(30)			2			104(22)	400(80)					69La02
6285(30)			2			82(22)	302(70)					69La02
6447(30)						80(22)						69La02
6618(30)						114(26)						69La02
8250(30)											360	94Fi01
11195(20)**	$\langle 0^+ \rangle$		$\langle 0 \rangle$		≈8							69La02
		78Ko01	69Oh01	69Oh01	69Oh01		69La02		85Aj03			Ref.
						69La02				72Fl01	94Fi01	Ref.

Additional data on this isotope can be found in [71Ha55, 70Sc22].

* taking into account results from [85Aj03].

** interpreted in [69Oh01, 71Ha55] as isobar-analog of the ^{50}Ca ground state.

Two parameters $S_N=\sigma_{exp}/\sigma_{DWBA}$ for the (τ,p) reaction was given in [69Oh01] with two fitted normalization constants (the second – according to the theory given by G.Brawn and T.Kuo [69Oh01]); σ (τ,p) measured at 39° and the integral cross section (σ) in μb are from [69La02]; maximum cross sections (σ (τ,p)) in arbitrary units [72Fl01] are given in the last column.

For two-nucleon transfer (α,d) reaction approximate values of the deuteron yield I_d at 25° in units counts per channel are from [94Fi01], see also $\sigma_{exp}/\sigma_{theor}$ for 7 states in [69Mo18].

σ (^{16}O,^{14}N) and uncertainties in E^*, σ (τ,p) and $T_{1/2}$ are given in Supplement.

Energy levels and branching ratios [95Bu09]. Part 2 **$^{50}_{21}$Sc**

E^*	J^π	$T_{1/2}$ or	Ref.	Branching ratios in percentage			
				E_f^*:	0.0	256.9	328.4
[keV]		Γ_{cm}		J_f^π:	5^+	2^+,3^+	3^+
0.0	5^+	103(1) s	78Ko01				
256.89(1)	2^+,3^+	0.35(4) s	69La02		100		
328.45(2)	3^+	<10 ns	78Ko01			100	
756(8)	4^+		78Ko01				
1847.77(2)	1^+	<10 ns	78Ko01			38(1)	62(1)
2227(5)	$\langle 3 \rangle^+$		69La02				

(continued) **$^{50}_{21}$Sc**

E^* [keV]	J^π	$T_{1/2}$ or Γ_{cm}	Ref.	Branching ratios in percentage			
				E_f^*:	0.0	256.9	328.4
				J_f^π:	5^+	2^+,3^+	3^+
2331(8)	3^+		69La02				
2527(10)	1		85Aj03				
2614(10)	1^+		85Aj03				
3028(15)			85Aj03				
3090(5)			69La02				
3259(7)			69La02				
3287(5)			69La02				
3363(15)*			85Aj03				
3497(15)*			85Aj03				
3556(15)*			85Aj03				
3610(10)*			85Aj03				
3682(5)			69La02				
3731(10)							
3940(20)			69La02				
3950			72Fl01				
4140(20)			72Fl01				
4240(20)			69La02				
4320(20)			69La02				
4460(20)			69La02				
4530(20)							
4590(20)							
4640(7)			69La02				
4660(20)			72Fl01				
4740(20)			72Fl01				
4830(20)			69La02				
4879(7)			69La02				
4980(7s)			69La02				
5073(10)			69La02				
5160(20)			72Fl01				
5220(20)			72Fl01				
5290(20)			72Fl01				
5370(20)			69La02				
5460(20)			69La02				
5570(20)			69La02				
5630(20)			69La02				
5730(20)			69La02				
5840(20)			69La02				
5890(20)			69La02				
6014(30)			69La02				
6118(30)			69La02				
6285(30)			69La02				
6447(30)			69La02				
6618(30)			69La02				
8250(30)			94Fi01				
11195(20)**	$\langle 0^+ \rangle$		69La02				

(continued) **$^{50}_{21}$Sc**

E^*	J^π	$T_{1/2}$ or	Ref.	Branching ratios in percentage			
				E_f^*:	0.0	256.9	328.4
[keV]		Γ_{cm}		J_f^π:	5^+	2^+,3^+	3^+
			Ref.				
			Ref.				

Energy levels and branching ratios [97Zh09, 05Br18]. **$^{51}_{21}$Sc**

E^*	$2J^\pi$	σ (α,p)	$T_{1/2}$ or	Ref.	Branching ratios in percentage						
					E_f^*:	0.0	862	1167	1394	1715	2347	3039
[keV]		μb/sr	Γ_{cm}		$2J_f^\pi$:	$\langle 7\rangle^-$	$\langle 3^-\rangle$		$\langle 3,5\rangle$		$\langle 1^-\rangle$	$\langle 3^-,5^-\rangle$
0.0	$\langle 7\rangle^-$	187	12.4(1) s	83El08								
861.6(1)	$\langle 3^-\rangle$	158		83El08		100						
1065.1(10)	$\langle 11^-\rangle$	102		83El08								
1167.33(20)	$\langle 3$–$7^+\rangle$					100						
1394.02(17)	$\langle 3,5\rangle$	15		83El08		87(10)	13.0(10)					
1715.02(19)						28(2)		72(20)				
2313(10)		5		83El08								
2347.2(4)	$\langle 1^-\rangle$	143		83El08			100					
2708.8(3)	$\langle 3^-\rangle$	151		83El08			58(6)		42(6)			
2887(7)		90		83El08								
2996(7)		9		83El08								
3038.69(23)	$\langle 3^-,5^-\rangle$	137		83El08		11(2)			23(2)	66(3)		
3069(7)		15		83El08								
3195.2(4)	$\langle 3^-,5^-\rangle$	51		83El08		12(2)	4(1)	3(1)		81(2)		
3390.6(6)	$\langle 1,3,5\rangle$								96(1)			4(1)
3772.1(6)	$\langle 3^-,5^-\rangle$					31(6)	20(6)		16(5)		33(6)	
3881.1	15^-											
4825.6	$\langle 15^-\rangle$			05Br18								
5540.2	$\langle 17^+\rangle$			05Br18								
6184.0	$\langle 19^+\rangle$			05Br18								
		83El08		Ref.								

Additional data on this isotope can be found in [70Gi10].