Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	T. W. Burrows	NDS 109,171 (2008)	30-Oct-2007

Q(β^-)=−2062.1 *5*; S(n)=11326.5 *19*; S(p)=6891.5 *8*; Q(α)=−7936.5 *8* 2012Wa38
Note: Current evaluation has used the following Q record \$−2062.1 5 *11323*.0 *196888*.3 *8* −7933.6 *8* 2003Au03.
Others: see 1992Bu01.

^{45}Sc Levels

Proton resonance parameters: see ^{44}Ca(p,p),(p,p′γ),(p,γ) res.
Isobaric analog states which contain no information pertinent to the bound states of A=45 have not been included in this evaluation. See 1983Bu21.
J(S),T(T) See discussion in 1992Bu01 on what may Be considerable discrepancies in the experimental data as to the existence and γ deexcitation patterns and resultant $T_{1/2}$′s of these two states.

Cross Reference (XREF) Flags

A	^{45}Ti ε decay	J	^{45}Sc(n,n′),(n,n′γ)	S	^{27}Al(^{18}O,Xγ), ^{45}Sc(γ,n),(γ,p)
B	^{28}Si(^{19}F,2pγ), ^{30}Si(^{18}O,p2nγ),	K	^{45}Sc(p,p′),(d,d′)	T	^{45}Sc IT decay (325.8 ms)
C	^{30}Si(^{18}O,p2nγ)	L	^{45}Sc(p,p′γ)	U	^{44}Ca(^{16}O,^{15}N)
D	^{42}Ca(α,p)	M	Coulomb excitation	V	^{45}Sc(e$^+$,Xγ)
E	^{42}Ca(α,pγ)	N	^{46}Ti(d,^{3}He)	W	^{45}Sc(^{3}He,^{3}Heγ) E=38 MeV
F	^{43}Ca(^{3}He,p)	O	^{48}Ti(pol p,α) E=79.2 MeV	X	^{47}Ti(d,α)
G	^{44}Ca(p,p),(p,p′γ),(p,γ) res	P	I(γ+ce)(μ^-,xnγ)	Y	^{48}Ti(p,α) E=10,12 MeV
H	^{44}Ca(^{3}He,d),(pol ^{3}He,d)	Q	^{45}Ca β^- decay	Z	^{48}Ti(p,α) E=40.35 MeV
I	^{45}Sc(γ,γ),(γ,γ′) res	R	Muonic atom		

E(E) TV Excitation energy is an average of the following data:

E(E) Adopted | ε Decay | (α,pγ) | (p,γ) | (γ,γ) | (p,p′γ)

376.50 *12* 376.1 *5* 376.8 *3* 376.5 *2* 376.4 *1* 376.58 *33*
TVWeighted
720.12 *14* 719.6 *3* 720.6 *5* 720.1 *2* 720.2 *1* 720.0 *10* 720.34 *15*
TVUnweighted
939.24 *15* 939.5 *5* 938.9 *2* 939.1 *1* 939.5 *5* TVUnweighted
1067.6 *4* 1068.6 *10* 1067.2 *3* 1067.2 *2* 1067.6 *5* TVUnweighted
1236.70 *25* 1236.4 *5* 1237.5 *5* 1235.*8* 6 1236.4 *2* 1237.0 *20* 1237.09 *18*
TVUnweighted
1303.18 *15* 1303.5 *5* 1303.1 *3* 1303.2 *2* 1302.9 *5* TVWeighted
1408.87 *20* 1408.1 *3* 1409.5 *5* 1408.5 *3* 1409.0 *2* 1409.0 *10* 1409.1 *4*
TVUnweighted
1556.2 *5* 1557.1 *10* 1555.1 *2* 1556.3 *3* 1556.4 *3* TVUnweighted
1662.0 *4* 1661.0 *3* 1662.0 *5* 1661.5 *5* 1663.0 *20* 1662.5 *5*
TVUnweighted
1800.0 *5* 1800.7 *10* 1800.0 *5* 1800.6 *3* 1798.0 *20* 1800.2 *5*
TVUnweighted
2030.2 *7* 2031.6 *5* 2028.6 *8* 2029.6 *3* 2030.9 *5* TVUnweighted
2093.0 *5* 2092.3 *10* 2092.2 *4* 2092.2 *5* 2093.1 *20* 2094.9 *10*
TVUnweighted
2341.0 *4* 2341.2 *5* 2341.1 *20* 2340.8 *6* TVWeighted

T(G) TV The half-life is a weighted average of the following data:

E_x | (α,pγ) DSAM (ps) | (γ,γ) (meV) | (p,p′γ) DSAM (ps) | Coul. ex. BEλ↑ (ps)

543 6.4 *+47−23* 0.086 *24* 4.5 *10* 6.0 *9*
6.9 *+23−16*
1068 0.35 *+12−8* 0.76 *35* 0.76 ps *35* excluded

0.22 +7−5
0.38 +14−9

T(J) TV The half-life is an unweighted average of the following data:

E_x	(α,pγ) DSAM (ps)	(γ,γ) (meV)	(p,p′γ) DSAM (ps)	E_x	(α,pγ) DSAM (ps)	(p,γ) (fs)	(γ,γ) DSAM (meV)	(n,n′γ) DSAM (fs)	(p,p′γ) (ps)
974	2.6 +6−5	0.233 30	2.1 +5−4	1800	0.11 4	66 +63−35	20 6	45 7	0.076 +12−7
			3.2 +8−5	2031	1.1 +6−3				0.37 19
1662		5.0 6	0.076 21						0.66 25
			0.080 11	2341	0.046 11				0.026 11
			0.100 +20−15						0.015 10
			0.103 8						0.036 12

E(W) TV Excitation energy is an average of the following data:

Adopted	(^{3}He,p) ±15	(^{3}He,d) ±15	(p,p′)		Adopted	(^{3}He,p) ±15	(^{3}He,d)	
3198 9		3189	3206 7	Unweighted	4662 11	4660	4664 15	Weighted
3283 7	3290		3281 7	Weighted	4824 11	4822	4826 15	Weighted
3400 8		3407	3392 7	Unweighted	4919 11	4920	4917 15	Weighted
3882 11	3883	3881	3914 7	Weighted	4965 11	4970	4959 15	Weighted
3982 7		3989	3975 7	Unweighted	5261 11	5268	5254 15	Weighted
4034 11	4034	4034		Weighted	5299 11	5288	5309 15	Weighted
4178 11	4176	4179		Weighted	5669 12	5661	5684 20	Weighted
4244 11	4240	4249		Weighted	6119 17	6102	6136 20	Unweighted
4307 13		4309	4299 30	Weighted	6332 13	6344	6319 20	Unweighted
4546 11	4542	4549		Weighted	6438 12	6441	6434 20	Weighted
4610 11	4601	4619		Weighted				

E(level)[†]	J^π[‡]	$T_{1/2}$[#]	XREF	Comments
0.0[@]	7/2⁻	stable	ABCDEFGHIJKLMNOPQ TUV XYZ	μ=+4.756487 *2* (2005St24,1969Lu01,1951Pr02) Q=−0.22 *1* (2005St24,1976Er01) J^π: J=7/2 from AB (1976Fu06, 1959Fr53). π=− from L(^{3}He,d)=3. μ: NMR; ^{2}H standard. Q: ABLDF; no pol correction. Others: −0.216 *9* (1971Ch25. AB), −0.220 *2* (2000Ke12. Molecular spectroscopy), and −0.236 *2* (2001Mi40. NMR; Sternheimer correction applied).
12.40[&a] *5*	3/2⁺	325.8 ms *42*	ABC E GHIJKLMNOPQ T V YZ	%IT=100 μ=+0.368 *5* (2006Ga47); Q=+0.318 *22* (2006Ga47) J^π: L(^{3}He,d)=2; D,E2 γ from 1/2⁻ IAR. $T_{1/2}$: mean lifetime τ=0.470 s *6* from timing of K x-rays in Coulomb excitation (1967Bl14). Authors of 1967Bl14 mentioned that the lifetime measured in this work superseded their earlier lifetime reported in 1964Ho14. Value of 0.32 s *1* from 1967Bl14 cited in Nuclear Data Sheets evaluations (2008Bu01,1992Bu01,1983Bu21,1977Be63,1970Le28) seems erroneous. Note by B. Singh, May 01, 2021. μ,Q: collinear LASER spectroscopy using IGISOL. ^{45}Sc g.s. μ=+4.756487 *2* (2005St24, 1969Lu01, 1951Pr02) and Q=−0.220 *2* (2005St24, 2000Ke12) used as references.
376.50[b] *12*	3/2⁻	43.3 ps *23*	AB DEFGH JKLMN P XY	J^π: L(^{3}He,d)=1; E2 γ to 7/2⁻. $T_{1/2}$: from B(E2)↑ in Coul. ex. Others: 101 ps *28* (RDM), >1.1 ps (DSAM), and 3.5 ps *13* (DSAM) in (p,p′γ) and >4 ps from DSAM in (α,pγ). See also discussion in (p,p′γ).
543.06[cd] *14*	5/2⁺	5.5 ps *6*	ABC E G IJKLMN XY	J^π: L(d,^{3}He)=2; E1(+M2) γ to 7/2⁻.

						$T_{1/2}$: other DSAM measurements: >0.38 ps from (n,n′γ) and >0.55 ps from (p,p′γ). 105 ps *28* (RDM) in (p,p′γ) discrepant.
720.12[b] *14*	$5/2^-$	206 fs *16*	A	EFGHIJKLMN P	XY	J^π: L(d,^{3}He)=3; D+Q γ to $3/2^+$. $T_{1/2}$: from (γ,γ). Others: 0.25 ps +*8*−*6* (DSAM) from (α,pγ), 0.15 ps *10* (DSAM) from (n,n′γ), 193 fs *22* (DSAM) from (p,p′γ), and 0.5 ps *4* from B(E1)↑ in Coul. ex.

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Adopted Levels, Gammas (continued)

^{45}Sc Levels (continued)

E(level)[†]	Jπ[‡]	T1/2[#]	XREF	Comments
939.24[e] *15*	1/2+	7.3 ps *+6−3*	E GH JKLMNO XYZ	$T_{1/2}$: from DSAM in (α,pγ). Other: >2.6 ps (DSAM) from (p,p′γ). <0.97 ps (DSAM) from (n,n′γ) is discrepant.
974.38[&c] *15*	7/2+	2.54 ps *23*	ABC E G IJ LM Y	Jπ: 5/2+,7/2+ from E1(+M2) γ to 7/2−; E2 γ to 3/2+. Ne 5/2 from pγ(θ) in (α,pγ). $T_{1/2}$: other: >0.42 ps (DSAM) from (n,n′γ). 0.36 ps *4* from B(E1)↑=7.5×10^{-6} *8* in Coul. ex. is discrepant.
1067.6 *4*	3/2−	0.28[f] ps *6*	DEFGH JKLMN U XY	Jπ: L(^{3}He,d)=1; M1+E2 γ to 5/2−.
1236.70[@] *25*	11/2−	1.80[f] ps *10*	ABC EFG IJKLMNO XYZ	Jπ: π=− from L(p,p′)=2. J=7/2,11/2 from pγ(θ) in (α,pγ). J=5/2,11/2 from γ(θ) in Coul. ex. $T_{1/2}$: from (γ,γ). Others: 2.4 ps *+10−6* from (α,pγ) and 1.60 ps *34* from (p,p′γ); DSAM. 0.12 ps *8* (DSAM) from (n,n′γ) discrepant.
1303.18[e] *15*	3/2+	2.3 ps *+7−4*	E G JKL N XY	Jπ: L(d,^{3}He)=2; γ from 1/2− IAR. $T_{1/2}$: weighted ave of 2.4 ps *+12−7* from (α,pγ) and 2.3 ps *+9−5* from (p,p′γ); DSAM. >5.5 ps (1980Bu08; DSAM) discrepant in (p,p′γ).
1354.2?[g] *9*	(11/2−)[h]		C	
1408.87[b] *20*	(7/2)−	257[f] fs *+23−18*	A EFGhIJKLMN XY	Jπ: 3/2−,5/2−,7/2− from M1+E2 γ to 7/2− and D,E2 γ to 3/2−; Ne 3/2 from pγ(θ) in (α,pγ). Member of $K^π$=3/2− band. $T_{1/2}$: other: 0.28 ps *14* (DSAM) from (n,n′γ). <0.12 ps from (p,γ) and 0.43 ps *+12−8* from (α,pγ) are discrepant; DSAM. Note that $T_{1/2}$=299 fs *19* from (γ,γ) assuming J=5/2 is more compatible with the adopted $T_{1/2}$ than 398 fs *24* assuming 7/2.
1433.49[d] *21*	9/2+	3.6 ps *18*	BC E Gh JKL Y	Jπ: 7/2+,9/2+ from E2(+M3) γ to 5/2+; D+Q γ from 11/2+. Ne 7/2 from pγ(θ) in (α,pγ). $T_{1/2}$: unweighted ave of 5.4 ps *+30−15* from (α,pγ) and 1.9 ps *13* from (p,p′γ); DSAM.
1472.5? *9*	(7/2+)		J	Jπ: 3/2 to 9/2 from γ′s to 5/2− and 7/2−. 7/2+ from Hauser-Feshbach in (n,n′).
1556.2 *5*	(3/2)−	0.28 ps *+12−8*	EFGH JKL N	Jπ: L(^{3}He,d)=1. d,E2 γ? to 5/2+. $T_{1/2}$: from DSAM in (α,pγ).
1662.0[b] *4*	9/2−	98[f] fs *10*	A EFG IJKLM V Y	Jπ: M1+E2 γ to 7/2−; D(+Q) γ to 11/2−. $T_{1/2}$: others: 0.14 ps *+5−4* from (α,pγ) and 0.13 *9* from (p,γ); DSAM.
1716? *30*			K	
1800.0[e] *5*	5/2+	65 fs *15*	A E G IJKL N V X Z	Jπ: L(d,^{3}He)=2; d,E2 γ to 7/2−. $T_{1/2}$: see also discussion in (p,p′γ).
1900.7[a] *3*			GH	
1930.6[a] *3*	1/2,3/2,5/2+		G x	XREF: x(1931). Jπ: γ to 1/2+.
1935.5 *10*		32 fs *+16−11*	L x	XREF: x(1931).
1935.5?		61 fs *+22−16*	L x	XREF: x(1931).

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Adopted Levels, Gammas (continued)

^{45}Sc Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
2031.2[&] *7*	11/2$^+$	0.76 ps *+12−8*	BC E G KL X	J^{π}: 9/2$^+$,11/2$^+$ from D,E2 γ to 11/2$^-$; E2(+M3) γ to 7/2$^+$. Ne 9/2 from p$\gamma(\theta)$ in (α,pγ). $T_{1/2}$: weighted ave. of 0.37 ps *19* (598γ) and 0.66 ps *25* (1057γ) in (p,p′γ), 0.97 ps *14* in (^{18}O,p2nγ), and 1.1 ps *+6−3* in (α,pγ); DSAM.
2090	15/2$^-$		Z	
2093.0 *5*	5/2	8.3[i] fs *21*	EFG IJKL X	J^{π}: D(+Q) γ's to 3/2$^-$ and 7/2$^-$. $T_{1/2}$: others: <35 fs from (α,pγ), 21 fs *9* from (n,n′γ), and <7.6 fs from (p,p′γ); DSAM. 85 meV 9 in (γ,γ). See also discussion in (p,p′γ).
2106.2[a] *5*	≤7/2		G	J^{π}: γ to 3/2$^-$.
2106.3[@] *3*	15/2$^-$	>1.4 ps	BC E KL O	J^{π}: from p$\gamma(\theta)$ and linear polarization in (α,pγ). 1981Bo37 in (pol p,α) noted that there may Be significant fragmentation of the ((ν $f_{7/2}$)$^{+2}$(π $f_{7/2}$)) pickup strength to 15/2$^-$ states in ^{45}Sc. $T_{1/2}$: other: >6 ps (DSAM) from (α,pγ).
2138.4[a] *5*	3/2$^-$,5/2	0.31 ps *+9−7*	G L x	XREF: x(2140). J^{π}: D γ to (3/2)$^-$; D,E2 γ to 7/2$^-$.
2151.0[a] *5*	(1/2,3/2,5/2)[j]	60 fs *+17−12*	G k x	XREF: k(2152.1)x(2140). J^{π}: Ne 7/2$^-$ from D,E2 γ's to 3/2$^+$. γ from 3/2$^{(-)}$ res.
2152.0?	[j]		kL x	XREF: k(2152.1)x(2140).
2221.8[a] *5*	(3/2$^-$,5/2)		G x	XREF: x(2213). J^{π}: γ to 3/2$^+$; γ?'s to 7/2$^-$ and from 1/2$^-$,3/2$^-$.
2224.2 *5*	5/2$^+$,7/2$^+$		JKL x	XREF: x(2213). J^{π}: γ's to 9/2$^+$ and 3/2$^+$. $T_{1/2}$: 69 fs *14* from (n,n′γ) and 0.41 ps *17* from (p,p′γ) are discrepant; DSAM.
2288.5 *6*	(7/2$^-$,9/2)	0.21 ps *7*	hi KL y	XREF: h(2304)i(2291)y(2303). J^{π}: 7/2$^-$,9/2,11/2$^-$ from D,E2 γ's to 7/2$^-$ and 11/2$^-$. D,E2 γ? to 7/2$^+$. $T_{1/2}$: see also discussion in (p,p′γ).
2303.8[a] *5*	(5/2$^-$)[kl]	55[i] fs *+35−17*	FGhiJ L N y	XREF: h(2304)i(2291)y(2303). J^{π}: 1/2,3/2,5/2 from D,E2 γ's to 3/2$^-$ and 3/2$^+$. 5/2$^-$ from D,E2 γ? to 9/2$^-$. L(^{3}He,d)=1 for E(level)=2290. $T_{1/2}$: other: 0.83 ps *83* (DSAM) from (n,n′γ). See also discussion in (p,p′γ).
2321.5 *10*	3/2$^-$,5/2,7/2$^+$[kl]	45 fs *+11−7*	h L N	XREF: h(2304). J^{π}: D,E2 γ's to 7/2$^-$ and 3/2$^+$. L(^{3}He,d)=1 for E=2290.
2341.0 *4*	(7/2$^-$)[l]	31 fs *7*	fGhIJKL y	XREF: f(2351)h(2349)y(2342). J^{π}: 3/2$^-$,5/2,7/2$^-$ from D,E2 γ to 7/2$^-$ and D,E2 γ from 3/2$^-$ IAR. 7/2,9/2,11/2$^-$ from Hauser-Feshbach in (p,p′).
2352.2[a] *5*	3/2$^-$,5/2[l]		fGh KL y	XREF: f(2351)h(2349)y(2342). J^{π}: γ's to 3/2$^-$, 3/2$^+$, and 7/2$^-$. $T_{1/2}$≥42 fs *+28−17*, $T_{1/2}$≤194 fs *56*.

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Adopted Levels, Gammas (continued)

^{45}Sc Levels (continued)

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$[#]	XREF	Comments
2385? *7*			K	
2531.0[a] *5*	(1/2$^+$,3/2,5/2)		G KL	J$^\pi$: γ's to 3/2$^+$ and 5/2$^+$ and from 3/2$^{(-)}$ res. $T_{1/2}$: 81 fs *+38−17* from (p,γ) and 21 fs *5* from (p,p′γ) are discrepant; DSAM.
2563.2[d] *4*	13/2$^+$	1.0[m] ps *3*	BC E K	J$^\pi$: D γ to 15/2$^-$ and D,E2 γ to 9/2$^+$. $T_{1/2}$: other: 1.4 ps *+6−4* from DSAM in (α,pγ).
2590.0[a] *6*	3/2$^-$,5/2,7/2$^-$[l]	35[i] fs *8*	fG I kL	XREF: f(2600)k(2596). J$^\pi$: D,E2 γ's to 3/2$^-$ and 7/2$^-$. $T_{1/2}$: other: 10 fs *5* from DSAM in (p,p′γ) depending on placement of 2590γ.
2601.4[a] *5*	1/2$^+$,3/2,5/2[l]		fG k	XREF: f(2600)k(2596). J$^\pi$: γ's to 3/2$^-$ and 5/2$^+$ and from 3/2$^+$ res. $T_{1/2}$: see comment on preceding $T_{1/2}$.
2634? *7*			K	
2700? *7*			K	
2747.0[a] *10*	5/2$^-$,7/2$^-$		FGH K U Z	
2778.7[a] *8*	(1/2$^-$,3/2,5/2)		G JKL	J$^\pi$: γ's to 3/2$^+$ and 5/2$^-$ and from 3/2$^{(-)}$ res. $T_{1/2}$: 13 fs *4* from (p,γ) and 69 fs *14* from (n,n′γ) are discrepant; DSAM. Other: <20 fs from (p,p′γ), DSAM.
2860.7?[a]	(1/2$^-$,3/2,5/2)		G	J$^\pi$: γ?'s to 3/2$^+$ and 5/2$^-$ and from 3/2$^-$ IAR.
2895.2[a] *5*	1/2$^+$,3/2,5/2	7[i] fs *4*	G	J$^\pi$: D,E2 γ to 5/2$^+$ and γ's from 3/2$^+$ res and 3/2$^{(-)}$ res.
2903.8[a] *7*	3/2$^+$,5/2$^+$		FG N	
2943[c] *7*	(5/2)$^+$		F K Z	J$^\pi$: π=+ from L(p,p′)=3; J^π=5/2$^+$ from DWBA in (p,α).
2960? *30*	(9/2$^+$,11/2$^-$)		O y	XREF: y(2967). J$^\pi$: from DWBA in (pol p,α).
2964.0?[a] *15*	(3/2$^+$,5/2$^+$)		G y	XREF: y(2967). J$^\pi$: γ?'s to 1/2$^+$ and 7/2$^+$.
2979.8[a] *18*	3/2$^-$		D FGH K y	XREF: y(2967). J$^\pi$: L(^{3}He,d)=1; L(α,p)=1. *3/2* from empirical J dependence in (α,p).
3025.5[a] *6*	1/2$^-$,3/2$^-$		FGH KL	
3059? *7*			K	
3092.0[a] *8*	1/2$^+$,3/2,5/2		Gh	XREF: h(3104). J$^\pi$: γ's to 3/2$^-$ and 5/2$^+$ and from 3/2$^+$ res.
3104[a]	(3/2,5/2)[n]		Gh k	XREF: h(3104,3119). J$^\pi$: 3/2,5/2,7/2 from γ's from 3/2$^-$ and to 7/2$^-$. Ne 7/2 from $\sigma(\theta)$ and p-wave formation in p res.
3111.2[a] *8*	7/2$^+$		Gh k	XREF: h(3119). J$^\pi$: γ's to 11/2$^+$ and from 3/2$^+$ res.
3136.3[a] *7*	5/2$^-$,7/2$^-$,9/2$^-$[n]		FGh	XREF: h(3119,3150). J$^\pi$: multiply-placed γ from 7711+7713+7715 triplet might exclude 9/2$^-$.
3159.1 *6*			E h K	XREF: h(3150).
3198 *9*			H K	
3224? *7*			K	
3283 *7*	($^+$)		F K	J$^\pi$: L(p,p′)=(1).
3294.9[&] *8*	15/2$^+$	0.46 ps *5*	BC	J$^\pi$: 11/2$^+$,15/2$^+$ from ΔJ=1 M1(+E2) or ΔJ=2 E2 γ to 13/2$^+$ and ΔJ=0 d or ΔJ=2 E2 γ to 11/2$^+$. Member of $\pi d^{-1}_{3/2} f^6_{7/2}$ band.

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Adopted Levels, Gammas (continued)

^{45}Sc Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
3329 *7*	$+$[o]		f K	XREF: f(3348).
3349 *7*	$(^{+})$		f K	XREF: f(3348). J^{π}: L(p,p′)=(1).
3363.5[g] *7*	$(15/2^-)$		C	J^{π}: $11/2^-,13/2,15/2^-$ from γ's to $11/2^-$ and $15/2^-$. Member of band based on $(11/2^-)$.
3366.4[a] *8*	$(5/2)^-$		FGH	J^{π}: $5/2^-,7/2^-,9/2^-$ from L(^{3}He,p)=0+2. Ne $7/2^-,9/2^-$ from γ from $3/2^+$ res.
3400 *8*	$1/2^-,3/2^-$		H K	
3443 *7*	$+$[o]		K	
3457[a]	$(5/2)^-$[n]		D fG	XREF: f(3473). J^{π}: L(α,p)=3; empirical J dependence of $\sigma(\theta)$ In(a,p).
3462.1[a] *8*	$5/2^-,7/2^-$[p]		fG	XREF: f(3473). J^{π}: γ's to $3/2^-$ and from $3/2^+$ res.
3475[a]	$3/2^+,5/2^+$		G N	
3487.4[a] *8*	$3/2^-$		GH K	J^{π}: L(^{3}He,d)=1; Ne $1/2^-$ from γ to $7/2^-$.
3525.2[a] *8*	$3/2^-,5/2$		G	J^{π}: γ's to $(3/2)^-$ and $7/2^-$ and from $3/2^+$ res.
3548.5[a] *8*	$1/2^+,3/2,5/2,7/2^+$		G	J^{π}: γ's to $3/2^+$ and $5/2^+$.
3569.6[q] *7*	$17/2^-$	<0.07 ps	BC	J^{π}: $11/2^-,13/2^-,17/2^-,19/2^-$ from ΔJ=1 M1(+E2) or ΔJ=2 E2 γ to $15/2^-$; 17/2 from $\gamma(\theta)$ from $19/2^-$.
3581 *15*	$5/2^-,7/2^-,9/2^-$[n]		F h	XREF: h(3609).
3584[a] *1*	$1/2,3/2,5/2^+$		Gh	XREF: h(3609). J^{π}: γ to $1/2^+$.
3606 *7*	$+$[o]		F h K	XREF: h(3609).
3692.9[@] *4*	$19/2^-$	1.39 ps *14*	BC O Z	J^{π}: 15/2,19/2 from $\gamma(\theta)$ to $15/2^-$ in (^{7}Li,p2nγ); $11/2^-,19/2^-$ from ΔJ=2 E2 γ to $15/2^-$.
3714.3[a] *8*	$1/2,3/2,5/2$[kr]	13[i] fs *+14−10*	FGh k n Z	XREF: h(3724)k(3715)n(3.73E+3). J^{π}: D,E2 γ to $(3/2)^-$ and γ from $3/2^+$ res.
3722.3[a] *10*	[kr]		FGh k n	XREF: h(3724)k(3715)n(3.73E+3).
3776 *13*	$(^{+})$[o]		H K	
3864.0?[a] *15*			G	
3882 *11*	$(1/2^-)$[s]		D FGH	J^{π}: L(^{3}He,d)=(1) and isotropic $\gamma(\theta)$ to $3/2^-$.
3890? *30*	$+$[o]		K	
3916 *7*	$1/2^-,3/2^-$[s]		H K	
3938 *15*	$5/2^-,7/2^-,9/2^-$[p]		F	
3982 *7*	$3/2^+,5/2^+$		GH K N	
4031 *7*	$+$[o]		K	
4034 *11*	$5/2^-,7/2^-,9/2^-$[p]		F H	
4055.4[d] *6*	$17/2^+$	0.28[m] ps *6*	C	J^{π}: $13/2,17/2^+$ from ΔJ=0 d or ΔJ=2 E2 γ to $15/2^+$ and ΔJ=1 d+Q or ΔJ=2 E2 γ to $15/2^-$. Member of $\pi d^{-1}_{3/2}f^{6}_{7/2}$ band.
4084.9[a] *10*	$(1/2^-,3/2^-)$		FG K	J^{π}: $1/2,3/2,5/2^+$ from γ to $1/2^+$. (5/2 to 9/2)$^-$ or (1/2,3/2)$^-$ from (^{3}He,p).
4129[c] *7*			H K	
4178 *11*			F H N	
4244 *11*			F H	
4307 *13*	$-$		H K	J^{π}: L(p,p′)=2.

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Adopted Levels, Gammas (continued)

^{45}Sc Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	$T_{1/2}$[#]	XREF	Comments
4360 *15*	3/2$^+$,5/2$^+$		H N	E(level): from (^{3}He,d).
4424 *15*			H k	XREF: k(4427).
4464 *15*			f H k	XREF: f(4488)k(4427).
4505 *15*	1/2$^-$,3/2$^-$		fGH	XREF: f(4488). E(level): from (^{3}He,d).
4546 *11*			F H	
4610? *30*	(13/2$^-$,15/2$^+$)		O	J$^{\pi}$: from $\sigma(\theta)$ and analyzing power in (pol p,α).
4610 *11*			F H	
4662 *11*	(1/2,3/2)		FGH	J$^{\pi}$: from $\gamma(\theta)$ in (p,γ).
4690? *30*	(13/2$^+$,15/2$^-$)		O	J$^{\pi}$: from $\sigma(\theta)$ and analyzing power in (pol p,α).
4713 *15*			f H	XREF: f(4716).
4739 *15*			f H n	XREF: f(4716)n(4.75E+3).
4774 *15*			f H n	XREF: f(4795)n(4.75E+3).
4801 *15*			f H	XREF: f(4795).
4824 *11*			F H	
4869 *15*			H	
4895.4[&] *11*	19/2$^+$	0.21[m] ps *4*	C	J$^{\pi}$: 13/2$^+$,17/2,19/2$^+$ from D,E2 γ to 17/2$^+$ and ΔJ=1 d+Q or ΔJ=2 E2 γ to 15/2$^+$. Member of $\pi d^{-1}_{3/2}f^6_{7/2}$ band.
4919 *11*	(1/2$^-$,3/2$^-$)		F H	J$^{\pi}$: L(^{3}He,p)=2.
4950? *30*	(17/2$^+$)		O	J$^{\pi}$: from $\sigma(\theta)$ and analyzing power in (pol p,α).
4965 *11*	5/2$^-$,7/2$^-$,9/2$^-$[p]		F H	
5009 *15*			H	
5049 *15*			H	
5084 *15*			H	
5125 *15*			H	
5169 *15*	[t]		H o	XREF: o(5200).
5219 *15*	[t]		H o	XREF: o(5200).
5261 *11*			F H	
5299 *11*			F H n	XREF: n(5.34E+3).
5374 *15*			H n	XREF: n(5.34E+3).
5418.3[@] *7*	23/2$^-$[u]	1.32 ps *14*	BC O	
5419? *15*			H	
5444 *15*			H	
5504 *15*			H	
5516.4[g] *6*	(19/2$^-$)		C	J$^{\pi}$: 15/2$^-$,17/2,19/2$^-$ from γ's to 15/2$^-$, 17/2$^-$, and 19/2$^-$. Member of band based on (11/2$^-$).
5574 *15*			H	
5604 *15*			H	
5669 *12*	3/2$^+$,5/2$^+$		F H N	
5696.8[d] *7*	21/2$^+$	0.28[m] ps *14*	C	J$^{\pi}$: 17/2,21/2$^+$ from ΔJ=0 d or ΔJ=2 E2 γ to 17/2$^+$ and ΔJ=1 d+Q or ΔJ=2 E2 γ to 19/2$^-$. Member of $\pi d^{-1}_{3/2}f^6_{7/2}$ band.
5710.6[q] *7*	(21/2$^-$)		C	J$^{\pi}$: 19/2,21/2,23/2 from ΔJ=1 d+Q or ΔJ=2 γ to 19/2$^-$ and γ's to 17/2$^-$ and 19/2$^-$. Member of $\pi f^5_{7/2}$ band.
5774 *20*			F H	
5810 *20*			f H	
5834 *20*			f H	
5931 *20*			H	
5964 *20*			H	

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Adopted Levels, Gammas (continued)

^{45}Sc Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
5971 *20*			H	
6004 *20*			H	
6031 *20*			H	
6119 *17*			F H	
6179 *20*			H	
6202 *20*			H	
6244 *20*			H	
6332 *13*	[n]		F H	
6369 *15*	$3/2^+,5/2^+$[n]		F N	E(level): from (^{3}He,p).
6438 *12*			F H	
6476 *15*			F	
6551 *15*	$5/2^-,7/2^-,9/2^-$[p]		F	
6609 *15*			F	
6667 *15*	$(5/2^-,7/2^-,9/2^-)$[p]		F z	XREF: z(6680).
6683.9[&] *11*	$23/2^+$	0.17[m] ps *4*	C	J^{π}: $19/2,23/2^+$ from ΔJ=0 d or ΔJ=2 E2 γ to $19/2^+$ and D,E2 γ to $21/2^+$. Member of $\pi d^{-1}_{3/2}f^{6}_{7/2}$ band.
6699 *15*	$7/2^-$		F z	XREF: z(6680). J^{π}: L(^{3}He,p)=0.
6.75×10^3	$3/2^+,5/2^+$		N	
6751 *15*	$(5/2^-,7/2^-,9/2^-)$[p]		F	
6820 *15*	$5/2^-,7/2^-,9/2^-$[p]		F	
7612.6[g] *7*	$(23/2^-)$		C	J^{π}: $19/2^-,21/2,23/2^-$ from γ's to $19/2^-$ and $23/2^-$. Member of band based on $(11/2^-)$.
7.65×10^3?			N	
7696.3? *15*			C	
7711.0 *18*	[v]		G	
7712.5 *17*	[v]		G	
7714.9 *17*	[v]		G	
7725.0 *17*	$3/2^{(-)}$		G	J^{π}: J from $\gamma(\theta)$ in (p,γ); π from inhibition of M2 transitions for 1f7/2 nuclides.
7774.4 *17*	$3/2^{(+)}$		G	J^{π}: 3/2 from $\gamma(\theta)$ in (p,γ); γ to $7/2^+$.
7929.3[d] *8*	$25/2^+$[u]	<0.07[m] ps	C	
8003.4 *12*	$19/2^-$ to $27/2^-$	<0.07[m] ps	C	J^{π}: D,E2 γ to $23/2^-$.
8111.6[w] *9*	$3/2^-$	37 eV *9*	G	Γ_p=36 eV *9*; Γ_{γ}=1.3 eV *4* J^{π}: from $\gamma(\theta)$ and p-wave formation in p resonance studies.
8118.3		20 eV *+8−18*	G	Γ_p=20 eV *+8−18*
8127.7[w] *9*	$3/2^-$	23 eV *7*	G	Γ_p=22 eV *7*; Γ_{γ}=0.87 eV *24* J^{π}: from $\gamma(\theta)$ and p-wave formation in p resonance studies.
8305.3? *15*			C	
8364.4 *9*	$25/2^+$[x]	<0.07[m] ps	C	
8436.1	$3/2^-,5/2$		G	J^{π}: γ's to $3/2^-$, $3/2^+$, and $7/2^-$.
8471.3	$5/2^+$		G	J^{π}: γ's to $1/2^+$, $7/2^-$, and $7/2^+$.
8475.8	$(3/2)^-$	12 eV *5*	G	Γ_p=12 eV *5*; Γ_{γ}=0.42 eV
8484.4	$(3/2)^-$	25 eV *7*	G	Γ_p=25 eV; Γ_{γ}=0.17 eV
8491.9	$3/2^-$		G	$\Gamma_{\gamma}\geq$0.35 eV *10*
8497.7	$3/2^-$	80 eV *15*	G	Γ_p=80 eV *15*; Γ_{γ}=0.45 eV

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Adopted Levels, Gammas (continued)

^{45}Sc Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
8503.3[y]	$3/2^-$	400 eV *40*	G	Γ_p=400 eV *40*; Γ_γ=0.41 eV
8509.5	$3/2^-$		G	
8515.9[y]	$3/2^-$	60 eV *10*	G	Γ_p=60 eV *10*; Γ_γ=0.34 eV
8519.3[y]	$3/2^-$	30 eV *7*	G	Γ_p=30 eV *7*; Γ_γ=0.32 eV
8528.4[y]	$(3/2)^-$	7 eV *5*	G	Γ_p=7 eV *5*; Γ_γ=0.16 eV
8529.2[y]	$(3/2)^-$	5 eV *3*	G	Γ_p=5 eV *3*; Γ_γ=0.16 eV
8533.1[y]	$3/2^-$	10 eV *5*	G	Γ_p=10 eV *5*; Γ_γ=0.11 eV J^{π}: $1/2^+$,3/2,$5/2^+$ from D,E2 γ to $5/2^+$ and γ to $1/2^+$.
8543.2[y]	$3/2^-$	10 eV *5*	G	Γ_p=10 eV *5*; Γ_γ=0.32 eV J^{π}: 3/2,$5/2^+$ from D,E2 γ's to $1/2^+$, $5/2^-$, and $5/2^+$. $(3/2)^-$ from line-shape analysis in p res.
8552.7[z]	$(1/2)^-$	10 eV *5*	G	Γ_p=10 eV *5*; Γ_γ=0.28 eV
8580.1[z]	$1/2^-$	50 eV *10*	G	Γ_p=50 eV *10*; Γ_γ=0.13 eV
8591.4[z]	$(1/2)^-$	15 eV *5*	G	Γ_p=15 eV *5*; Γ_γ=0.12 eV
8606.3	5/2		G	J^{π}: γ's to $3/2^-$, $3/2^+$, $7/2^-$, and $7/2^+$.
8616.1[z]	$1/2^-$	40 eV *10*	G	Γ_p=40 eV *10*; Γ_γ=0.37 eV
8622.4[&] *11*	$27/2^+$[x]	0.19[m] ps *6*	C	
8658.2[z]	$(1/2)^-$	26 eV *7*	G	Γ_p=25 eV *7*; Γ_γ=0.79 eV
8664.9[z]	$(1/2)^-$	5 eV *3*	G	Γ_p=5 eV *3*; Γ_γ=0.23 eV
8674.5[z]	$(1/2)^-$	15 eV *5*	G	Γ_p=15 eV *5*; Γ_γ=0.19 eV
8696.4[z]	$1/2^-$	36 eV *7*	G	Γ_p=35 eV *7*; Γ_γ=0.51 eV
8711.7[z]	$(1/2)^-$	15 eV *5*	G	Γ_p=15 eV *5*; Γ_γ=0.46 eV
8716.1[z]	$(1/2)^-$	26 eV *7*	G	Γ_p=25 eV *7*; Γ_γ=0.85 eV
8735.5[z]	$1/2^-$	60 eV *10*	G	Γ_p=60 eV *10*; Γ_γ=0.33 eV
8749.2[z]	$(1/2)^-$	11 eV *5*	G	Γ_p=10 eV *5*; Γ_γ=0.91 eV
8754.5[1]	$1/2^-$	100 eV *15*	G	Γ_p=100 eV *15*; Γ_γ=0.28 eV Probable doublet.
8766.3[1]	$1/2^-$	52 eV *10*	G	Γ_p=50 eV *10*; Γ_γ=1.61 eV
8794.8[1]	$1/2^-$	76 eV *15*	G	Γ_p=75 eV *15*; Γ_γ=0.56 eV
8807.5[1]	$1/2^-$	35 eV *7*	G	Γ_p=35 eV *7*; Γ_γ=0.32 eV
8813.9[1]	$(1/2)^-$	21 eV *5*	G	Γ_p=20 eV *5*; Γ_γ=1.38 eV
8824.7[1]	$(1/2)^-$	11 eV *5*	G	Γ_p=10 eV *5*; Γ_γ=0.52 eV Probable doublet.
8838.2[1]	$1/2^-$	400 eV *40*	G	Γ_p=400 eV *40*; Γ_γ=0.29 eV
8844.4[1]	$1/2^-$	35 eV *7*	G	Γ_p=35 eV *7*; Γ_γ=0.10 eV
8862.8[1]	$1/2^-$	175 eV *20*	G	Γ_p=175 eV *20*; Γ_γ=0.28 eV
8870.5[1]	$1/2^-$	241 eV *25*	G	Γ_p=241 eV *25*; Γ_γ=0.40 eV
8885.7[1]	$1/2^-$	54 eV *10*	G	Γ_p=53 eV *10*; Γ_γ=0.50 eV
8888.4[1]	$1/2^-$	351 eV *35*	G	Γ_p=350 eV *25*; Γ_γ=0.31 eV
8891.7[1]	$1/2^-$	64 eV *10*	G	Γ_p=63 eV *10*; Γ_γ=0.61 eV
8908.2[1]	$1/2^-$	243 eV *25*	G	Γ_p=242 eV *25*; Γ_γ=0.75 eV
8917.2[1]	$1/2^-$	36 eV *7*	G	Γ_p=35 eV *7*; Γ_γ=0.86 eV Probable doublet.
8935.0[1]	$1/2^-$	64 eV *10*	G	Γ_p=63 eV *10*; Γ_γ=0.61 eV
8947.7[1]	$(1/2)^-$	20 eV *5*	G	Γ_p=19 eV *5*; Γ_γ=0.55 eV
8948.9[1]	$(1/2)^-$	16 eV *5*	G	Γ_p=15 eV *5*; Γ_γ=0.61 eV
8961.2[1]	$1/2^-$	60 eV *10*	G	Γ_p=60 eV *10*; Γ_γ=0.29 eV
8965.3[1]	$1/2^-$	31 eV *7*	G	Γ_p=30 eV *7*; Γ_γ=0.81 eV
8975.5[q] *12*	$(25/2^-)$		C	J^{π}: $19/2^-$ to $27/2^-$ from γ to $23/2^-$. Member of $\pi f^5_{7/2}$ band.
8983.5[1]	$1/2^-$	49 eV *10*	G	Γ_p=48 eV *10*; Γ_γ=0.55 eV

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Adopted Levels, Gammas (continued)

^{45}Sc Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
8996.3[l]	$1/2^-$	40 eV *10*	G	Γ_p=40 eV *10*; Γ_γ=0.26 eV
9017.0[l]	$(1/2)^-$	12 eV *5*	G	Γ_p=11 eV *5*; Γ_γ=0.38 eV
9164.0? *15*			C	
9481.1? *15*			C	
10001.1? *16*			C	
10007.6[g] *9*	$(27/2^-)$		C	J^π: $19/2^-$ to $27/2^-$ from γ's to $23/2^-$ states (5419 and 7612). Member of band based on $(11/2^-)$.
10169.4[d] *10*	$(29/2^+)$		C	J^π: $23/2^+$,25/2,27/2,$29/2^+$ from γ's to $25/2^+$ and $27/2^+$. Member of $\pi d^{-1}_{3/2}f^6_{7/2}$.
10299.2? *15*			C	
10936.2? *15*			C	
11021.9[&] *13*	$(31/2^+)$		C	J^π: 23/2,25/2,29/2,31/2 from ΔJ=1 d+Q or ΔJ=2 Q γ to $27/2^+$. Member of $\pi d^{-1}_{3/2}f^6_{7/2}$ band.
11201.2 *11*	$(29/2^+)$		C	J^π: from DCO ratios and linear polarization in (^{18}O,p2nγ) (2001Be12. No details given). Parentheses added by the evaluator.
12142.2? *16*			C	
12592.7[g] *14*	$(31/2^-)$		C	J^π: member of band based on $(11/2^-)$.
13372.5 *14*	$(31/2^+)$		C	J^π: from DCO ratios and linear polarization in (^{18}O,p2nγ) (2001Be12. No details given). Parentheses added by the evaluator.
13674.6? *15*			C	
14516.8[d] *13*	$(33/2^+)$		C	J^π: ($27/2^+$,29/2,31/2,$33/2^+$) from γ's to $(29/2^+)$ and $(31/2^+)$. Member of $\pi d^{-1}_{3/2}f^6_{7/2}$ band.
15313.3? *16*			C	
15702.8[g] *17*	$(35/2^-)$		C	J^π: member of band based on $(11/2^-)$.
16462.2[&] *17*	$(35/2^+)$		C	J^π: member of $\pi d^{-1}_{3/2}f^6_{7/2}$ band.

[†] Bound state excitation energies were derived by a least-squares adjustment to the Eγ's ($\Delta E(\gamma)$=1 keV assumed when not given), except as noted in the footnotes, comments, or XREF column (these energies were held fixed in the adjustment). Excitation energies of the resonances are from (p,γ) and were not included in the adjustment.

[‡] From angular momentum transfer in (^{3}He,d) or (d,^{3}He) for ex<7 MeV and from line shape analysis in p resonances for ex>7 MeV, except as noted.

[#] $T_{1/2}$'s are from DSAM in (p,p'γ), except as noted, and resonant Γ's are from p resonance studies.

[@] Band(A): $\pi f^5_{7/2}$, α=$-1/2$. Identified as a K^π=$3/2^-$ band based on J(J+1) energy dependence and enhanced B(E2)(W.u.)'s (1985Av04). 1998Be29 identified the members as belonging to the $\pi f^5_{7/2}$ α=$-1/2$ and extended the structure from 3693 keV to 10169 keV. 2001Be12 reassigned 7929, $25/2^-$, and 10169, $27/2^-$, as the $25/2^+$ and $29/2^+$ members of the $\pi d^{-1}_{3/2}f^6_{7/2}$ band.

[&] Band(B): $\pi d^{-1}_{3/2}f^6_{7/2}$, α=$-1/2$. Identified as a 3/2[202] band based on J(J+1) energy dependence and enhanced B(E2)(W.u.)'s (1985Av04). 1998Be29 extended this band from 3296 keV to 13601 keV. 2001Be12 further extended the structure to 16462 keV, identified the 16462 keV state as the $35/2^+$ member of this band instead of the 13601 keV state as proposed by 1998Be29, and reassigned the 7929, $25/2^-$, and 10169, $27/2^-$, members of the $\pi f^5_{7/2}$ as the $25/2^+$ and $29/2^+$ members of of this band.

[a] Excitation energy is from (p,γ).

[b] Band(C): K^π=$3/2^-$ band. Based on J(J+1) energy dependence and enhanced B(E2)(W.u.)'s (1985Av04).

[c] Excitation energy is from (p,p'γ) or (p,p').

[d] Band(D): $\pi d^{-1}_{3/2}f^6_{7/2}$, α=+1/2. See footnote on $\pi d^{-1}_{3/2}f^6_{7/2}$, α=$-1/2$.

[e] Band(E): 1/2(200) band.

[f] $T_{1/2}$ from B(E2)↑ in Coulomb excitation not included in the evaluated value since 1986Ta14 noted that the compound nuclear contribution was ≈50%.

[g] Band(F): Band based on $(11/2^-)$. The deformation of this band exhibits similar behavior in magnitude and trend at high spins as that of the $\pi d^{-1}_{3/2}f^6_{7/2}$ band. This effect may point out that the deformation of ^{45}Sc is not directly related to the number of

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Adopted Levels, Gammas (continued)

^{45}Sc Levels (continued)

involved particle-hole excitations. (2004Be20).

[h] See footnote on Band based on (11/2$^-$).

[i] From DSAM in (p,γ).

[j] (1/2$^-$),1/2$^+$ from Hauser-Feshbach analysis in (p,p′).

[k] L(d,^{3}He)=1 for 2.3-MeV multiplet and 2 for 3.7-MeV multiplet.

[l] L(^{3}He,p)=2 for the multiplet.

[m] From DSAM in ^{30}Si(^{18}O,p2nγ).

[n] L(^{3}He,p)=0+2 or (0+2) for the multiplet.

[o] L(p,p′)=3.

[p] L(^{3}He,p)=0+2 or (0+2).

[q] Band(G): $\pi f^5_{7/2}$, α=+1/2. See footnote on the α=−1/2 signature members of this band.

[r] L(^{3}He,d)=1 for the multiplet.

[s] L=(1), J^π=(3/2$^-$) in (α,p) for the doublet.

[t] (11/2$^-$,13/2$^+$) for the multiplet from $\sigma(\theta)$ and analyzing power in (pol p,α).

[u] J^π(5419)=15/2$^-$,19/2,23/2$^-$ from ΔJ=0 d or ΔJ=2 E2 γ to 19/2$^-$. J^π(7929)=19/2$^+$,21/2,23/2,25/2$^+$ from D,E2 γ to 21/2$^+$ and γ to 23/2$^+$. J^π(5419)=19/2,23/2$^-$ and J^π(7929)=21/2, J^π(5419)=19/2 and J^π(7929)=23/2, or J^π(5419)=23/2$^-$ and J^π(7929)=25/2$^+$ from connecting ΔJ=1 d+Q or ΔJ=2 E2 γ. Members of the $\pi f^5_{7/2}$ and $\pi d^{-1}_{3/2} f^6_{7/2}$, respectively.

[v] Possibly 3/2,5/2$^+$ from multiply placed γ′s to 1/2$^+$, 5/2$^-$, and 5/2$^+$.

[w] Fragments of ^{45}Ca 1435, 3/2$^-$, IAR.

[x] J^π(8364)=19/2$^-$,21/2,25/2,27/2$^-$ from ΔJ=1 d+Q or ΔJ=2 E2 to 23/2$^-$. J^π(8622)=19/2$^+$,21/2,25/2,27/2$^+$ to 23/2$^+$. J^π(8364)=21/2$^+$ and J^π(8622)=19/2$^+$, J^π(8364)=19/2$^-$,23/2 and J^π(8622)=21/2, J^π(8364)=27/2$^-$ and J^π(8622)=25/2, or J^π(8364)=25/2$^+$ and J^π(8622)=27/2$^+$ from connecting M1+E2 γ. J^π(8622)=27/2$^+$ from membership in $\pi d^{-1}_{3/2} f^6_{7/2}$ band; therefore, J^π(8364)=25/2$^+$.

[y] Fine structure of the ^{45}Ca 1904, 3/2$^-$, IAR.

[z] Background 1/2$^-$ states.

[1] Fine structure of the ^{45}Ca 2251, 1/2$^-$, IAR.

$\gamma(^{45}Sc)$

See (α,pγ) for unplaced gammas.

B(E1)(W.u.), B(E2)(W.u.), B(M2)(W.u.) and comparison to RUL: calculations for γ's from proton resonances were performed using the partial Γ_γ's if possible and the total Γ_γ for other cases instead of the total level Γ.

E(B) TV Gamma energy is an unweighted average of the following data:

Adopted	ε Decay	(^{19}F,2pγ)	(α,pnγ)		(γ,γ)	(n,n′γ)	(p,p′γ)	(μ,Xnγ)	
364.19 *14*	364 *1*	364.55 *25*					363.8 *5*	364.35 *33*	364.23 *13*
543.14 *14*	543 *1*	542.8 *9*	543.2 *2*	543 *2*	543.2 *5*	543.09 *23*			
720.22 *17*	719.6 *3*		720.6 *5*	720 *1*	720.3 *5*	720.34 *15*	719.9 *4*		
869.57 *13*		869.44 *15*	869.7 *2*						
890.9 *8*		889.8 *3*	891.0 *3*			893 *1*	889.8 *6*		
962.01 *11*	961.6 *6*	962.03 *20*	962.4 *2*	962 *2*	962 *1*	962.02 *14*			
974.42 *15*	974.0 *5*	974.64 *20*	974.7 *3*	974 *2*	974.8 *5*	974.39 *14*			
1032.4 *4*	1032.1 *5*							1032.79 *39*	
1237.07 *20*	1236.5 *5*	1237.25 *30*	1237.4 *2*				1237.13 *18*		
1408.6 *5*	1408.1 *3*							1409.08 *42*	
1435.4 *16*			1433.8 *1*	1437 *2*					
1662.4 *6*	1660.9 *3*		1662.4 *3*	1663 *2*	1664 *2*	1661.9 *10*			
2094.0 *10*			2093 *2*			2094.9 *10*			

E(D) TV Gamma energy is a weighted average of the following data:

Adopted	ε Decay	(^{19}F,2pγ)	(α,pγ)		(γ,γ)	(n,n′γ)	(p,p′γ)	Coul. ex.
377.1 *4*				377.3 *5*		376.94 *49*		
425.1 *3*	425 *1*		425.4 *5*	426 *1*	425.4 *5*			
431.77 *11*		432 *1*	431.9 *2*				431.71 *13*	
459.06 *17*			459.0 *2*				459.2 *3*	
530.65 *15*	530 *1*	530.95 *15*	530.7 *2*	531 *2*	530.6 *5*	530.66 *17*		
926.8 *4*				926.7 *5*	926.8 *5*			
2341.5 *9*			2341 *2*			2341.6 *10*		

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[u]	Comments
12.40	3/2$^+$	12.40 *5*	100	0.0	7/2$^-$	(M2)	423 *9*	α(K)=362 *8*; α(L)=53.5 *12*; α(M)=6.63 *15*; α(N)=0.298 *7* B(M2)(W.u.)=0.0606 *15* E_γ: from level energy (B. Singh, May 01, 2021). Other: 12.4 from ε decay, with ΔE=+0.1−0.2 keV in 2008Bu01 evaluation. Comment modified by B. Singh, May 01, 2021. I_γ: from ε decay. α(K)exp=428 *37*. α(K)exp value deduced by B. Singh, May 01, 2021, weighted average of 429 *117* from ε decay, 413 *37* from (p,p′γ), and 580 *120* from Coul. ex. Mult.: D,Q from comparison to RUL. ΔJ^π=2,yes from level scheme.

$^{45}_{21}Sc_{24}$-13

$\gamma(^{45}$Sc) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[#]	α[u]	Comments
									α: from BrIcc for M2. Other: 501 *43* from α(K)exp=428 *37*, and α=1.17(α(K)exp), the ratio of total α/α(K) (theory) from BrIcc. 2008Bu01 evaluation used K/L+=3. Comment added by B. Singh, May 01, 2021. B(M2)(W.u.) deduced by B. Singh, May 01, 2021.
376.50	3/2$^-$	364.19 *14*	100.00 *20*	12.40	3/2$^+$	(E1(+M2))	−0.01 *8*	5.09×10^{-4} *18*	α(K)=0.000463 *17*; α(L)=4.07×10^{-5} *15*; α(M)=5.04×10^{-6} *19*; α(N+..)=2.81×10^{-7} *10* α(N)=2.81×10^{-7} *10* B(E1)(W.u.)=0.000234 *13*; B(M2)(W.u.)=0.8 *+130−8* Mult.: D(+Q) from $\gamma(\theta)$ in (α,pγ). $\Delta\pi$=yes from level scheme.
		377.1 *4*	9.11 *20*	0.0	7/2$^-$	E2(+M3)	−0.01 *2*	0.00198 *3*	α(K)=0.00180 *3*; α(L)=0.0001595 *24*; α(M)=1.97×10^{-5} *3*; α(N+..)=1.086×10^{-6} *16* α(N)=1.086×10^{-6} *16* B(E2)(W.u.)=15.0 *9*; B(M3)(W.u.)=7.E+4 *+30−7* I_γ: weighted ave of Iγ(377γ)/Iγ(364γ)=0.087 *13* from (p,γ), 0.094 *7* from (α,pγ), 0.088 *5* from (p,p′γ), and 0.0958 *21* from Coul. ex. Mult.: from $\gamma(\theta)$ in (α,pγ) and comparison to RUL. Additional information 1.
543.06	5/2$^+$	166.4	0.7 *4*	376.50	3/2$^-$	(E1)[@]		0.00518 *8*	α(K)=0.00472 *7*; α(L)=0.000414 *6*; α(M)=5.11×10^{-5} *8*; α(N+..)=2.82×10^{-6} *4* α(N)=2.82×10^{-6} *4* B(E1)(W.u.)=9.E−5 *5* E_γ,I_γ: from Coulomb excitation.
		530.65 *15*	100.0 *7*	12.40	3/2$^+$	M1+E2[&]	−0.55 *+11−18*	0.00037 *4*	B(M1)(W.u.)=0.0120 *18*; B(E2)(W.u.)=35 *12* α(K)=0.00034 *4*; α(L)=3.0×10^{-5} *4*; α(M)=3.7×10^{-6} *4*; α(N+..)=2.05×10^{-7} *22* α(N)=2.05×10^{-7} *22*
		543.14 *14*	70.5 *7*	0.0	7/2$^-$	E1(+M2)	<0.014	0.0001770 *25*	α(K)=0.0001614 *23*; α(L)=1.416×10^{-5} *20*; α(M)=1.754×10^{-6} *25* α(N+..)=9.81×10^{-8} *14* α(N)=9.81×10^{-8} *14* B(E1)(W.u.)=0.00025 *3* I_γ: unweighted ave of Iγ(543γ)/(531γ)=0.719 *16*

$^{45}_{21}Sc_{24}$-14

γ(^{45}Sc) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[#]	α[u]	Comments
									from (p,γ), 0.684 *19* from (p,p′γ), and 0.710 *10* from Coul. ex. Mult.: from $\gamma(\theta)$ in (α,pγ) and Coul. ex. δ: from comparison to RUL. δ(543γ)=−0.04 *6* from $\gamma(\theta)$ in (A,pγ).
720.12	5/2$^-$	708.2[a]	3.6[a] *6*	12.40	3/2$^+$	(E1(+M2))	<0.024	9.48×10^{-5} *14*	B(E1)(W.u.)=0.00025 *5* α(K)=8.63×10^{-5} *13*; α(L)=7.56×10^{-6} *11*; α(M)=9.37×10^{-7} *14*; α(N+..)=5.25×10^{-8} *8* α(N)=5.25×10^{-8} *8* I_γ: other Iγ(708γ)/Iγ(720γ)=0.007 *3* from Coul. ex. Mult.: D+Q from $\gamma(\theta)$ in Coul. ex. $\Delta\pi$=yes from level scheme. δ: from comparison to RUL. δ(708γ)=+1.2 *+14−5* from $\gamma(\theta)$ in Coul. ex.
		720.22 *17*	100.0[a] *6*	0.0	7/2$^-$	M1+E2	+0.14 *5*	1.54×10^{-4} *3*	α(K)=0.0001404 *25*; α(L)=1.234×10^{-5} *22*; α(M)=1.53×10^{-6} *3*; α(N+..)=8.59×10^{-8} *15* α(N)=8.59×10^{-8} *15* B(M1)(W.u.)=0.271 *22*; B(E2)(W.u.)=28 *20* Mult.: from $\gamma(\theta)$ in (α,pγ) and Coul. ex. δ: unweighted av of +0.09 *6* from (α,pγ) and +0.18 *3* from Coul. ex.; $\gamma(\theta)$. BM1W,BE2W From gW(125°)Γ_0^2/Γ in (γ,γ).
939.24	1/2$^+$	562.7[a]	20.9[a] *8*	376.50	3/2$^-$	(E1)[@]		0.0001630 *23*	B(E1)(W.u.)=7.1×10^{-5} *+4−7* α(K)=0.0001479 *21*; α(L)=1.297×10^{-5} *19*; α(M)=1.607×10^{-6} *23* α(N+..)=8.99×10^{-8} *13* α(N)=8.99×10^{-8} *13*
		926.8[x] *4*	100.0[xa] *8*	12.40	3/2$^+$	D,E2			
974.38	7/2$^+$	431.77 *11*	17.7[b] *10*	543.06	5/2$^+$	M1+E2[&]	−0.24 *+12−16*	0.00050 *7*	B(M1)(W.u.)=0.0105 *13*; B(E2)(W.u.)=9 *9* α(K)=0.00045 *6*; α(L)=4.0×10^{-5} *6*; α(M)=5.0×10^{-6} *7*; α(N+..)=2.8×10^{-7} *4* α(N)=2.8×10^{-7} *4*
		962.01 *11*	54.0[b] *14*	12.40	3/2$^+$	E2[c]		0.0001170 *17*	B(E2)(W.u.)=8.9 *9* α(K)=0.0001060 *15*; α(L)=9.31×10^{-6} *13*; α(M)=1.154×10^{-6} *17* α(N+..)=6.46×10^{-8} *9* α(N)=6.46×10^{-8} *9*
		974.42 *15*	100.0[b] *5*	0.0	7/2$^-$	E1+M2[c]	<0.042	4.86×10^{-5} *7*	α(K)=4.43×10^{-5} *7*; α(L)=3.87×10^{-6} *6*;

Adopted Levels, Gammas (continued)

$\gamma(^{45}Sc)$ (continued)

E_i(level)	J^{π}_i	E_γ[†]	I_γ[†]	E_f	J^{π}_f	Mult.[‡]	δ[#]	α[u]	Comments
									α(M)=4.80×10^{-7} *7*; α(N+..)=2.70×10^{-8} *4* α(N)=2.70×10^{-8} *4* B(E1)(W.u.)=0.000133 *12* δ: from comparison to RUL. δ(974)=+0.09 *+17−12* from $\gamma(\theta)$ in (α,pγ) and −0.32 *+6−11* from $\gamma(\theta)$ in Coul. ex.
1067.6	3/2$^-$	347.36[b] *33*	31 *4*	720.12	5/2$^-$	(M1(+E2))	+0.04 *13*	0.00075 *6*	α(K)=0.00068 *5*; α(L)=6.0×10^{-5} *5*; α(M)=7.5×10^{-6} *6*; α(N+..)=4.2×10^{-7} *3* α(N)=4.2×10^{-7} *3* B(M1)(W.u.)=0.43 *12*; B(E2)(W.u.)=15 *+100−15* Mult.: D(+Q) from $\gamma(\theta)$ in (α,pγ). $\Delta\pi$=no from level scheme.
		691.11[b] *49*	100 *10*	376.50	3/2$^-$	M1+E2[&]	−0.11 *5*	1.67×10^{-4} *3*	B(M1)(W.u.)=0.17 *5*; B(E2)(W.u.)=12 *12* α(K)=0.000152 *3*; α(L)=1.338×10^{-5} *23*; α(M)=1.66×10^{-6} *3*; α(N+..)=9.31×10^{-8} *16* α(N)=9.31×10^{-8} *16*
		1067	4.1 *8*	0.0	7/2$^-$	(E2)[d]		9.06×10^{-5} *13*	B(E2)(W.u.)=4.7 *14* α(K)=8.24×10^{-5} *12*; α(L)=7.23×10^{-6} *11*; α(M)=8.96×10^{-7} *13*; α(N+..)=5.02×10^{-8} *7* α(N)=5.02×10^{-8} *7*
1236.70	11/2$^-$	1237.07 *20*	100	0.0	7/2$^-$	E2[c]		8.00×10^{-5} *12*	B(E2)(W.u.)=11.4 *7* α(K)=5.86×10^{-5} *9*; α(L)=5.14×10^{-6} *8*; α(M)=6.37×10^{-7} *9*; α(N+..)=1.558×10^{-5} *23* α(N)=3.58×10^{-8} *5*; α(IPF)=1.554×10^{-5} *22*
1303.18	3/2$^+$	760.2[b] *7*	100 *14*	543.06	5/2$^+$	D+Q[&]			δ: −0.27 *15* or −2.0 *6* from $\gamma(\theta)$ in (α,pγ).
		926.8[xb] *5*	45[xb]	376.50	3/2$^-$	(E1)[@]		5.36×10^{-5} *8*	B(E1)(W.u.)=6.0×10^{-5} *+12−19* α(K)=4.88×10^{-5} *7*; α(L)=4.27×10^{-6} *6*; α(M)=5.29×10^{-7} *8*; α(N+..)=2.97×10^{-8} *5* α(N)=2.97×10^{-8} *5*
		1289.6[b] *8*	74 *14*	12.40	3/2$^+$	(E2)[d]		8.54×10^{-5} *12*	α(K)=5.35×10^{-5} *8*; α(L)=4.69×10^{-6} *7*; α(M)=5.81×10^{-7} *9*; α(N+..)=2.66×10^{-5} *5* α(N)=3.26×10^{-8} *5*; α(IPF)=2.66×10^{-5} *5* B(E2)(W.u.)=2.5 *+7−9* I_γ: unweighted ave of Iγ(1290γ)/Iγ(760γ)=0.56 *12* from (p,γ) and 1.1 *4* from Coul. ex.
1354.2?	(11/2$^-$)	1354[ey]		0.0	7/2$^-$				
1408.87	(7/2)$^-$	688.9[b] *5*	7.4 *12*	720.12	5/2$^-$	D,E2			I_γ: from Coulomb excitation.
		1032.4[x] *4*	4.9[x] *5*	376.50	3/2$^-$	(E2)[d]		9.80×10^{-5} *14*	α(K)=8.92×10^{-5} *13*; α(L)=7.83×10^{-6} *11*;

$\gamma(^{45}Sc)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[#]	α[u]	Comments
									α(M)=9.70×10^{-7} *14*; α(N+..)=5.43×10^{-8} *8* α(N)=5.43×10^{-8} *8* B(E2)(W.u.)=8.6 *+11−12* I_γ: from Coulomb excitation.
1408.87	(7/2)$^-$	1408.6 *5*	100.0 *5*	0.0	7/2$^-$	M1+E2	−2.62 *62*	1.03×10^{-4} *2*	B(M1)(W.u.)=0.0035 *15*; B(E2)(W.u.)=32 *+3−4* α(K)=4.35×10^{-5} *8*; α(L)=3.81×10^{-6} *7*; α(M)=4.72×10^{-7} *9*; α(N+..)=5.51×10^{-5} *14* α(N)=2.65×10^{-8} *5*; α(IPF)=5.51×10^{-5} *14* I_γ: from Coulomb excitation. Mult.: from $\gamma(\theta)$ in Coul. ex. and Coul. ex. δ: from $\gamma(\theta)$ in Coul. ex. δ=+0.05 *+13−9* if J=7/2 or −0.9 *4* if J=5/2 in (α,pγ) discrepant.
1433.49	9/2$^+$	197.53[by] *29*	4[b]	1236.70	11/2$^-$	(E1)[f]		0.00306 *5*	B(E1)(W.u.)=0.0005 *3* α(K)=0.00279 *4*; α(L)=0.000245 *4*; α(M)=3.02×10^{-5} *5*; α(N+..)=1.674×10^{-6} *25* α(N)=1.674×10^{-6} *25*
		459.06 *17*	27[b] *8*	974.38	7/2$^+$	M1+E2[&]	−0.24 *6*	4.32×10^{-4} *19*	B(M1)(W.u.)=0.011 *7*; B(E2)(W.u.)=8 *6* α(K)=0.000393 *17*; α(L)=3.46×10^{-5} *15*; α(M)=4.29×10^{-6} *19*; α(N+..)=2.40×10^{-7} *10* α(N)=2.40×10^{-7} *10*
		890.9 *8*	100[b] *13*	543.06	5/2$^+$	E2(+M3)[c]	+0.03 *6*	1.42×10^{-4} *4*	B(E2)(W.u.)=20 *11* α(K)=0.000129 *3*; α(L)=1.13×10^{-5} *3*; α(M)=1.41×10^{-6} *4*; α(N+..)=7.86×10^{-8} *19* α(N)=7.86×10^{-8} *19*
		1435.4 *16*	17.0[b] *19*	0.0	7/2$^-$	(E1(+M2))	−0.11 *+20−24*	2.37×10^{-4} *15*	α(K)=2.3×10^{-5} *5*; α(L)=2.0×10^{-6} *4*; α(M)=2.4×10^{-7} *5*; α(N+..)=0.000212 *20* α(N)=1.4×10^{-8} *3*; α(IPF)=0.000212 *20* B(E1)(W.u.)=6.E−6 *3*; B(M2)↓=0.15 *+56−15* Mult.: D(+Q) from $\gamma(\theta)$ in (α,pγ). $\Delta\pi$=yes from level scheme.
1472.5?	(7/2$^+$)	752[y] *1*		720.12	5/2$^-$				E_γ: from (n,n′γ).
		1474[y] *2*		0.0	7/2$^-$				E_γ: from (n,n′γ).
1556.2	(3/2)$^-$	488.5[a] *10*	100 *11*	1067.6	3/2$^-$	(M1)[gh]		0.000348 *5*	B(M1)(W.u.)=0.54 *+18−25* α(K)=0.000316 *5*; α(L)=2.78×10^{-5} *4*;

From ENSDF

$^{45}_{21}Sc_{24}$-17

Adopted Levels, Gammas (continued)

$\gamma(^{45}Sc)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[#]	α[u]	Comments
									α(M)=3.45×10^{-6} *5*; α(N+..)=1.93×10^{-7} *3* α(N)=1.93×10^{-7} *3*
1556.2	(3/2)$^-$	616.3[y]	8.9 *16*	939.24	1/2$^+$	(E1)[f]		0.0001310 *19*	B(E1)(W.u.)=0.00058 *+21−28* α(K)=0.0001188 *17*; α(L)=1.041×10^{-5} *15*; α(M)=1.290×10^{-6} *18* α(N+..)=7.22×10^{-8} *11* α(N)=7.22×10^{-8} *11*
		1013.8[ay]	<20[a]	543.06	5/2$^+$				
		1179.02[y]	5.7 *12*	376.50	3/2$^-$	D,E2			
1662.0	9/2$^-$	253.8[by] *5*	13[b] *3*	1408.87	(7/2)$^-$	M1		0.001550 *22*	B(M1)(W.u.)=1.2 *4* α(K)=0.001411 *21*; α(L)=0.0001253 *19*; α(M)=1.553×10^{-5} *23* α(N+..)=8.65×10^{-7} *13* α(N)=8.65×10^{-7} *13*
		425.1 *3*	19[b] *4*	1236.70	11/2$^-$	(M1(+E2))	−0.03 *13*	4.73×10^{-4} *22*	α(K)=0.000430 *20*; α(L)=3.80×10^{-5} *17*; α(M)=4.71×10^{-6} *21*; α(N+..)=2.63×10^{-7} *12* α(N)=2.63×10^{-7} *12* B(M1)(W.u.)=0.38 *10*; B(E2)(W.u.)=5 *+45−5* Mult.: D(+Q) from $\gamma(\theta)$ in (α,pγ). $\Delta\pi$=no from level scheme.
		942.0[by] *6*	14[b] *8*	720.12	5/2$^-$	(E2)[d]		0.0001230 *18*	B(E2)(W.u.)=8.E+1 *5* α(K)=0.0001117 *16*; α(L)=9.82×10^{-6} *14*; α(M)=1.217×10^{-6} *18* α(N+..)=6.81×10^{-8} *10* α(N)=6.81×10^{-8} *10*
		1662.4 *6*	100[b] *5*	0.0	7/2$^-$	M1+E2[&]	−0.47 *5*	1.57×10^{-4} *3*	B(M1)(W.u.)=0.027 *4*; B(E2)(W.u.)=5.9 *13* α(K)=2.88×10^{-5} *5*; α(L)=2.52×10^{-6} *4*; α(M)=3.13×10^{-7} *5*; α(N+..)=0.0001249 *22* α(N)=1.76×10^{-8} *3*; α(IPF)=0.0001249 *22*
1800.0	5/2$^+$	497.7[by]	31[b]	1303.18	3/2$^+$	(M1)[h]		0.000334 *5*	B(M1)(W.u.)=0.34 *8* α(K)=0.000303 *5*; α(L)=2.67×10^{-5} *4*; α(M)=3.31×10^{-6} *5*; α(N+..)=1.86×10^{-7} *3* α(N)=1.86×10^{-7} *3*
		733.3[by]	8[b]	1067.6	3/2$^-$	(E1)[@]		8.77×10^{-5} *13*	B(E1)(W.u.)=0.00066 *16* α(K)=7.98×10^{-5} *12*; α(L)=6.99×10^{-6} *10*; α(M)=8.66×10^{-7} *13*; α(N+..)=4.85×10^{-8} *7* α(N)=4.85×10^{-8} *7*

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Adopted Levels, Gammas (continued)

$\gamma(^{45}Sc)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[#]	α[u]	Comments
1800.0	$5/2^+$	1080.9[by]	8[b]	720.12	$5/2^-$	(E1)[@]		3.98×10^{-5} *6*	B(E1)(W.u.)=0.00021 *5* α(K)=3.62×10^{-5} *5*; α(L)=3.17×10^{-6} *5*; α(M)=3.93×10^{-7} *6*; α(N+..)=2.21×10^{-8} *3* α(N)=2.21×10^{-8} *3*
		1257.2[b] *5*	62[a] *3*	543.06	$5/2^+$	D+Q[i]			δ: 0.0 *2* or +1.4 *9* from $\gamma(\theta)$ in (α,pγ).
		1424.5[by]	23[b]	376.50	$3/2^-$	(E1)[@]		0.000231 *4*	B(E1)(W.u.)=0.00026 *6* α(K)=2.23×10^{-5} *4*; α(L)=1.95×10^{-6} *3*; α(M)=2.42×10^{-7} *4*; α(N+..)=0.000207 *3* α(N)=1.358×10^{-8} *19*; α(IPF)=0.000207 *3*
		1788.1[b] *6*	100[a] *3*	12.40	$3/2^+$	D+Q[i]			δ: −0.20 *9* or −1.3 *3* from $\gamma(\theta)$ in (α,pγ).
		1800.1[b] *6*	22.1 *22*	0.0	$7/2^-$	(E1)[@]		0.000512 *8*	B(E1)(W.u.)=0.00012 *3* α(K)=1.539×10^{-5} *22*; α(L)=1.344×10^{-6} *19*; α(M)=1.666×10^{-7} *24* α(N+..)=0.000495 *7* α(N)=9.38×10^{-9} *14*; α(IPF)=0.000495 *7*
1900.7		833.45	100	1067.6	$3/2^-$				
1930.6	$1/2,3/2,5/2^+$	991.49	100	939.24	$1/2^+$				
1935.5		1935.5[b] *10*	100[b]	0.0	$7/2^-$	D,E2			
1935.5?		1559[by]	100[b]	376.50	$3/2^-$	D,E2			
2031.2	$11/2^+$	597.4[b] *5*	100	1433.49	$9/2^+$	M1+E2	−0.19 *7*	2.33×10^{-4} *7*	α(K)=0.000212 *7*; α(L)=1.86×10^{-5} *6*; α(M)=2.31×10^{-6} *7*; α(N+..)=1.29×10^{-7} *4* α(N)=1.29×10^{-7} *4* B(M1)(W.u.)=0.062 *+11−14*; B(E2)(W.u.)=17 *13* Mult.: D+Q from $\gamma(\theta)$ in (α,pγ); ΔJ=1 d+Q or ΔJ=2 Q from DCO in (^{18}O,p2nγ). Ne E1+M2 from δ and comparison to RUL.
		794.2[b] *5*	12 *5*	1236.70	$11/2^-$	(E1)[@]		7.37×10^{-5} *11*	α(K)=6.71×10^{-5} *10*; α(L)=5.88×10^{-6} *9*; α(M)=7.28×10^{-7} *11*; α(N+..)=4.08×10^{-8} *6* α(N)=4.08×10^{-8} *6* B(E1)(W.u.)=8.E−5 *4* I_γ: weighted ave of Iγ(794γ)/Iγ(597γ)=0.15 *10* from (α,pγ) and 0.10 *6* from (p,p′γ).
		1056.14[b] *23*	98 *29*	974.38	$7/2^+$	E2(+M3)[c]	<0.0017	9.28×10^{-5} *13*	α(K)=8.44×10^{-5} *12*; α(L)=7.41×10^{-6} *11*; α(M)=9.18×10^{-7} *13*; α(N+..)=5.15×10^{-8} *8* α(N)=5.15×10^{-8} *8* B(E2)(W.u.)=30 *14* I_γ: unweighted ave of Iγ(1056γ)/Iγ(597γ)=0.56

From ENSDF

$^{45}_{21}Sc_{24}$-19

$\gamma(^{45}$Sc) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[#]	α[u]	Comments
									10 from ^{28}Si(^{19}F,2pγ), ^{30}Si(^{18}O,p2nγ),..., 1.54 *24* from (α,pγ), and 0.8 *5* from (p,p′γ). Other: 1.07 from ^{30}Si(^{18}O,p2nγ). δ: from comparison to RUL. δ(1057γ)=+0.03 *3* from $\gamma(\theta)$ in (α,pγ).
2093.0	5/2	788.8[ay]	<30[a]	1303.18	3/2$^+$				
		1023.7[a]	12.0[a] *24*	1067.6	3/2$^-$	D(+Q)[i]	−0.05 *20*		
		1715.5[a]	8.4[a] *24*	376.50	3/2$^-$	D,E2			
		2094.0 *10*	100.0[a] *24*	0.0	7/2$^-$	D(+Q)[i]	−0.05 *6*		
2106.2	≤7/2	1038.98	100	1067.6	3/2$^-$				
2106.3	15/2$^-$	869.57 *13*	100[a]	1236.70	11/2$^-$	E2		0.0001510 *22*	α(K)=0.0001371 *20*; α(L)=1.206×10^{-5} *17*; α(M)=1.494×10^{-6} *21* α(N+..)=8.35×10^{-8} *12* α(N)=8.35×10^{-8} *12* B(E2)(W.u.)<86 Mult.: from p$\gamma(\theta)$ and linear polarization in (α,pγ); ΔJ=0 d or ΔJ=2 Q from DCO in (^{18}O,p2nγ).
2138.4	3/2$^-$,5/2	583.34	40 *12*	1556.2	(3/2)$^-$	D			
		2138.29	1.0×10^2 *3*	0.0	7/2$^-$	D,E2			
2151.0	(1/2,3/2,5/2)	847.4	11.1 *23*	1303.18	3/2$^+$	D,E2			
		2138.5[x]	100[x] *10*	12.40	3/2$^+$	D,E2			
2152.0?		596.4[by]	100[b]	1556.2	(3/2)$^-$				
		1084.0[by]	52[b]	1067.6	3/2$^-$				
		1608.8[by]	98[b]	543.06	5/2$^+$				
2221.8	(3/2$^-$,5/2)	2209.42	100[b] *16*	12.40	3/2$^+$				
		2220.6[by] *18*	47[b] *16*	0.0	7/2$^-$				
2224.2	5/2$^+$,7/2$^+$	790.7[b]	56[b]	1433.49	9/2$^+$				
		920.8[b]	26[b]	1303.18	3/2$^+$				
		1504.0[b]	100[b]	720.12	5/2$^-$				
		1681.2[b]	74[b]	543.06	5/2$^+$				
		2212[y]		12.40	3/2$^+$				
		2224[y]		0.0	7/2$^-$				
2288.5	(7/2$^-$,9/2)	1049.2[b] *10*	82[b]	1236.70	11/2$^-$	D,E2			
		1316.0[y] *5*	58 *11*	974.38	7/2$^+$	D,E2			
		2289.7[b] *7*	100[b] *13*	0.0	7/2$^-$	D,E2			
2303.8	(5/2$^-$)	641.1[by] *5*	25[b] *8*	1662.0	9/2$^-$	(E2)[d]		0.000353 *5*	B(E2)(W.u.)=9.E+2 *+4−7*

$^{45}_{21}$Sc$_{24}$-20

γ(^{45}Sc) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[#]	α[u]	Comments
									α(K)=0.000321 *5*; α(L)=2.83×10^{-5} *4*; α(M)=3.50×10^{-6} *5*; α(N+..)=1.95×10^{-7} *3* α(N)=1.95×10^{-7} *3*
2303.8	(5/2$^-$)	1235.8	100 *21*	1067.6	3/2$^-$	D,E2			
		1926.7	92 *19*	376.50	3/2$^-$	D,Q			
		2290.7	71 *13*	12.40	3/2$^+$	(E1)[@]		0.000849 *12*	B(E1)(W.u.)=0.00020 +*8*−*14* α(K)=1.084×10^{-5} *16*; α(L)=9.46×10^{-7} *14*; α(M)=1.173×10^{-7} *17* α(N+..)=0.000837 *12* α(N)=6.60×10^{-9} *10*; α(IPF)=0.000837 *12*
2321.5	3/2$^-$,5/2,7/2$^+$	2308.8[b] *13*	100[b] *12*	12.40	3/2$^+$	D,E2			
		2321.7[b] *14*	45[b] *12*	0.0	7/2$^-$	D,E2			
2341.0	(7/2$^-$)	931.34[wby] *32*	≤100[wb]	1408.87	(7/2)$^-$	D			
		1622.5[xy]	42.95[x]	720.12	5/2$^-$	D,E2			
		2341.6[b] *10*	1.0×10^2 *3*	0.0	7/2$^-$	D,E2			
2352.2	3/2$^-$,5/2	797.3[j]	47 *9*	1556.2	(3/2)$^-$				
		1285.7[j]	20 *4*	1067.6	3/2$^-$				
		1632.4[j]	100 *20*	720.12	5/2$^-$				
		2340.1[j]	56 *12*	12.40	3/2$^+$				
		2350.4[b] *10*	5.4[b] *11*	0.0	7/2$^-$				
2531.0	(1/2$^+$,3/2,5/2)	1227.6	28 *6*	1303.18	3/2$^+$				
		1988.1	100 *20*	543.06	5/2$^+$	[k]			
		2516.3	72 *14*	12.40	3/2$^+$				
2563.2	13/2$^+$	457.5[e]	42[e]	2106.3	15/2$^-$	(E1)[f]		0.000275 *4*	B(E1)(W.u.)=0.0011 *4* α(K)=0.000250 *4*; α(L)=2.19×10^{-5} *3*; α(M)=2.72×10^{-6} *4*; α(N+..)=1.517×10^{-7} *22* α(N)=1.517×10^{-7} *22*
		531.7[a]	34[ae] *11*	2031.2	11/2$^+$	D,E2			
		1129.8[a] *3*	100[ae]	1433.49	9/2$^+$	E2(+M3)	0.00 *4*	8.14×10^{-5} *12*	α(K)=7.20×10^{-5} *11*; α(L)=6.32×10^{-6} *10*; α(M)=7.83×10^{-7} *12*; α(N+..)=2.22×10^{-6} *4* α(N)=4.39×10^{-8} *7*; α(IPF)=2.18×10^{-6} *4* B(E2)(W.u.)=14 *5* Mult.,δ: from γ(θ) in (α,pγ) and comparison to RUL. Other possibilities

Adopted Levels, Gammas (continued)

$\gamma(^{45}Sc)$ (continued)

E_i(level)	J^{π}_i	E_{γ}[†]	I_{γ}[†]	E_f	J^{π}_f	Mult.[‡]	α[u]	Comments
								excluded by level scheme. ΔJ=1 d+Q or ΔJ=2 Q from DCO in (^{18}O,p2nγ).
2563.2	13/2$^+$	1325.8[a]	47[ae]	1236.70	11/2$^-$	(E1)	1.68×10^{-4} *3*	B(E1)(W.u.)=4.8×10^{-5} *15* α(K)=2.52×10^{-5} *4*; α(L)=2.20×10^{-6} *3*; α(M)=2.73×10^{-7} *4*; α(N+..)=0.0001399 *20* α(N)=1.533×10^{-8} *22*; α(IPF)=0.0001399 *20* Mult.: D,E2 from comparison to RUL. Δπ=yes from level scheme.
2590.0	3/2$^-$,5/2,7/2$^-$	1032.8[xby] *4*	≤35[xb]	1556.2	(3/2)$^-$			
		1524.5[by] *4*	61[b] *18*	1067.6	3/2$^-$	D,E2		
		1869.7[by] *15*	17[b] *13*	720.12	5/2$^-$			
		2212.7[b] *13*	100 *20*	376.50	3/2$^-$	D,E2		
		2590.0[xy]	67[x] *14*	0.0	7/2$^-$	D,E2[k]		
2601.4	1/2$^+$,3/2,5/2	1045.4	30 *6*	1556.2	(3/2)$^-$			
		1534.2	100 *10*	1067.6	3/2$^-$	[k]		
		2059.28[y]	35 *15*	543.06	5/2$^+$			
		2224.30	56 *12*	376.50	3/2$^-$			
		2590.45[xy]	1.0×10^{2}[x] *5*	12.40	3/2$^+$			
2778.7	(1/2$^-$,3/2,5/2)	2058.6	47 *9*	720.12	5/2$^-$	[k]		
		2402	100 *21*	376.50	3/2$^-$			
2860.7?	(1/2$^-$,3/2,5/2)	1558[y]		1303.18	3/2$^+$			
		2140[vy]		720.12	5/2$^-$			
2895.2	1/2$^+$,3/2,5/2	2352.1 *5*	100	543.06	5/2$^+$	D,E2		
2903.8	3/2$^+$,5/2$^+$	1836.4	100 *20*	1067.6	3/2$^-$			
		2361	61 *13*	543.06	5/2$^+$			
2964.0?	(3/2$^+$,5/2$^+$)	1990[y]		974.38	7/2$^+$			
		2027[y]		939.24	1/2$^+$			
2979.8	3/2$^-$	1425	100 *20*	1556.2	(3/2)$^-$			
		2605.5	92 *20*	376.50	3/2$^-$			
3025.5	1/2$^-$,3/2$^-$	803.5[by] *6*	18[b] *7*	2221.8	(3/2$^-$,5/2)			
		931.34[wby] *32*	5.2[w] *10*	2093.0	5/2			
		2305.9	19 *4*	720.12	5/2$^-$			
		2648.73[y]	100	376.50	3/2$^-$			
3092.0	1/2$^+$,3/2,5/2	2024.4	100 *21*	1067.6	3/2$^-$			
		2550.3	72 *14*	543.06	5/2$^+$			
3104	(3/2,5/2)	3104[y]	100	0.0	7/2$^-$			
3111.2	7/2$^+$	1082.6	100	2031.2	11/2$^+$			
3159.1		1052.8[a] *5*	100[a]	2106.3	15/2$^-$			

From ENSDF

$^{45}_{21}Sc_{24}$-22

γ(^{45}Sc) (continued)

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.‡	δ#	α[u]	Comments
3294.9	15/2+	732[l]	100[l] 13	2563.2	13/2+	M1,E2[m]		0.00019 5	α(K)=0.00018 5; α(L)=1.6×10^{-5} 4; α(M)=1.9×10^{-6} 5; α(N+..)=1.1×10^{-7} 3 α(N)=1.1×10^{-7} 3
		1263[l]	62[l] 25	2031.2	11/2+	(E2)[n]		8.23×10^{-5} 12	α(K)=5.60×10^{-5} 8; α(L)=4.91×10^{-6} 7; α(M)=6.09×10^{-7} 9; α(N+..)=2.08×10^{-5} 3 α(N)=3.42×10^{-8} 5; α(IPF)=2.08×10^{-5} 3 B(E2)(W.u.)=15 7
3363.5	(15/2−)	1257[e]		2106.3	15/2−				
		2009[ey]		1354.2?	(11/2−)				
		2127[e]		1236.70	11/2−				
3366.4	(5/2)−	1957.9	100	1408.87	(7/2)−				
3457	(5/2)−	2216[y]		1236.70	11/2−				Placement of 2216γ or 2520γ is suspect since they feed 11/2− and 1/2+ states, respectively.
		2520[y]		939.24	1/2+				See comment on 2216γ.
3462.1	5/2−,7/2−	3085.5	100	376.50	3/2−				
3487.4	3/2−	2766.8	89 19	720.12	5/2−				
		3110.7	74 16	376.50	3/2−				
		3488.3	100 21	0.0	7/2−				
3525.2	3/2−,5/2	1969.6	43 9	1556.2	(3/2)−				
		3525	100 20	0.0	7/2−				
3548.5	1/2+,3/2,5/2,7/2+	3005.4	100 20	543.06	5/2+				
		3536.4	75 16	12.40	3/2+				
3569.6	17/2−	1463.3[l]	100[l]	2106.3	15/2−	M1,E2[m]		1.07×10^{-4} 14	α(K)=3.8×10^{-5} 3; α(L)=3.34×10^{-6} 25; α(M)=4.1×10^{-7} 3; α(N+..)=6.5×10^{-5} 11 α(N)=2.33×10^{-8} 17; α(IPF)=6.5×10^{-5} 11
3584	1/2,3/2,5/2+	2645	100	939.24	1/2+				
3692.9	19/2−	122.9[l]	21[o] 7	3569.6	17/2−	M1(+E2)[p]	<0.003‡	0.00932 14	B(M1)(W.u.)=1.5 6 α(K)=0.00846 12; α(L)=0.000761 11; α(M)=9.42×10^{-5} 14; α(N+..)=5.20×10^{-6} 8 α(N)=5.20×10^{-6} 8
		1586.56[l] 20	100[o]	2106.3	15/2−	E2		0.0001610 23	α(K)=3.47×10^{-5} 5; α(L)=3.04×10^{-6} 5; α(M)=3.77×10^{-7} 6;

$^{45}_{21}Sc_{24}$-23

$\gamma(^{45}$Sc) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[#]	α[u]	Comments
									α(K)=3.47×10^{-5} *5*; α(L)=3.04×10^{-6} *5*; α(M)=3.77×10^{-7} *6*; α(N+..)=0.0001232 *18* α(N)=2.12×10^{-8} *3*; α(IPF)=0.0001231 *18* B(E2)(W.u.)=3.5 *4* Mult.: Q from $\gamma(\theta)$ in (^{7}Li,p2nγ); ΔJ=0 d or ΔJ=2 Q from DCO in (^{18}O,p2nγ). Ne M2 from comparison to RUL.
3714.3	1/2,3/2,5/2	1621.8[x]	64[xl] *14*	2093.0	5/2	D,E2			
		2158.6	100[l] *20*	1556.2	(3/2)$^-$	D,E2			
3722.3		3345.7	100	376.50	3/2$^-$				
3882	(1/2$^-$)	2580	79	1303.18	3/2$^+$				
		3507	100	376.50	3/2$^-$	[g]			
4055.4	17/2$^+$	760[e]	9[e]	3294.9	15/2$^+$	D,E2			
		1492.5[e]	78[e]	2563.2	13/2$^+$	(E2)		0.0001280 *18*	α(K)=3.93×10^{-5} *6*; α(L)=3.44×10^{-6} *5*; α(M)=4.26×10^{-7} *6*; α(N+..)=8.53×10^{-5} *12* α(N)=2.40×10^{-8} *4*; α(IPF)=8.53×10^{-5} *12* B(E2)(W.u.)=12 *3* Mult.: ΔJ=0 d or ΔJ=2 Q from DCO in (^{18}O,p2nγ). Ne M2 from comparison to RUL.
		1949[e]	100[e]	2106.3	15/2$^-$	(E1(+M2))[q]	≤0.086[‡]	0.000618 *9*	B(E1)(W.u.)=0.00014 *3* α(K)=1.375×10^{-5} *21*; α(L)=1.200×10^{-6} *19*; α(M)=1.488×10^{-7} *23* α(N+..)=0.000602 *9* α(N)=8.38×10^{-9} *13*; α(IPF)=0.000602 *9*
4084.9	(1/2$^-$,3/2$^-$)	3146.5 *10*	100	939.24	1/2$^+$				
4505	1/2$^-$,3/2$^-$	1398	100	3104	(3/2,5/2)	[k]			
		3436	64	1067.6	3/2$^-$				
4662	(1/2,3/2)	4298	100	376.50	3/2$^-$				
4895.4	19/2$^+$	840[e]	20[e]	4055.4	17/2$^+$	D,E2			
		1600.5[e]	100[e]	3294.9	15/2$^+$	(E2)[n]		0.0001670 *24*	B(E2)(W.u.)=22 *5* α(K)=3.41×10^{-5} *5*; α(L)=2.99×10^{-6} *5*; α(M)=3.70×10^{-7} *6*; α(N+..)=0.0001291 *18* α(N)=2.08×10^{-8} *3*; α(IPF)=0.0001291 *18*
5418.3	23/2$^-$	1725.5[l]	100[l]	3692.9	19/2$^-$	(E2)[n]		0.000216 *4*	B(E2)(W.u.)=2.9 *4* α(K)=2.94×10^{-5} *5*; α(L)=2.58×10^{-6} *4*; α(M)=3.19×10^{-7} *5*; α(N+..)=0.000184 *3* α(N)=1.80×10^{-8} *3*; α(IPF)=0.000184 *3*
5516.4	(19/2$^-$)	1824[e]		3692.9	19/2$^-$				

From ENSDF

$^{45}_{21}$Sc$_{24}$-24

Adopted Levels, Gammas (continued)

$\gamma(^{45}Sc)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[#]	α[u]	Comments
5516.4	(19/2⁻)	1946[e]		3569.6	17/2⁻				
		2153[e]		3363.5	(15/2⁻)				
		3410[e]		2106.3	15/2⁻				
5696.8	21/2⁺	1641[e]	100[e]	4055.4	17/2⁺	(E2)		0.000182 *3*	α(K)=3.25×10⁻⁵ *5*; α(L)=2.84×10⁻⁶ *4*; α(M)=3.52×10⁻⁷ *5*; α(N+..)=0.0001467 *21* α(N)=1.98×10⁻⁸ *3*; α(IPF)=0.0001467 *21* B(E2)(W.u.)=10 *5* Mult.: ΔJ=0 d or ΔJ=2 Q from DCO in (^{18}O,p2nγ). Ne M2 from comparison to RUL. Δπ=2 from level scheme.
		2004[e]	78[e]	3692.9	19/2⁻	(E1(+M2))[q]	≤0.094[‡]	0.000656 *10*	α(K)=1.322×10⁻⁵ *21*; α(L)=1.153×10⁻⁶ *18*; α(M)=1.430×10⁻⁷ *23* α(N+..)=0.000641 *10* α(N)=8.05×10⁻⁹ *13*; α(IPF)=0.000641 *10* B(E1)(W.u.)=0.00010 *6*
5710.6	(21/2⁻)	292.5[e]		5418.3	23/2⁻				
		2016.3[e]		3692.9	19/2⁻	D+Q,Q			Mult.: ΔJ=1 d+Q or ΔJ=2 Q from DCO in (^{18}O,p2nγ).
		2142[e]		3569.6	17/2⁻				
6683.9	23/2⁺	988[e]	16[e]	5696.8	21/2⁺	D,E2			
		1789[e]	100[e]	4895.4	19/2⁺	(E2)[n]		0.000243 *4*	B(E2)(W.u.)=16 *4* α(K)=2.75×10⁻⁵ *4*; α(L)=2.40×10⁻⁶ *4*; α(M)=2.98×10⁻⁷ *5*; α(N+..)=0.000213 *3* α(N)=1.676×10⁻⁸ *24*; α(IPF)=0.000213 *3*
7612.6	(23/2⁻)	1902[e]		5710.6	(21/2⁻)				
		2096[e]		5516.4	(19/2⁻)				
		2194[e]		5418.3	23/2⁻				
		3920[e]		3692.9	19/2⁻				
7696.3?		1986[ey]		5710.6	(21/2⁻)				
7711.0		3991[w]	17[w] *4*	3722.3					
		4225[w]	3.3[w] *7*	3487.4	3/2⁻				
		4577[w]	6.7[w] *14*	3136.3	5/2⁻,7/2⁻,9/2⁻				
		4614[w]	3.3[w] *7*	3104	(3/2,5/2)				
		4731[w]	17[w] *4*	2979.8	3/2⁻				
		4809[w]	3.3[w] *7*	2903.8	3/2⁺,5/2⁺				
		4818[w]	6.7[w] *14*	2895.2	1/2⁺,3/2,5/2				
		4934[w]	23[w] *5*	2778.7	(1/2⁻,3/2,5/2)				
		5111[w]	3.3[w] *7*	2601.4	1/2⁺,3/2,5/2				

$^{45}_{21}Sc_{24}$-25

Adopted Levels, Gammas (continued)

$\gamma(^{45}Sc)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π
7711.0		5123[w]	10.0[w] 20	2590.0	$3/2^-,5/2,7/2^-$
		5182[w]	10.0[w] 20	2531.0	$(1/2^+,3/2,5/2)$
		5361[w]	3.3[w] 7	2352.2	$3/2^-,5/2$
		5410[w]	6.7[w] 14	2303.8	$(5/2^-)$
		5562[wy]	3.3[w] 7	2152.0?	
		5562[wy]	3.3[w] 7	2151.0	$(1/2,3/2,5/2)$
		5621[w]	6.7[w] 14	2093.0	5/2
		6410[w]	3.3[w] 7	1303.18	$3/2^+$
		6645[w]	10.0[w] 20	1067.6	$3/2^-$
		6774[w]	100[w] 20	939.24	$1/2^+$
		6992[w]	33[w] 7	720.12	$5/2^-$
		7170[w]	20[w] 4	543.06	$5/2^+$
		7336[w]	17[w] 4	376.50	$3/2^-$
		7700[w]	23[w] 5	12.40	$3/2^+$
7712.5		3991[w]	17[w] 4	3722.3	
		4225[w]	3.3[w] 7	3487.4	$3/2^-$
		4577[w]	6.7[w] 14	3136.3	$5/2^-,7/2^-,9/2^-$
		4614[w]	3.3[w] 7	3104	$(3/2,5/2)$
		4731[w]	17[w] 4	2979.8	$3/2^-$
		4809[w]	3.3[w] 7	2903.8	$3/2^+,5/2^+$
		4818[w]	6.7[w] 14	2895.2	$1/2^+,3/2,5/2$
		4934[w]	23[w] 5	2778.7	$(1/2^-,3/2,5/2)$
		5111[w]	3.3[w] 7	2601.4	$1/2^+,3/2,5/2$
		5123[w]	10.0[w] 20	2590.0	$3/2^-,5/2,7/2^-$
		5182[w]	10.0[w] 20	2531.0	$(1/2^+,3/2,5/2)$
		5361[w]	3.3[w] 7	2352.2	$3/2^-,5/2$
		5410[w]	6.7[w] 14	2303.8	$(5/2^-)$
		5562[wy]	3.3[w] 7	2152.0?	
		5562[wy]	3.3[w] 7	2151.0	$(1/2,3/2,5/2)$
		5621[w]	6.7[w] 14	2093.0	5/2
		6410[w]	3.3[w] 7	1303.18	$3/2^+$
		6645[w]	10.0[w] 20	1067.6	$3/2^-$
		6774[w]	100[w] 20	939.24	$1/2^+$
		6992[w]	33[w] 7	720.12	$5/2^-$
		7170[w]	20[w] 4	543.06	$5/2^+$
		7336[w]	17[w] 4	376.50	$3/2^-$
		7700[w]	23[w] 5	12.40	$3/2^+$
7714.9		3991[w]	17[w] 4	3722.3	

Adopted Levels, Gammas (continued)

$\gamma(^{45}Sc)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]
7714.9		4225[w]	3.3[w] *7*	3487.4	$3/2^-$	
		4577[w]	6.7[w] *14*	3136.3	$5/2^-,7/2^-,9/2^-$	
		4614[w]	3.3[w] *7*	3104	(3/2,5/2)	
		4731[w]	17[w] *4*	2979.8	$3/2^-$	
		4809[w]	3.3[w] *7*	2903.8	$3/2^+,5/2^+$	
		4818[w]	6.7[w] *14*	2895.2	$1/2^+$,3/2,5/2	
		4934[w]	23[w] *5*	2778.7	($1/2^-$,3/2,5/2)	
		5111[w]	3.3[w] *7*	2601.4	$1/2^+$,3/2,5/2	
		5123[w]	10.0[w] *20*	2590.0	$3/2^-$,5/2,$7/2^-$	
		5182[w]	10.0[w] *20*	2531.0	($1/2^+$,3/2,5/2)	
		5361[w]	3.3[w] *7*	2352.2	$3/2^-$,5/2	
		5410[w]	6.7[w] *14*	2303.8	($5/2^-$)	
		5562[wy]	3.3[w] *7*	2152.0?		
		5562[wy]	3.3[w] *7*	2151.0	(1/2,3/2,5/2)	
		5621[w]	6.7[w] *14*	2093.0	5/2	
		6410[w]	3.3[w] *7*	1303.18	$3/2^+$	
		6645[w]	10.0[w] *20*	1067.6	$3/2^-$	
		6774[w]	100[w] *20*	939.24	$1/2^+$	
		6992[w]	33[w] *7*	720.12	$5/2^-$	
		7170[w]	20[w] *4*	543.06	$5/2^+$	
		7336[w]	17[w] *4*	376.50	$3/2^-$	
		7700[w]	23[w] *5*	12.40	$3/2^+$	
7725.0	$3/2^{(-)}$	3742[y]	20 *4*	3982	$3/2^+,5/2^+$	
		4003	33 *7*	3722.3		
		4359	27 *6*	3366.4	$(5/2)^-$	
		4589	20 *4*	3136.3	$5/2^-,7/2^-,9/2^-$	
		4633	27 *6*	3092.0	$1/2^+$,3/2,5/2	
		4830	27 *6*	2895.2	$1/2^+$,3/2,5/2	
		4947	53 *11*	2778.7	($1/2^-$,3/2,5/2)	
		5124	20 *4*	2601.4	$1/2^+$,3/2,5/2	
		5135	33 *7*	2590.0	$3/2^-$,5/2,$7/2^-$	
		5194	33 *7*	2531.0	($1/2^+$,3/2,5/2)	
		5422	60 *12*	2303.8	($5/2^-$)	
		5574[wy]	20[w] *4*	2152.0?		[g]
		5574[wy]	20[w] *4*	2151.0	(1/2,3/2,5/2)	[g]
		5633	40 *8*	2093.0	5/2	
		6170	3.3 *7*	1556.2	$(3/2)^-$	
		6422	3.3 *7*	1303.18	$3/2^+$	
		6658	20 *4*	1067.6	$3/2^-$	

$\gamma(^{45}Sc)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	Comments
7725.0	3/2$^{(-)}$	6786	20 *4*	939.24	1/2$^+$	D+Q[r]	δ: +0.03 *6* or −1.7 *1*.
		7005	40 *8*	720.12	5/2$^-$	D+Q[r]	δ: −0.08 *5* or −2.6 *12*.
		7182	100 *20*	543.06	5/2$^+$	D+Q[r]	δ: −0.13 +*3*−*1* or −2.9 +*4*−*3*.
		7348	60 *12*	376.50	3/2$^-$		
		7713	6.7 *14*	12.40	3/2$^+$		
7774.4	3/2$^{(+)}$	3690	7.1 *15*	4084.9	(1/2$^-$,3/2$^-$)		
		3911[y]	21 *5*	3864.0?			
		4061	36 *7*	3714.3	1/2,3/2,5/2		
		4191	14 *3*	3584	1/2,3/2,5/2$^+$		
		4226	14 *3*	3548.5	1/2$^+$,3/2,5/2,7/2$^+$		
		4250	14 *3*	3525.2	3/2$^-$,5/2		
		4287	21 *5*	3487.4	3/2$^-$		
		4313	14 *3*	3462.1	5/2$^-$,7/2$^-$		
		4408	7.1 *15*	3366.4	(5/2)$^-$		
		4664	14 *3*	3111.2	7/2$^+$		
		4676[y]	21 *5*	3104	(3/2,5/2)		
		4683	7.1 *15*	3092.0	1/2$^+$,3/2,5/2		
		4749	43 *9*	3025.5	1/2$^-$,3/2$^-$		
		4793	14 *3*	2979.8	3/2$^-$		
		4811[y]	7.1 *15*	2964.0?	(3/2$^+$,5/2$^+$)		
		4873	36 *7*	2903.8	3/2$^+$,5/2$^+$		
		4880	7.1 *15*	2895.2	1/2$^+$,3/2,5/2		
		4996	7.1 *15*	2778.7	(1/2$^-$,3/2,5/2)		
		5173	29 *6*	2601.4	1/2$^+$,3/2,5/2		
		5244	14.3 *15*	2531.0	(1/2$^+$,3/2,5/2)		
		5422	57 *12*	2352.2	3/2$^-$,5/2		
		5472	21 *5*	2303.8	(5/2$^-$)		
		5624[wy]	29[w] *6*	2152.0?		[g]	
		5624[wy]	29[w] *6*	2151.0	(1/2,3/2,5/2)	[g]	
		5682	14 *3*	2093.0	5/2		
		5975	7.1 *15*	1800.0	5/2$^+$		
		6219	21 *5*	1556.2	(3/2)$^-$		
		6471	7.1 *15*	1303.18	3/2$^+$		
		6707	21 *5*	1067.6	3/2$^-$	D+Q[r]	δ: +2.4 *4* or +0.14 *6*.
		6836	100 *22*	939.24	1/2$^+$	D+Q[r]	δ: +0.03 *2* or −1.9 *1*.
		7054	29 *6*	720.12	5/2$^-$	D+Q[r]	δ: −0.4 *1* or −1.6 *4*.
		7231	29 *6*	543.06	5/2$^+$	D+Q[r]	δ: −0.07 +*5*−*3* or −3.50 +*4*−*5*.
		7398	29 *6*	376.50	3/2$^-$		
		7762	29 *6*	12.40	3/2$^+$	D+Q[r]	δ: −0.19 *6* or >+12.
7929.3	25/2$^+$	1245[e]		6683.9	23/2$^+$		

Adopted Levels, Gammas (continued)

$\gamma(^{45}$Sc) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[#]	α[u]	Comments
7929.3	25/2$^+$	2231.5[e]	32[e]	5696.8	21/2$^+$	(E2)[d]		0.000447 *7*	B(E2)(W.u.)>3.0 α(K)=1.83×10^{-5} *3*; α(L)=1.603×10^{-6} *23*; α(M)=1.99×10^{-7} *3*; α(N+..)=0.000427 *6* α(N)=1.119×10^{-8} *16*; α(IPF)=0.000427 *6*
		2511[e]	100[e]	5418.3	23/2$^-$	D+Q,E2[t]			
8003.4	19/2$^-$ to 27/2$^-$	2585[e]	100[e]	5418.3	23/2$^-$	D,E2			
8111.6	3/2$^-$	3439	59 *9*	4662	(1/2,3/2)	D+Q[r]	+0.07 *3*		
		3611	55 *9*	4505	1/2$^-$,3/2$^-$	(M1+E2)[s]	−0.06 *3*	0.000913 *13*	B(M1)(W.u.)=0.16 *6*; B(E2)(W.u.)=0.12 *+13−12* α(K)=8.11×10^{-6} *12*; α(L)=7.07×10^{-7} *10*; α(M)=8.77×10^{-8} *13* α(N+..)=0.000904 *13* α(N)=4.95×10^{-9} *7*; α(IPF)=0.000904 *13*
		4230	100 *14*	3882	(1/2$^-$)	(M1+E2)[s]	+0.09 *2*	0.001120 *16*	B(M1)(W.u.)=0.18 *7*; B(E2)(W.u.)=0.23 *10* α(K)=6.45×10^{-6} *9*; α(L)=5.62×10^{-7} *8*; α(M)=6.97×10^{-8} *10*; α(N+..)=0.001113 *16* α(N)=3.93×10^{-9} *6*; α(IPF)=0.001113 *16*
		6021	91 *14*	2093.0	5/2	D+Q[r]	−0.09 *4*		
		7174	23	939.24	1/2$^+$	[E1]			B(E1)(W.u.)=0.00021 *7* α(IPF)=2.554×10^{-3} *36*
		7393	27	720.12	5/2$^-$				
		7739	41	376.50	3/2$^-$				
		8101	50 *9*	12.40	3/2$^+$	(E1+M2)	−0.03 *3*		B(E1)(W.u.)=0.00032 *12*; B(M2)(W.u.)=0.020 *+41−20* Mult.: D+Q from $\gamma(\theta)$ in (p,γ). $\Delta\pi$=yes from level scheme.
8127.7	3/2$^-$	3456	77 *12*	4662	(1/2,3/2)	D+Q[r]	+0.03 *3*		
		3628	92 *16*	4505	1/2$^-$,3/2$^-$	(M1+E2)[s]	0.00 *3*	0.000918 *13*	B(M1)(W.u.)=0.21 *7* α(K)=8.05×10^{-6} *12*; α(L)=7.02×10^{-7} *10*; α(M)=8.71×10^{-8} *13* α(N+..)=0.000909 *13* α(N)=4.91×10^{-9} *7*; α(IPF)=0.000909 *13*
		4247	100 *16*	3882	(1/2$^-$)	(M1+E2)[s]	+0.05 *2*	0.001130 *16*	B(M1)(W.u.)=0.14 *5*; B(E2)(W.u.)=0.05 *5* α(K)=6.41×10^{-6} *9*; α(L)=5.59×10^{-7} *8*; α(M)=6.93×10^{-8} *10*; α(N+..)=0.001118 *16* α(N)=3.91×10^{-9} *6*; α(IPF)=0.001118 *16*
		6038	69 *12*	2093.0	5/2	D+Q[r]	+0.06 *5*		
		7410	8	720.12	5/2$^-$				
		7587	23	543.06	5/2$^+$	[E1]			B(E1)(W.u.)=0.00014 *4* α(IPF)=2.628×10^{-3} *37*
		8118	15	12.40	3/2$^+$	[E1]			B(E1)(W.u.)=7.4×10^{-5} *22*

$^{45}_{21}$Sc$_{24}$-29

$\gamma(^{45}Sc)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	Comments
8305.3?		2595[ey]		5710.6	(21/2⁻)		
8364.4	25/2⁺	1680.5[e]	100[e]	6683.9	23/2⁺	D+Q,E2[t]	
		2946[e]		5418.3	23/2⁻		
8436.1	3/2⁻,5/2	7895	100	543.06	5/2⁺		
		8060	58	376.50	3/2⁻		
		8424	42	12.40	3/2⁺		
		8436	42	0.0	7/2⁻		
8471.3	5/2⁺	7406	69	1067.6	3/2⁻		
		7498	59	974.38	7/2⁺		
		7531	62	939.24	1/2⁺		
		7930	23	543.06	5/2⁺		
		8095	36	376.50	3/2⁻		
		8459	100	12.40	3/2⁺		
		8471	33	0.0	7/2⁻		
8475.8	(3/2)⁻	6135	18	2341.0	(7/2⁻)	[E2]	Γ_γ=0.011 eV; B(E2)(W.u.)=0.165 α(IPF)=1.775×10^{-3} *25*
		7408	82	1067.6	3/2⁻		Γ_γ=0.051 eV
		7536	73	939.24	1/2⁺	[E1]	Γ_γ=0.045 eV; B(E1)(W.u.)=0.000123 α(IPF)=2.620×10^{-3} *37*
		7755	34	720.12	5/2⁻		Γ_γ=0.021 eV
		7933	100	543.06	5/2⁺	[E1]	Γ_γ=0.062 eV; B(E1)(W.u.)=0.000146 α(IPF)=2.698×10^{-3} *38*
		8099	37	376.50	3/2⁻		Γ_γ=0.023 eV
		8463	95	12.40	3/2⁺	[E1]	Γ_γ=0.059 eV; B(E1)(W.u.)=0.000114
8484.4	(3/2)⁻	7417	100	1067.6	3/2⁻		Γ_γ=0.025 eV
		7941	40	543.06	5/2⁺	[E1]	Γ_γ=0.010 eV; B(E1)(W.u.)=2.34×10^{-5} α(IPF)=2.699×10^{-3} *38*
		8472	16	12.40	3/2⁺	[E1]	Γ_γ=0.004 eV; B(E1)(W.u.)=7.7×10^{-6}
8491.9	3/2⁻	7772	94	720.12	5/2⁻		
		8115	100	376.50	3/2⁻		Γ_γ=0.15 eV *5*
		8491	39	0.0	7/2⁻	[E2]	Γ_γ=0.06 eV *2*; B(E2)(W.u.)=0.18 *6*
8497.7	3/2⁻	5042[y]	<11	3457	(5/2)⁻		
		5473[y]	<11	3025.5	1/2⁻,3/2⁻		
		5535[y]	14	2964.0?	(3/2⁺,5/2⁺)		
		5590[y]		2903.8	3/2⁺,5/2⁺		
		5637[y]	11	2860.7?	(1/2⁻,3/2,5/2)		
		6147[y]	11	2352.2	3/2⁻,5/2		
		6157[y]	37	2341.0	(7/2⁻)	(E2)[d]	Γ_γ=0.039 eV; B(E2)(W.u.)=0.58 α(IPF)=1.781×10^{-3} *25*
		6343[y]	4	2151.0	(1/2,3/2,5/2)		

$^{45}_{21}Sc_{24}$-30

$\gamma(^{45}Sc)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[#]	Comments
8497.7	$3/2^-$	6943	32	1556.2	$(3/2)^-$	D(+Q)[r]		
		7196	25	1303.18	$3/2^+$	(E1(+M2))	−0.5 *+5−2*	B(E1)(W.u.)=5.8×10^{-5} *24*; B(M2)(W.u.)=1.3 *+21−13* α(IPF)=2.35×10^{-3} *21* Mult.: D+Q from $\gamma(\theta)$ in (p,γ). π=yes from level scheme.
		7430	41	1067.6	$3/2^-$			Γ_γ=0.043 eV
		7529[y] *5*	25 *3*	974.38	$7/2^+$	[M2]		B(M2)(W.u.)=5.2 α(IPF)=1.589×10^{-3} *23* Mult.: B(M2)(W.u.) exceeds RUL(M1) by a factor of five.
		7561[y]	22	939.24	$1/2^+$	(E1(+M2))	+0.10 *+17−8*	B(E1)(W.u.)=5.5×10^{-5}; B(M2)(W.u.)=0.04 *+15−4* α(IPF)=2.614×10^{-3} *70* Mult.: D+Q from $\gamma(\theta)$ in (p,γ). π=yes from level scheme.
		7777	100	720.12	$5/2^-$			Γ_γ=0.105 eV
		7954	39	543.06	$5/2^+$	[E1]		Γ_γ=0.041 eV; B(E1)(W.u.)=9.5×10^{-5} α(IPF)=2.702×10^{-3} *38*
		8121	83	376.50	$3/2^-$			Γ_γ=0.087 eV
		8485	29	12.40	$3/2^+$	D+Q[r]		Γ_γ=0.030 eV δ: −0.3 *+5−0* or −2.4 *+8−14*.
8503.3	$3/2^-$	4783[y]	<3	3722.3				
		5027[y]	<3	3475	$3/2^+,5/2^+$			
		5477[y]	<3	3025.5	$1/2^-,3/2^-$			
		6152[y]	18	2352.2	$3/2^-,5/2$			
		6163[y]	14	2341.0	$(7/2^-)$	(E2)[d]		Γ_γ=0.039 eV; B(E2)(W.u.)=0.572 α(IPF)=1.782×10^{-3} *25*
		6946[y]	<3	1556.2	$(3/2)^-$			
		7436	10	1067.6	$3/2^-$			Γ_γ=0.043 eV
		7564	100	939.24	$1/2^+$	(E1+M2)		Mult.: D+Q from $\gamma(\theta)$ in (p,γ). $\Delta\pi$=yes from level scheme. δ: −0.10 *+3−7* or −1.7 *+3−4*.
		7783	38	720.12	$5/2^-$			Γ_γ=0.105 eV
		7960	14	543.06	$5/2^+$	[E1]		Γ_γ=0.041 eV; B(E1)(W.u.)=9.5×10^{-5} α(IPF)=2.703×10^{-3} *38*
		8126	19	376.50	$3/2^-$			Γ_γ=0.087 eV
		8491	17	12.40	$3/2^+$	[E1]		Γ_γ=0.030 eV; B(E1)(W.u.)=5.7×10^{-5}
		8504[y]	74	0.0	$7/2^-$	[E2]		B(E2)(W.u.)=0.287
8509.5	$3/2^-$	5534[y]		2979.8	$3/2^-$			
		5765[y]		2747.0	$5/2^-,7/2^-$			
		5910[y]	21	2601.4	$1/2^+,3/2,5/2$			
		6170[y]	21	2341.0	$(7/2^-)$			
		6208[y]	6	2303.8	$(5/2^-)$			
		6711[y]	29	1800.0	$5/2^+$			

$\gamma(^{45}Sc)$ (continued)

E_i(level)	J_i^π	E_γ†	I_γ†	E_f	J_f^π	Mult.‡	Comments
8509.5	3/2$^-$	7102[y]	17	1408.87	(7/2)$^-$		
		7208[y]	6	1303.18	3/2$^+$		
		7444[y]	33	1067.6	3/2$^-$		
		7537[y]	2	974.38	7/2$^+$		
		7572[y]	46	939.24	1/2$^+$		
		7792	10	720.12	5/2$^-$		
		7968[y]	12	543.06	5/2$^+$		
		8135	100	376.50	3/2$^-$		
		8499	58	12.40	3/2$^+$		
		8511	29	0.0	7/2$^-$		
8515.9	3/2$^-$	6175	17	2341.0	(7/2$^-$)	[E2]	Γ_γ=0.025 eV; B(E2)(W.u.)=0.363 α(IPF)=1.785×10^{-3} *25*
		7577	100	939.24	1/2$^+$	(E1)[@]	Γ_γ=0.151 eV; B(E1)(W.u.)=0.000407 α(IPF)=2.626×10^{-3} *37*
		7796	19	720.12	5/2$^-$		Γ_γ=0.029 eV
		8139	14	376.50	3/2$^-$		Γ_γ=0.021 eV
		8503	2	12.40	3/2$^+$	[E1]	Γ_γ=0.003 eV; B(E1)(W.u.)=5.7×10^{-6}
8519.3	3/2$^-$	6179	20	2341.0	(7/2$^-$)	[E2]	Γ_γ=0.019 eV; B(E2)(W.u.)=0.275 α(IPF)=1.786×10^{-3} *25*
		7799	100	720.12	5/2$^-$		Γ_γ=0.096 eV
		8142	43	376.50	3/2$^-$		Γ_γ=0.041 eV
		8507	60	12.40	3/2$^+$	[E1]	Γ_γ=0.058 eV; B(E1)(W.u.)=0.000110
8528.4	(3/2)$^-$	7461	56	1067.6	3/2$^-$		Γ_γ=0.019 eV
		7808	32	720.12	5/2$^-$		Γ_γ=0.011 eV
		7985	100	543.06	5/2$^+$	[E1]	Γ_γ=0.034 eV; B(E1)(W.u.)=7.8×10^{-5} α(IPF)=2.708×10^{-3} *38*
		8152	21	376.50	3/2$^-$		Γ_γ=0.007 eV
		8516	44	12.40	3/2$^+$	[E1]	Γ_γ=0.015 eV; B(E1)(W.u.)=2.85×10^{-5}
8529.2	(3/2)$^-$	6189	100	2341.0	(7/2$^-$)	[E2]	Γ_γ=0.018 eV; B(E2)(W.u.)=0.259 α(IPF)=1.788×10^{-3} *25*
		7590	28	939.24	1/2$^+$	[E1]	Γ_γ=0.005 eV; B(E1)(W.u.)=1.34×10^{-5} α(IPF)=2.628×10^{-3} *37*
		8152	33	376.50	3/2$^-$		Γ_γ=0.006 eV
		8516	17	12.40	3/2$^+$	[E1]	Γ_γ=0.003 eV; B(E1)(W.u.)=5.7×10^{-6}
8533.1	3/2$^-$	7466	40	1067.6	3/2$^-$		Γ_γ=0.021 eV
		7594	17	939.24	1/2$^+$	[E1]	Γ_γ=0.009 eV; B(E1)(W.u.)=2.41×10^{-5} α(IPF)=2.629×10^{-3} *37*
		7990	100	543.06	5/2$^+$	[E1]	Γ_γ=0.052 eV; B(E1)(W.u.)=0.000119 α(IPF)=2.709×10^{-3} *38*

$\gamma(^{45}Sc)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[#]	α[u]	Comments
8543.2	3/2⁻	7476	63	1067.6	3/2⁻				Γ_γ=0.039 eV
		7604	100	939.24	1/2⁺	[E1]			Γ_γ=0.062 eV; B(E1)(W.u.)=0.000165 α(IPF)=2.631×10^{-3} *37*
		7823	52	720.12	5/2⁻				Γ_γ=0.032 eV
		8000	82	543.06	5/2⁺	[E1]			Γ_γ=0.051 eV; B(E1)(W.u.)=0.000117 α(IPF)=2.711×10^{-3} *38*
		8166	11	376.50	3/2⁻				Γ_γ=0.007 eV
		8530	10	12.40	3/2⁺	[E1]			Γ_γ=0.006 eV; B(E1)(W.u.)=1.13×10^{-5}
8552.7	(1/2)⁻	7485	100	1067.6	3/2⁻				Γ_γ=0.031 eV
		7613	35	939.24	1/2⁺	[E1]			Γ_γ=0.011 eV; B(E1)(W.u.)=2.92×10^{-5} α(IPF)=2.632×10^{-3} *37*
		8176	19	376.50	3/2⁻				Γ_γ=0.006 eV
		8540	45	12.40	3/2⁺	[E1]			Γ_γ=0.014 eV; B(E1)(W.u.)=2.63×10^{-5}
8580.1	1/2⁻	7513	100	1067.6	3/2⁻				Γ_γ=0.053 eV
		7641	26	939.24	1/2⁺	[E1]			Γ_γ=0.014 eV; B(E1)(W.u.)=3.68×10^{-5} α(IPF)=2.637×10^{-3} *37*
		8567	23	12.40	3/2⁺	[E1]			Γ_γ=0.012 eV; B(E1)(W.u.)=2.24×10^{-5}
8591.4	(1/2)⁻	7524	60	1067.6	3/2⁻				Γ_γ=0.018 eV
		7652	100	939.24	1/2⁺	[E1]			Γ_γ=0.030 eV; B(E1)(W.u.)=7.8×10^{-5} α(IPF)=2.639×10^{-3} *37*
		8215	91	376.50	3/2⁻				Γ_γ=0.011 eV
		8579	91	12.40	3/2⁺	[E1]			Γ_γ=0.012 eV; B(E1)(W.u.)=2.23×10^{-5}
8606.3	5/2	7633	50	974.38	7/2⁺				
		8230	100	376.50	3/2⁻				
		8594	91	12.40	3/2⁺				
		8606	91	0.0	7/2⁻				
8616.1	1/2⁻	7313	12	1303.18	3/2⁺	[E1]			Γ_γ=0.015 eV; B(E1)(W.u.)=4.49×10^{-5} α(IPF)=2.584×10^{-3} *37*
		8239	100	376.50	3/2⁻				Γ_γ=0.125 eV
		8603	36	12.40	3/2⁺	[E1]			Γ_γ=0.045 eV; B(E1)(W.u.)=8.3×10^{-5}
8622.4	27/2⁺	258[e]	22[e]	8364.4	25/2⁺	M1(+E2)[p]	<0.006[‡]	0.001490 *21*	B(M1)(W.u.)=1.2 *4* α(K)=0.001358 *19*; α(L)=0.0001205 *17*; α(M)=1.493×10^{-5} *21* α(N+..)=8.32×10^{-7} *12* α(N)=8.32×10^{-7} *12*
		693[e]		7929.3	25/2⁺				
		1938.5[e]	100[e]	6683.9	23/2⁺	(E2)		0.000310 *5*	α(K)=2.36×10^{-5} *4*; α(L)=2.07×10^{-6} *3*; α(M)=2.56×10^{-7} *4*; α(N+..)=0.000284 *4* α(N)=1.441×10^{-8} *21*; α(IPF)=0.000284 *4*

Adopted Levels, Gammas (continued)

$\gamma(^{45}Sc)$ (continued)

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.‡	Comments
							B(E2)(W.u.)=9 *3*
							Mult.: ΔJ=1 d+Q or ΔJ=2 Q from DCO in (^{18}O,p2nγ). Ne M2 from comparison to RUL. ΔJ=2 from level scheme.
8658.2	(1/2)$^-$	7591	38	1067.6	3/2$^-$		Γ_γ=0.022 eV
		7719	100	939.24	1/2$^+$	[E1]	Γ_γ=0.058 eV; B(E1)(W.u.)=0.000148
							α(IPF)=2.653×10^{-3} *38*
8664.9	(1/2)$^-$	7725	10	939.24	1/2$^+$	[E1]	Γ_γ=0.006 eV; B(E1)(W.u.)=1.53×10^{-5}
							α(IPF)=2.654×10^{-3} *38*
		8288	22	376.50	3/2$^-$		Γ_γ=0.013 eV
		8652	100	12.40	3/2$^+$	[E1]	Γ_γ=0.059 eV; B(E1)(W.u.)=0.000107
8674.5	(1/2)$^-$	7371	43	1303.18	3/2$^+$	[E1]	Γ_γ=0.018 eV; B(E1)(W.u.)=5.3×10^{-5}
							α(IPF)=2.596×10^{-3} *37*
		7607	79	1067.6	3/2$^-$		Γ_γ=0.033 eV
		7735	100	939.24	1/2$^+$	[E1]	Γ_γ=0.042 eV; B(E1)(W.u.)=0.000106
							α(IPF)=2.656×10^{-3} *37*
		8298	33	376.50	3/2$^-$		Γ_γ=0.014 eV
		8662	64	12.40	3/2$^+$	[E1]	Γ_γ=0.027 eV; B(E1)(W.u.)=4.87×10^{-5}
8696.4	1/2$^-$	7629	100	1067.6	3/2$^-$	D,E2	Γ_γ=0.137 eV
		7757	13	939.24	1/2$^+$	[E1]	Γ_γ=0.018 eV; B(E1)(W.u.)=4.52×10^{-5}
							α(IPF)=2.661×10^{-3} *38*
		8319	31	376.50	3/2$^-$		Γ_γ=0.042 eV
		8684	61	12.40	3/2$^+$	[E1]	Γ_γ=0.084 eV; B(E1)(W.u.)=0.000150
8711.7	(1/2)$^-$	7408	100	1303.18	3/2$^+$	(E1)@	Γ_γ=0.099 eV
							α(IPF)=2.602×10^{-3} *37*; B(E1)(W.u.)=0.000285
		7772	33	939.24	1/2$^+$	[E1]	Γ_γ=0.033 eV; B(E1)(W.u.)=8.2×10^{-5}
							α(IPF)=2.664×10^{-3} *38*
		8335	27	376.50	3/2$^-$		Γ_γ=0.027 eV
		8699	32	12.40	3/2$^+$	[E1]	Γ_γ=0.032 eV; B(E1)(W.u.)=5.70×10^{-5}
8716.1	(1/2)$^-$	7777	22	939.24	1/2$^+$	(E1)@	Γ_γ=0.051 eV; B(E1)(W.u.)=0.000127
							α(IPF)=2.665×10^{-3} *38*
		8339	26	376.50	3/2$^-$		Γ_γ=0.062 eV
		8703	100	12.40	3/2$^+$	(E1)@	Γ_γ=0.237 eV; B(E1)(W.u.)=0.000421
8735.5	1/2$^-$	7432	100	1303.18	3/2$^+$	[E1]	Γ_γ=0.056 eV; B(E1)(W.u.)=0.000160
							α(IPF)=2.606×10^{-3} *37*
		7668	30	1067.6	3/2$^-$		Γ_γ=0.017 eV
		7796	46	939.24	1/2$^+$	[E1]	Γ_γ=0.026 eV; B(E1)(W.u.)=6.4×10^{-5}
							α(IPF)=2.669×10^{-3} *38*
		8359	48	376.50	3/2$^-$		Γ_γ=0.027 eV
		8723	30	12.40	3/2$^+$	[E1]	Γ_γ=0.017 eV; B(E1)(W.u.)=3.00×10^{-5}

$\gamma(^{45}Sc)$ (continued)

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.‡	Comments
8749.2	(1/2)$^-$	7446	5	1303.18	3/2$^+$	[E1]	Γ_γ=0.034 eV; B(E1)(W.u.)=9.7×10^{-5} α(IPF)=2.608×10^{-3} *37*
		7810	8	939.24	1/2$^+$	[E1]	Γ_γ=0.058 eV; B(E1)(W.u.)=0.000143 α(IPF)=2.672×10^{-3} *38*
		8736	100	12.40	3/2$^+$	(E1)@	Γ_γ=0.706 eV; B(E1)(W.u.)=0.00124
8754.5	1/2$^-$	7687	16	1067.6	3/2$^-$		Γ_γ=0.026 eV
		7815	5	939.24	1/2$^+$	[E1]	Γ_γ=0.008 eV; B(E1)(W.u.)=1.96×10^{-5} α(IPF)=2.673×10^{-3} *38*
		8377	9	376.50	3/2$^-$		Γ_γ=0.014 eV
		8742	100	12.40	3/2$^+$	(E1)@	Γ_γ=0.164 eV; B(E1)(W.u.)=0.000288
8766.3	1/2$^-$	7462	100	1303.18	3/2$^+$	(E1)@	Γ_γ=0.319 eV; B(E1)(W.u.)=0.000900 α(IPF)=2.610×10^{-3} *37*
		7699	28	1067.6	3/2$^-$		Γ_γ=0.089 eV
		7827	91	939.24	1/2$^+$	(E1)@	Γ_γ=0.290 eV; B(E1)(W.u.)=0.00071 α(IPF)=2.676×10^{-3} *38*
		8389	56	376.50	3/2$^-$	D,E2	Γ_γ=0.179 eV
		8753	34	12.40	3/2$^+$	[E1]	Γ_γ=0.108 eV; B(E1)(W.u.)=0.000189
8794.8	1/2$^-$	7491	100	1303.18	3/2$^+$	(E1)@	Γ_γ=0.345 eV; B(E1)(W.u.)=0.00096 α(IPF)=2.614×10^{-3} *37*
		7727	11	1067.6	3/2$^-$		Γ_γ=0.037 eV
		7855	4	939.24	1/2$^+$	[E1]	Γ_γ=0.013 eV; B(E1)(W.u.)=3.14×10^{-5} α(IPF)=2.682×10^{-3} *38*
		8417	3	376.50	3/2$^-$		Γ_γ=0.012 eV
		8781	2	12.40	3/2$^+$	[E1]	Γ_γ=0.007 eV; B(E1)(W.u.)=1.21×10^{-5}
8807.5	1/2$^-$	7503	100	1303.18	3/2$^+$	(E1)@	Γ_γ=0.120 eV; B(E1)(W.u.)=0.000333 α(IPF)=2.616×10^{-3} *37*
		7867	22	939.24	1/2$^+$		Γ_γ=0.026 eV
		8794	42	12.40	3/2$^+$	[E1]	Γ_γ=0.051 eV; B(E1)(W.u.)=8.8×10^{-5}
8813.9	(1/2)$^-$	8800	100	12.40	3/2$^+$	(E1)@	Γ_γ=0.805 eV; B(E1)(W.u.)=0.00138
8824.7	(1/2)$^-$	7521	100	1303.18	3/2$^+$	[E1]	Γ_γ=0.067 eV; B(E1)(W.u.)=0.000185 α(IPF)=2.618×10^{-3} *37*
		7757	96	1067.6	3/2$^-$		Γ_γ=0.064 eV
		7885	46	939.24	1/2$^+$	[E1]	Γ_γ=0.031 eV; B(E1)(W.u.)=7.4×10^{-5} α(IPF)=2.688×10^{-3} *38*
		8447	40	376.50	3/2$^-$		Γ_γ=0.027 eV
		8811	79	12.40	3/2$^+$	[E1]	Γ_γ=0.053 eV; B(E1)(W.u.)=9.1×10^{-5}
8838.2	1/2$^-$	7898	100	939.24	1/2$^+$	(E1)@	Γ_γ=0.209 eV; B(E1)(W.u.)=0.000497 α(IPF)=2.691×10^{-3} *38*

$^{45}_{21}Sc_{24}$-35

Adopted Levels, Gammas (continued)

γ(^{45}Sc) (continued)

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.‡	Comments
8838.2	1/2$^-$	8825	18	12.40	3/2$^+$	[E1]	Γ_γ=0.037 eV; B(E1)(W.u.)=6.3×10^{-5}
8844.4	1/2$^-$	8467	46	376.50	3/2$^-$		Γ_γ=0.006 eV
		8832	100	12.40	3/2$^+$	[E1]	Γ_γ=0.013 eV; B(E1)(W.u.)=2.21×10^{-5}
8862.8	1/2$^-$	7559	100	1303.18	3/2$^+$	(E1)@	Γ_γ=0.065 eV; B(E1)(W.u.)=0.000176 α(IPF)=2.624×10^{-3} *37*
		7795	48	1067.6	3/2$^-$		Γ_γ=0.031 eV
		8486	91	376.50	3/2$^-$		Γ_γ=0.059 eV
		8850	57	12.40	3/2$^+$	[E1]	Γ_γ=0.037 eV; B(E1)(W.u.)=6.3×10^{-5}
8870.5	1/2$^-$	7567	100	1303.18	3/2$^+$	(E1)@	Γ_γ=0.115 eV; B(E1)(W.u.)=0.000311 α(IPF)=2.625×10^{-3} *37*
		7803	30	1067.6	3/2$^-$		Γ_γ=0.035 eV
		7932	65	939.24	1/2$^+$	[E1]	Γ_γ=0.075 eV; B(E1)(W.u.)=0.000176 α(IPF)=2.697×10^{-3} *38*
		8494	64	376.50	3/2$^-$		Γ_γ=0.074 eV
		8858	16	12.40	3/2$^+$	[E1]	Γ_γ=0.018 eV; B(E1)(W.u.)=3.04×10^{-5}
8885.7	1/2$^-$	7582	14	1303.18	3/2$^+$	[E1]	Γ_γ=0.024 eV; B(E1)(W.u.)=6.5×10^{-5} α(IPF)=2.627×10^{-3} *37*
		8873	100	12.40	3/2$^+$	[E1]	Γ_γ=0.167 eV; B(E1)(W.u.)=0.000280
8888.4	1/2$^-$	7585	100	1303.18	3/2$^+$	[E1]	Γ_γ=0.088 eV; B(E1)(W.u.)=0.000236 α(IPF)=2.628×10^{-3} *37*
		7949	94	939.24	1/2$^+$	[E1]	Γ_γ=0.083 eV; B(E1)(W.u.)=0.000194 α(IPF)=2.701×10^{-3} *38*
		8511	92	376.50	3/2$^-$		Γ_γ=0.081 eV
		8875	10	12.40	3/2$^+$	[E1]	Γ_γ=0.009 eV; B(E1)(W.u.)=1.51×10^{-5}
8891.7	1/2$^-$	7588	12	1303.18	3/2$^+$	[E1]	Γ_γ=0.016 eV; B(E1)(W.u.)=4.29×10^{-5} α(IPF)=2.628×10^{-3} *37*
		7824	50	1067.6	3/2$^-$		Γ_γ=0.070 eV
		7952	38	939.24	1/2$^+$	[E1]	Γ_γ=0.053 eV; B(E1)(W.u.)=0.000124 α(IPF)=2.701×10^{-3} *38*
		8515	100	376.50	3/2$^-$		Γ_γ=0.139 eV
		8879	45	12.40	3/2$^+$	[E1]	Γ_γ=0.062 eV; B(E1)(W.u.)=0.000104
8908.2	1/2$^-$	7841	12	1067.6	3/2$^-$		Γ_γ=0.038 eV
		8531	100	376.50	3/2$^-$	D,E2	Γ_γ=0.309 eV
		8895	14	12.40	3/2$^+$	[E1]	Γ_γ=0.042 eV; B(E1)(W.u.)=7.0×10^{-5}
8917.2	1/2$^-$	7613	17	1303.18	3/2$^+$	[E1]	Γ_γ=0.079 eV; B(E1)(W.u.)=0.000210 α(IPF)=2.632×10^{-3} *37*
		7978	11	939.24	1/2$^+$	[E1]	Γ_γ=0.049 eV; B(E1)(W.u.)=0.000113 α(IPF)=2.707×10^{-3} *38*
		8540	7	376.50	3/2$^-$		Γ_γ=0.033 eV

Adopted Levels, Gammas (continued)

$\gamma(^{45}Sc)$ (continued)

E_i(level)	J^{π}_i	E_γ[†]	I_γ[†]	E_f	J^{π}_f	Mult.[‡]	Comments
8917.2	$1/2^-$	8904	100	12.40	$3/2^+$	(E1)[@]	Γ_γ=0.454 eV; B(E1)(W.u.)=0.00075
8935.0	$1/2^-$	7631	39	1303.18	$3/2^+$	[E1]	Γ_γ=0.028 eV; B(E1)(W.u.)=7.4×10^{-5} α(IPF)=2.635×10^{-3} *37*
		7995	100	939.24	$1/2^+$	[E1]	Γ_γ=0.072 eV; B(E1)(W.u.)=0.000165 α(IPF)=2.710×10^{-3} *38*
		8922	7	12.40	$3/2^+$	[E1]	Γ_γ=0.005 eV; B(E1)(W.u.)=8.3×10^{-6}
8947.7	$(1/2)^-$	7644	100	1303.18	$3/2^+$	(E1)[@]	Γ_γ=0.307 eV; B(E1)(W.u.)=0.00081 α(IPF)=2.638×10^{-3} *37*
		8571	3	376.50	$3/2^-$		Γ_γ=0.009 eV
		8935	13	12.40	$3/2^+$	[E1]	Γ_γ=0.040 eV; B(E1)(W.u.)=6.6×10^{-5}
8948.9	$(1/2)^-$	7645	92	1303.18	$3/2^+$	[E1]	Γ_γ=0.023 eV; B(E1)(W.u.)=6.0×10^{-5} α(IPF)=2.638×10^{-3} *37*
		7881	68	1067.6	$3/2^-$		Γ_γ=0.017 eV
		8572	100	376.50	$3/2^-$		Γ_γ=0.025 eV
		8936	52	12.40	$3/2^+$	[E1]	Γ_γ=0.013 eV; B(E1)(W.u.)=2.14×10^{-5}
8961.2	$1/2^-$	8584	35	376.50	$3/2^-$		
		8948	100	12.40	$3/2^+$	[E1]	Γ_γ=0.183 eV; B(E1)(W.u.)=0.000299
8965.3	$1/2^-$	8026	58	939.24	$1/2^+$	[E1]	Γ_γ=0.106 eV; B(E1)(W.u.)=0.000240
		8588	9	376.50	$3/2^-$		Γ_γ=0.017 eV
		8952	100	12.40	$3/2^+$	[E1]	Γ_γ=0.183 eV; B(E1)(W.u.)=0.000299
8975.5	$(25/2^-)$	3557[e]		5418.3	$23/2^-$		
8983.5	$1/2^-$	7679	19	1303.18	$3/2^+$	[E1]	Γ_γ=0.043 eV; B(E1)(W.u.)=0.000111 α(IPF)=2.645×10^{-3} *37*
		7915	14	1067.6	$3/2^-$		Γ_γ=0.033 eV
		8043	51	939.24	$1/2^+$	[E1]	Γ_γ=0.117 eV; B(E1)(W.u.)=0.000264
		8605	100	376.50	$3/2^-$	D,E2	Γ_γ=0.230 eV
8996.3	$1/2^-$	7693	20	1303.18	$3/2^+$	[E1]	Γ_γ=0.025 eV; B(E1)(W.u.)=6.4×10^{-5} α(IPF)=2.647×10^{-3} *37*
		8057	100	939.24	$1/2^+$	[E1]	Γ_γ=0.123 eV; B(E1)(W.u.)=0.000276
		8984	22	12.40	$3/2^+$	[E1]	Γ_γ=0.027 eV; B(E1)(W.u.)=4.36×10^{-5}
9017.0	$(1/2)^-$	8077	11	939.24	$1/2^+$	[E1]	Γ_γ=0.013 eV; B(E1)(W.u.)=2.89×10^{-5}
		9004	100	12.40	$3/2^+$	[E1]	Γ_γ=0.120 eV; B(E1)(W.u.)=0.000193
9164.0?		3746[ey]		5418.3	$23/2^-$		
9481.1?		4063[ey]		5418.3	$23/2^-$		
10001.1?		1379[ey]		8622.4	$27/2^+$		
10007.6	$(27/2^-)$	2395[e]		7612.6	$(23/2^-)$		
		4589[e]		5418.3	$23/2^-$		
10169.4	$(29/2^+)$	1547[e]		8622.4	$27/2^+$		
		2239.5[e]		7929.3	$25/2^+$		

$\gamma(^{45}Sc)$ (continued)

E_i(level)	J^π_i	E_γ[†]	E_f	J^π_f	Mult.[‡]	Comments
10299.2?		4881[ey]	5418.3	$23/2^-$		
10936.2?		5518[ey]	5418.3	$23/2^-$		
11021.9	$(31/2^+)$	852[e]	10169.4	$(29/2^+)$		
		2400[e]	8622.4	$27/2^+$	D+Q,Q	Mult.: ΔJ=1 d+Q or ΔJ=2 Q from DCO in (^{18}O,p2nγ).
11201.2	$(29/2^+)$	2578.5[e]	8622.4	$27/2^+$		
		2837[e]	8364.4	$25/2^+$		
12142.2?		3520[ey]	8622.4	$27/2^+$		
12592.7	$(31/2^-)$	2585[e]	10007.6	$(27/2^-)$		
13372.5	$(31/2^+)$	3203[e]	10169.4	$(29/2^+)$		
13674.6?		2473[ey]	11201.2	$(29/2^+)$		
14516.8	$(33/2^+)$	3495[e]	11021.9	$(31/2^+)$		
		4347[e]	10169.4	$(29/2^+)$		
15313.3?		5144[ey]	10169.4	$(29/2^+)$		
15702.8	$(35/2^-)$	3110[e]	12592.7	$(31/2^-)$		
16462.2	$(35/2^+)$	2786[ey]	13674.6?			
		5440[e]	11021.9	$(31/2^+)$		

[†] From (p,γ), except as noted. Iγ are given as relative photon branchings from each level.
[‡] From comparison to RUL, except as noted.
[#] From $\gamma(\theta)$ in (α,pγ) for E_x<7 MeV and (p,γ) for E_x>7 MeV, except as noted.
[@] D,E2 from comparison to RUL. $\Delta\pi$=yes from the level scheme.
[&] D+Q from $\gamma(\theta)$ in (α,pγ). Ne E1+M2 from δ and comparison to RUL.
[a] From (α,pγ).
[b] From (p,p′γ).
[c] From $\gamma(\theta)$ and linear polarization in (α,pγ).
[d] D,E2 from comparison to RUL. ΔJ=2 from level scheme.
[e] From ^{30}Si(^{18}O,p2nγ).
[f] D from comparison to RUL. $\Delta\pi$=yes from level scheme.
[g] Isotropic $\gamma(\theta)$ in (p,γ).
[h] D from comparison to RUL. $\Delta\pi$=no from level scheme.
[i] From $\gamma(\theta)$ in (α,pγ).
[j] See discussion in 1992Bu01 on the 2341 and 2352 states.
[k] Anisotropic $\gamma(\theta)$ in (p,γ).
[l] From (^{19}F,2pγ).
[m] ΔJ=1 d+Q or ΔJ=2 Q from DCO in (^{18}O,p2nγ). Ne M2 from comparison to RUL; Ne E1+M2 from large DCO and small δ from comparison to RUL.
[n] ΔJ=0 d or ΔJ=2 Q from DCO in (^{18}O,p2nγ). Ne M2 from comparison to RUL. ΔJ=2 from level scheme.

$^{45}_{21}Sc_{24}$-38

Adopted Levels, Gammas (continued)

$\gamma(^{45}Sc)$ (continued)

[o] Mean of Iγ(123γ)/Iγ(1586γ)=68/472 from ^{30}Si(^{18}O,p2nγ) and Iγ(122.9γ)/Iγ(1586.2γ)=8 *1*/29 *2* from ^{28}Si(^{19}F,2pγ), ^{30}Si(^{18}O,p2nγ),...

[p] ΔJ=1 d+Q or ΔJ=2 Q from DCO in (^{18}O,p2nγ). M1 from comparison to RUL.

[q] ΔJ=1 d+Q or ΔJ=2 Q from DCO in (^{18}O,p2nγ). Ne M2 from comparison to RUL. $\Delta\pi$=yes from level scheme.

[r] From $\gamma(\theta)$ in (p,γ).

[s] D+Q from $\gamma(\theta)$ in (p,γ). $\Delta\pi$=no from level scheme.

[t] ΔJ=1 d+Q or ΔJ=2 Q from DCO in (^{18}O,p2nγ). Ne M2 from comparison to RUL.

[u] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

[v] Multiply placed.

[w] Multiply placed with undivided intensity.

[x] Multiply placed with intensity suitably divided.

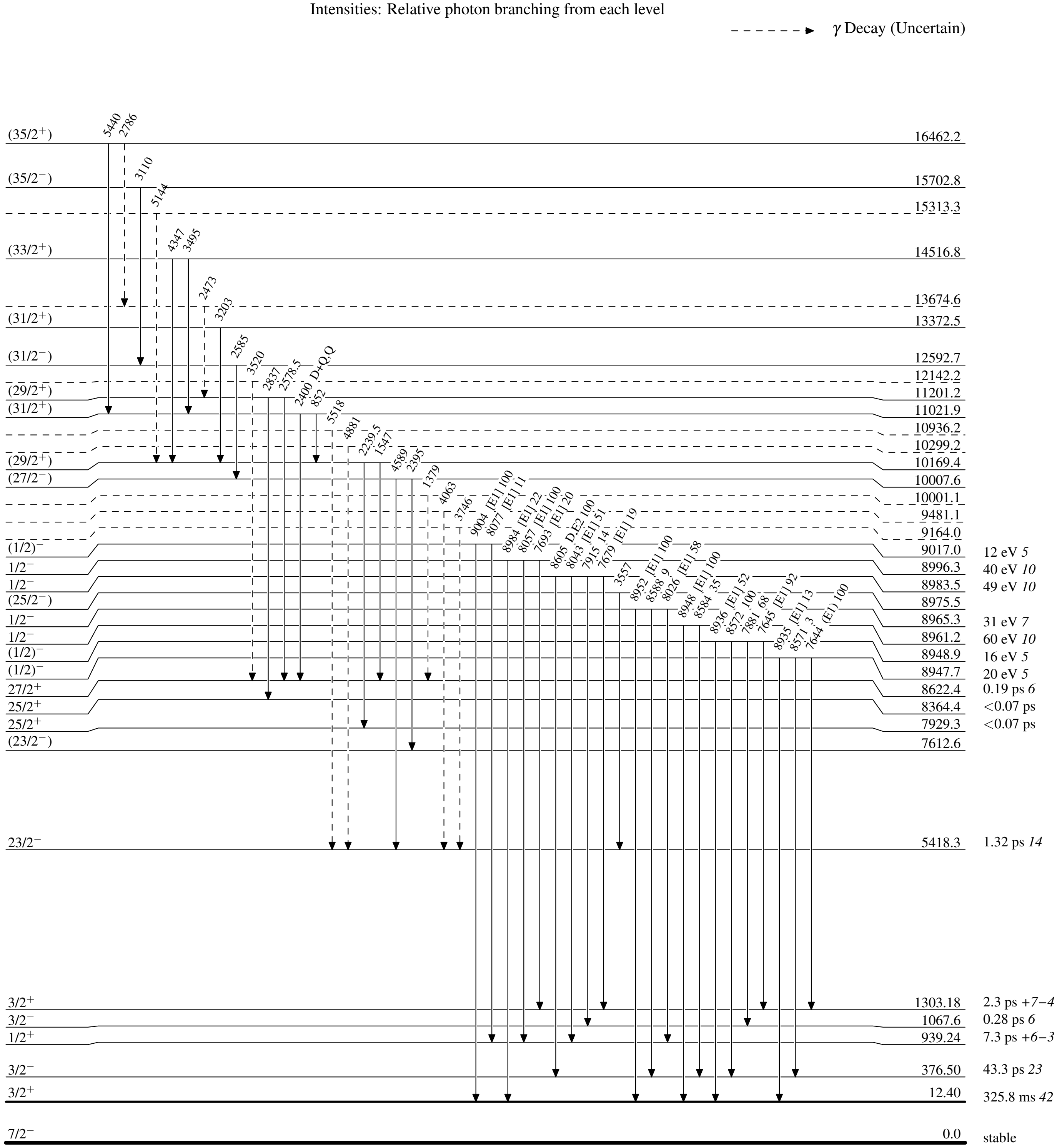
[y] Placement of transition in the level scheme is uncertain.

$^{45}_{21}Sc_{24}$-39

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

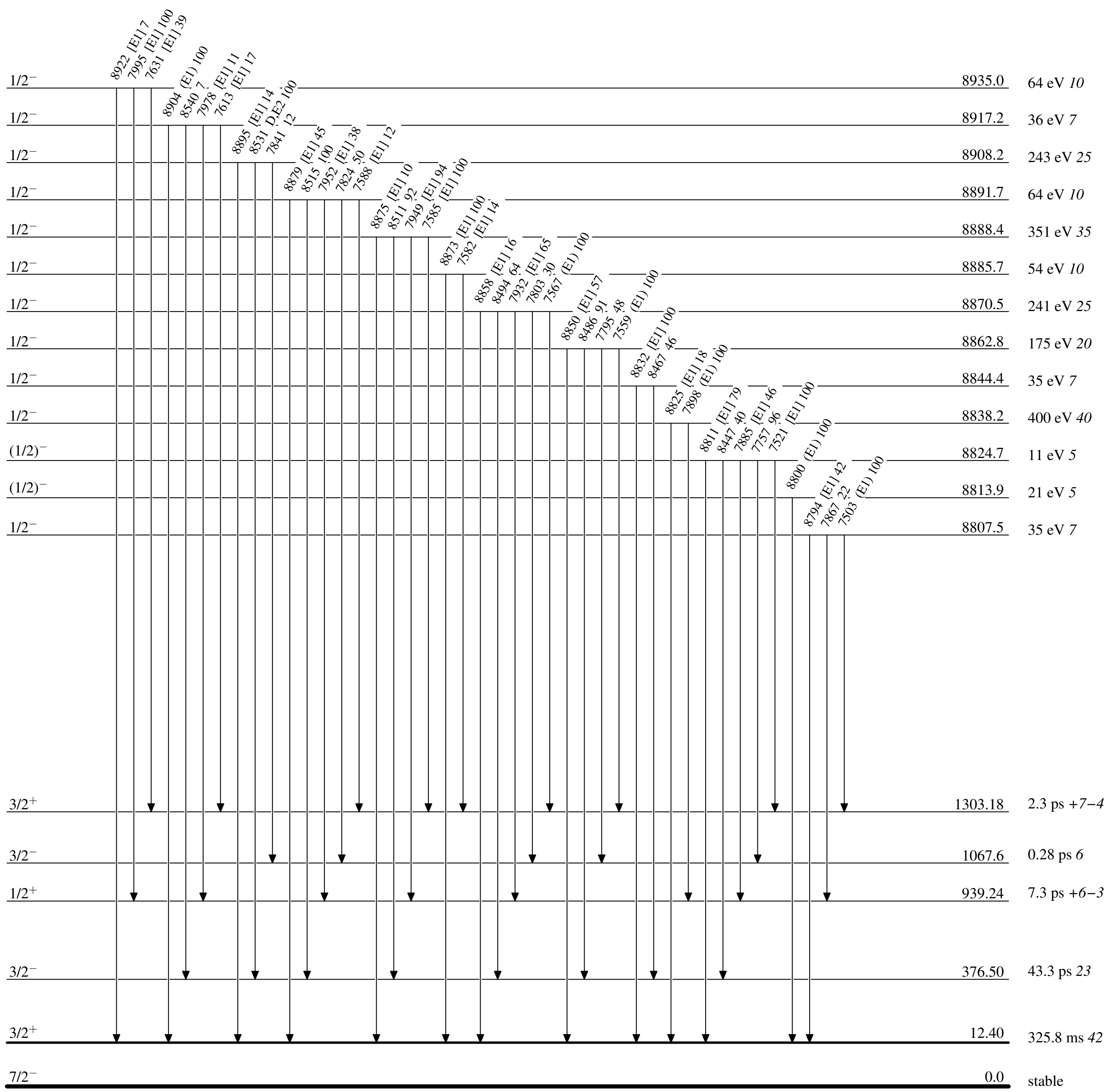


$^{45}_{21}Sc_{24}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

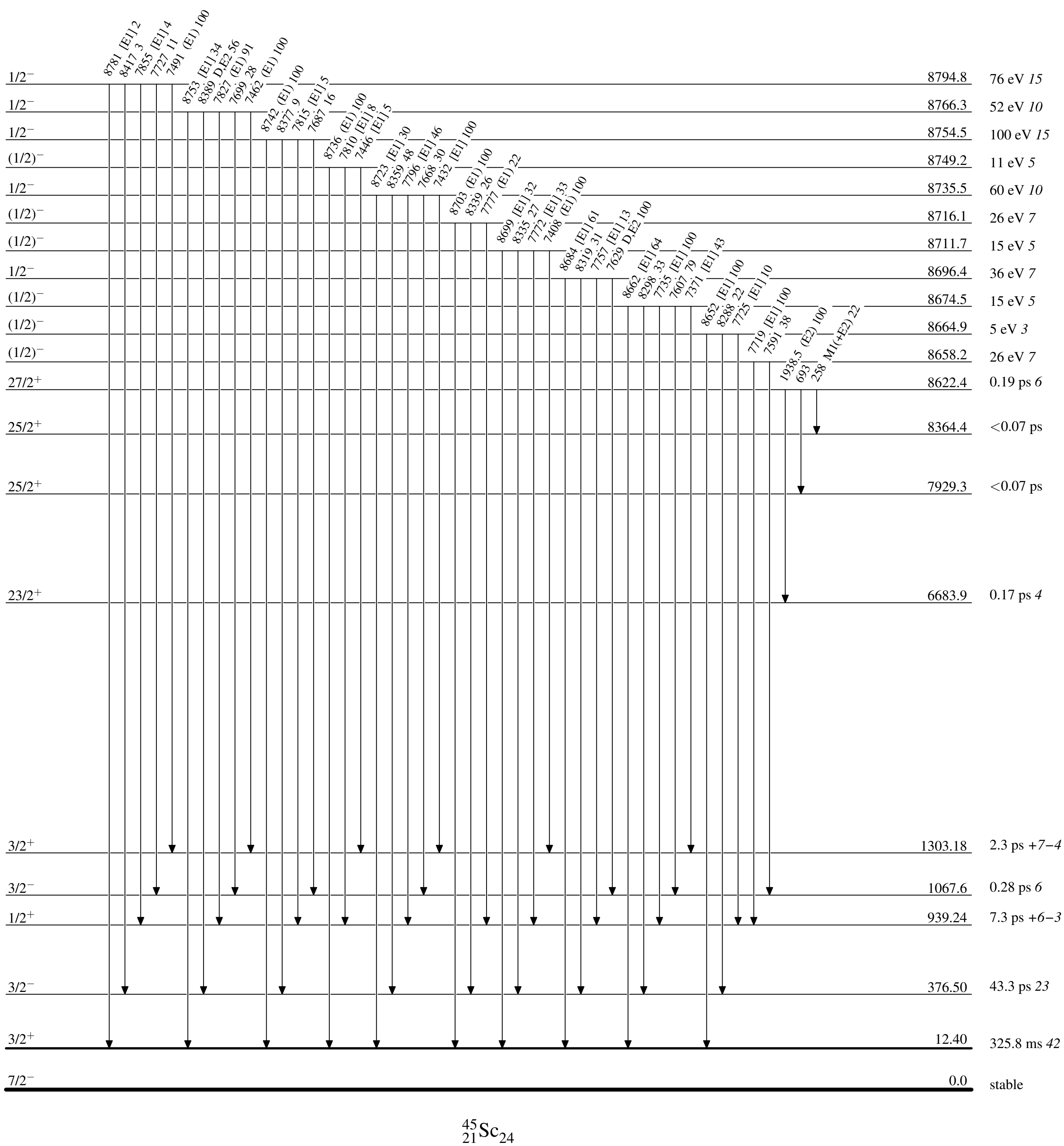


$^{45}_{21}Sc_{24}$

Adopted Levels, Gammas

Level Scheme (continued)

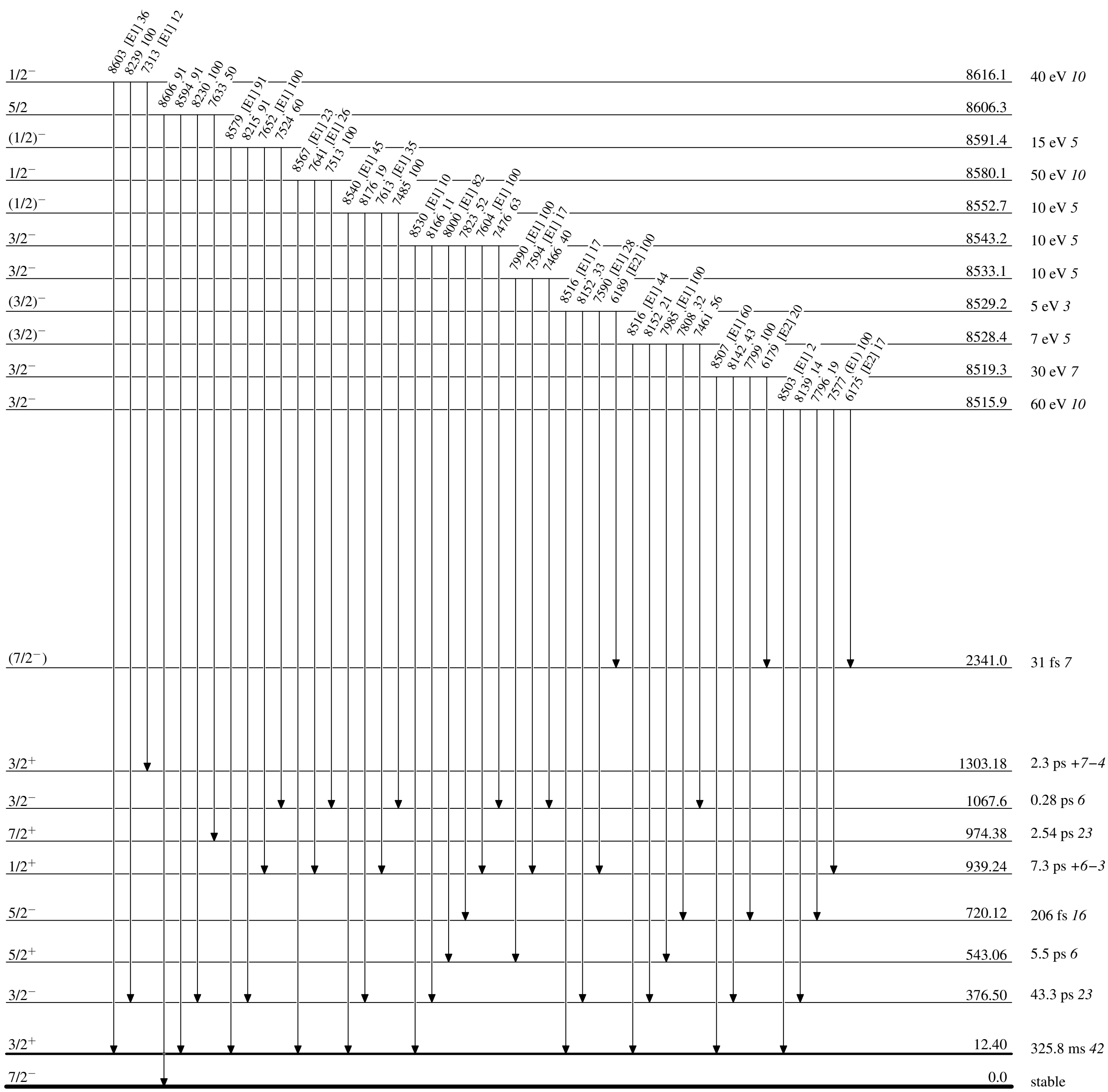
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{45}_{21}Sc_{24}$

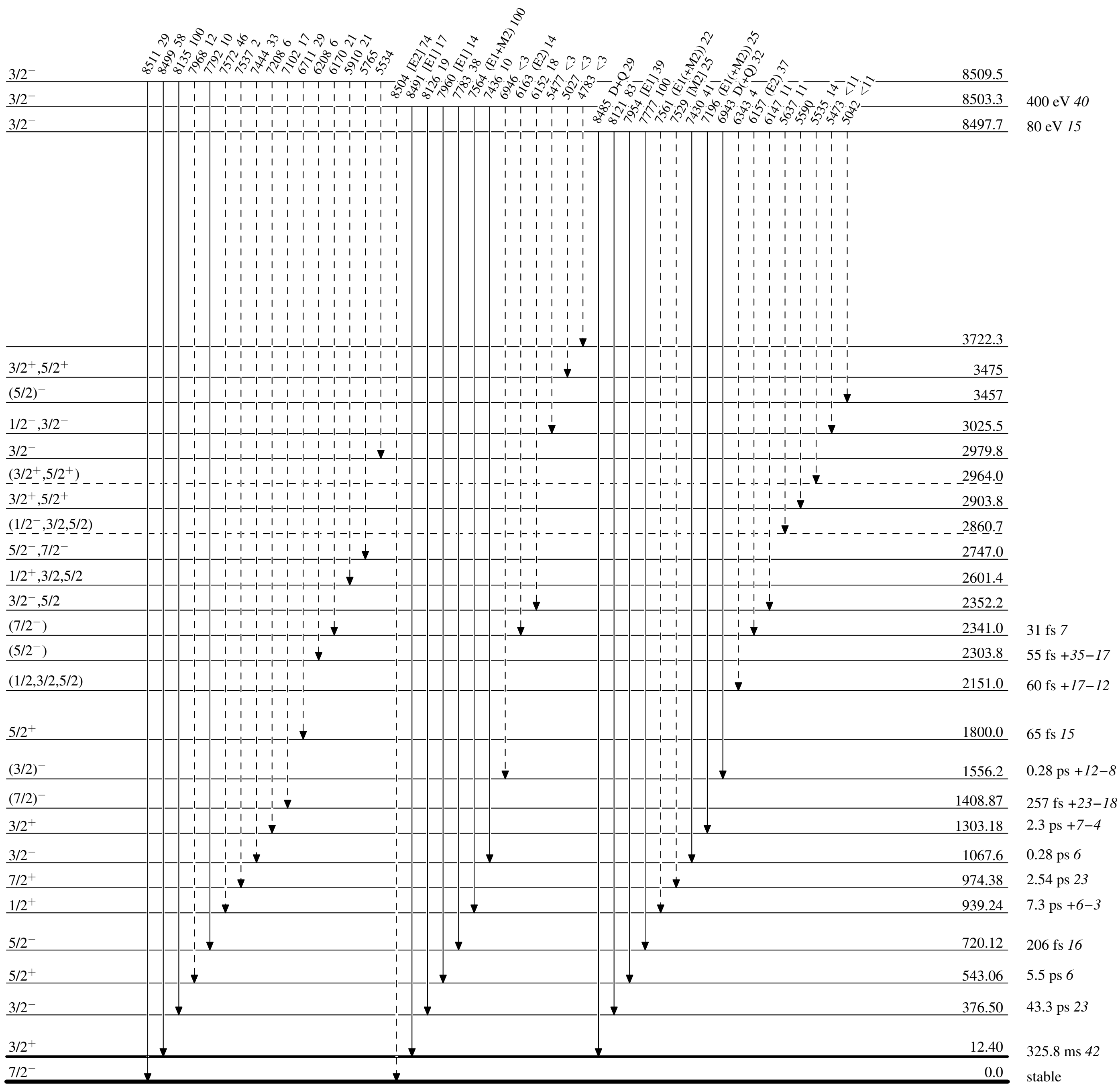
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

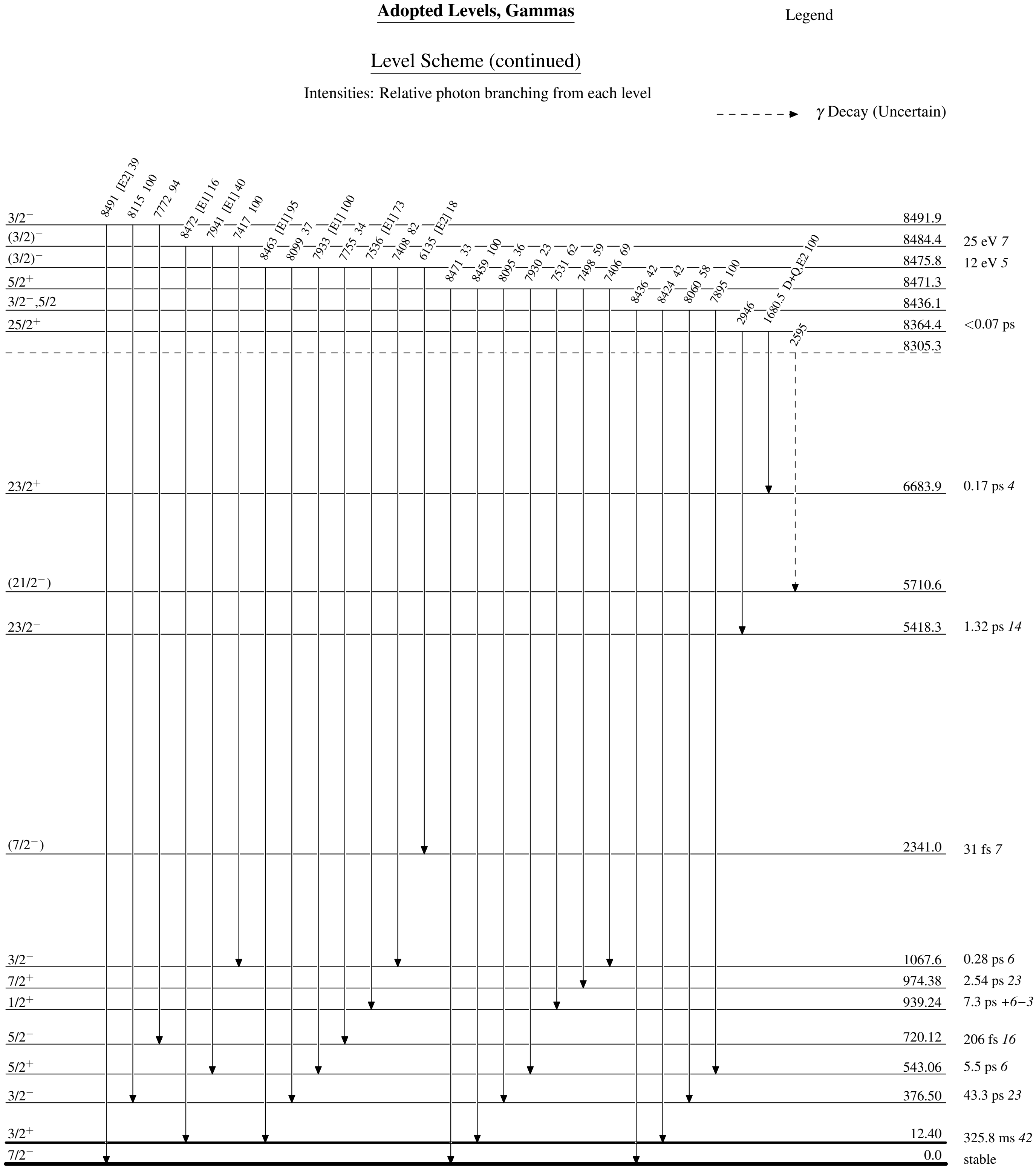


$^{45}_{21}Sc_{24}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



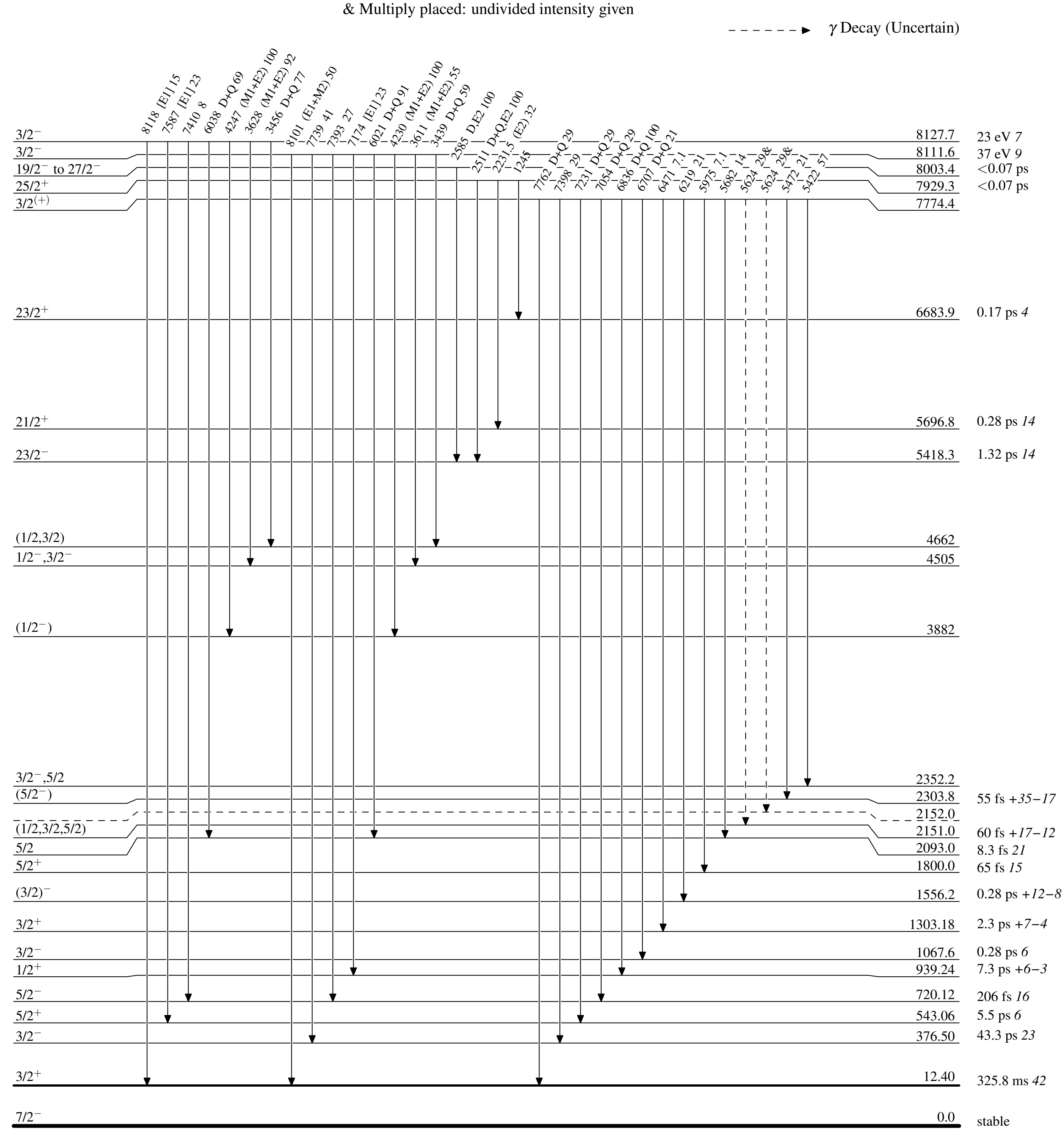
$^{45}_{21}Sc_{24}$

Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



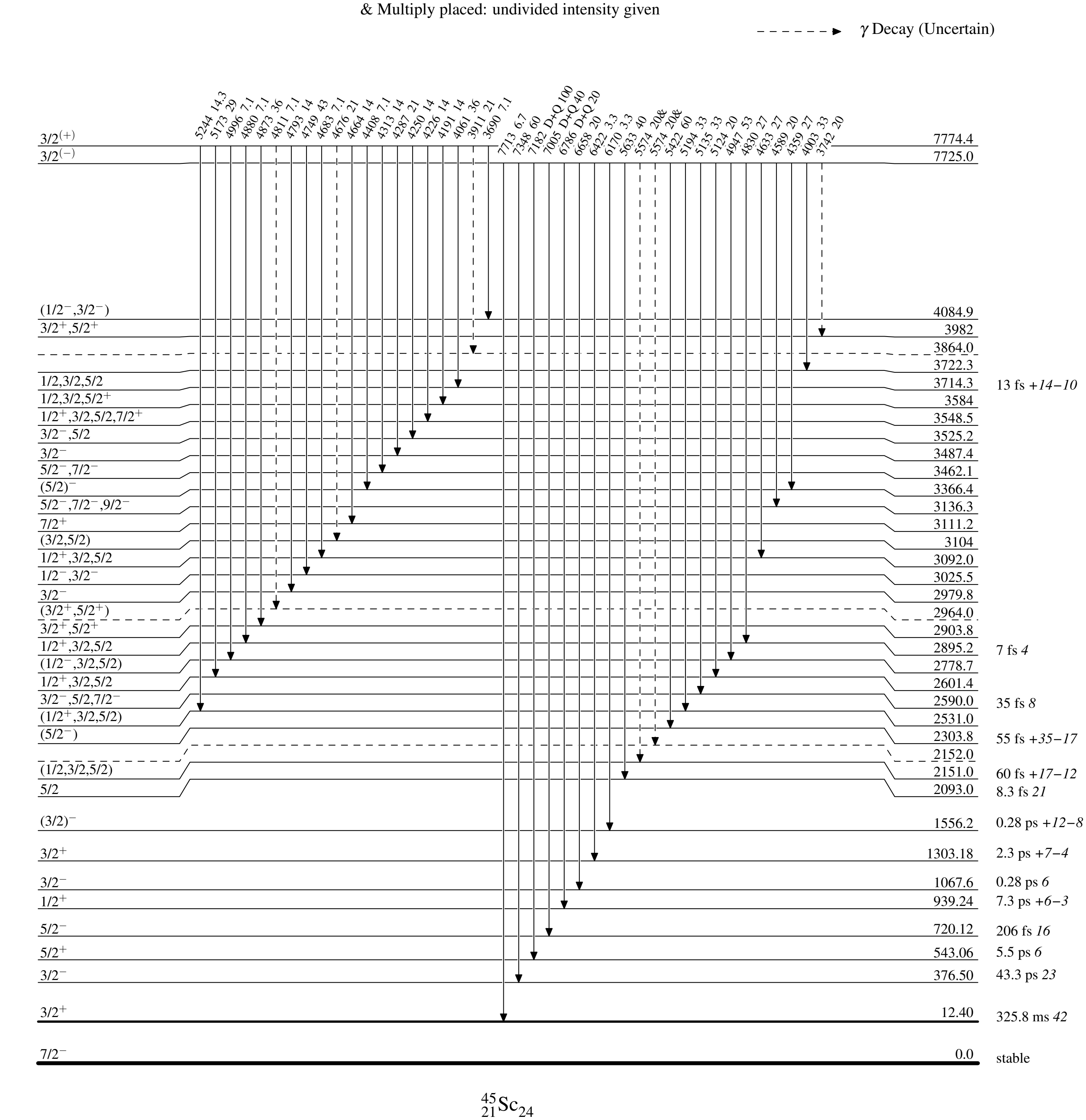
$^{45}_{21}Sc_{24}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

Legend



Adopted Levels, Gammas

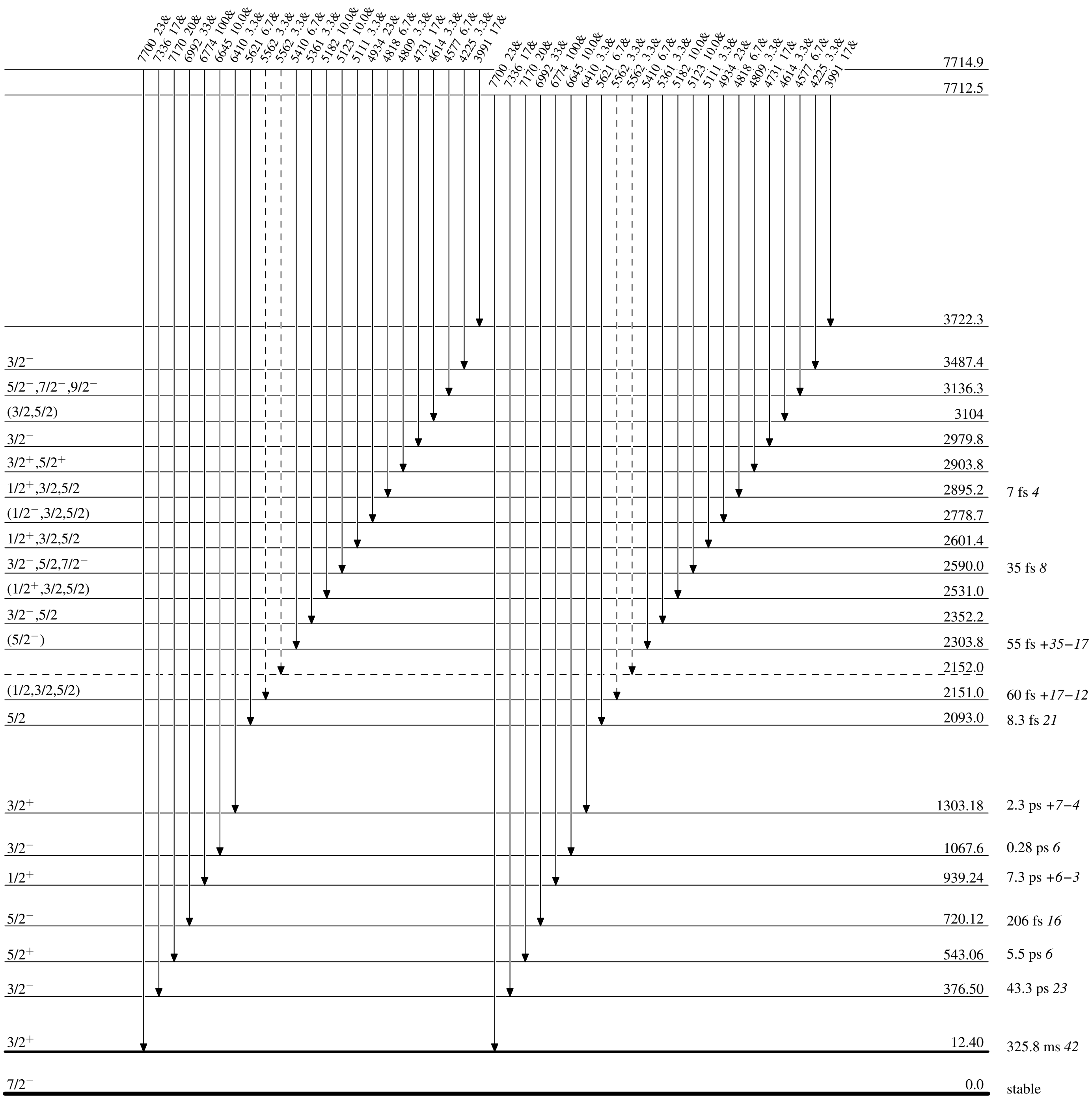
Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

& Multiply placed: undivided intensity given

γ Decay (Uncertain)



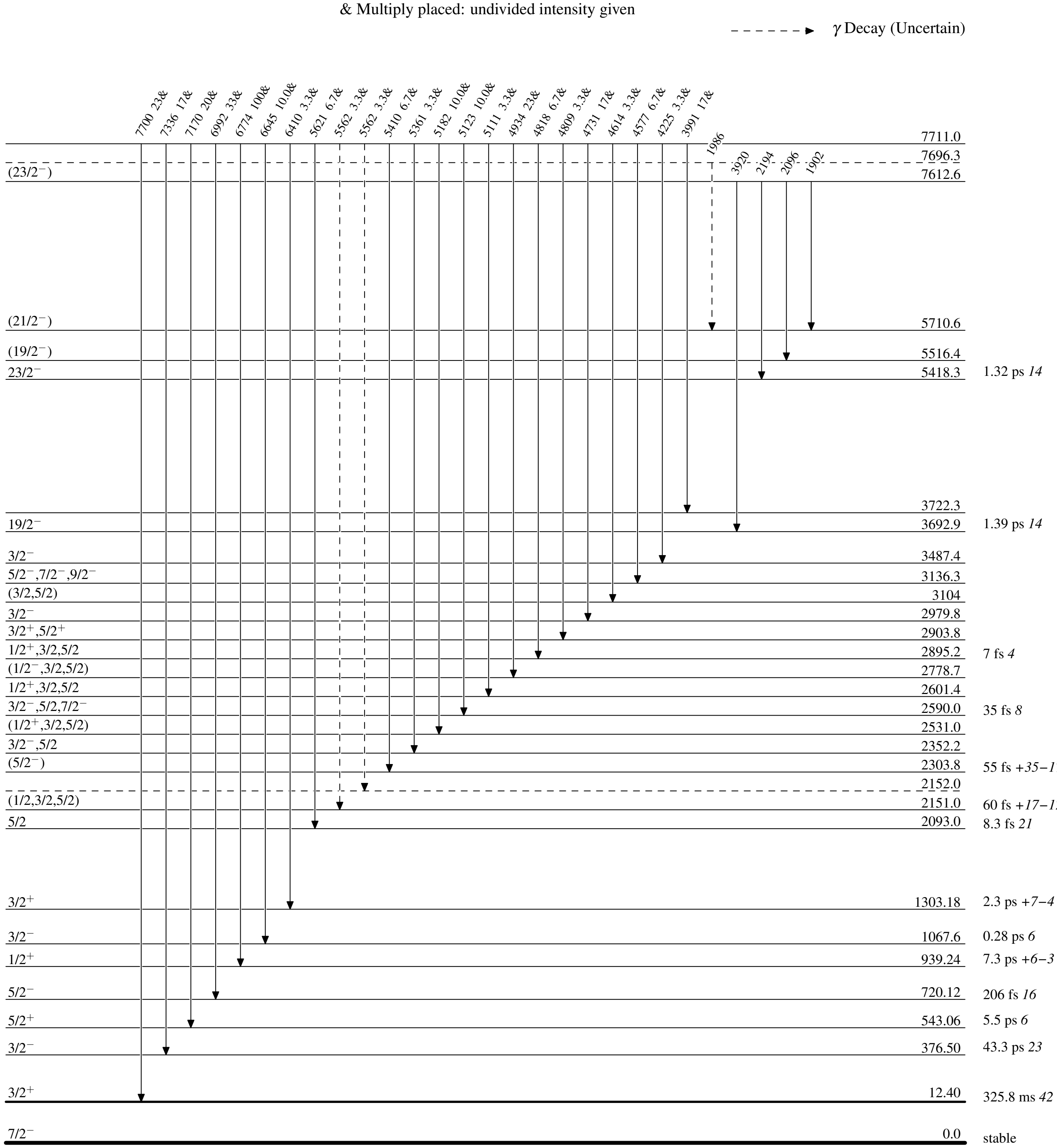
$^{45}_{21}Sc_{24}$

Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

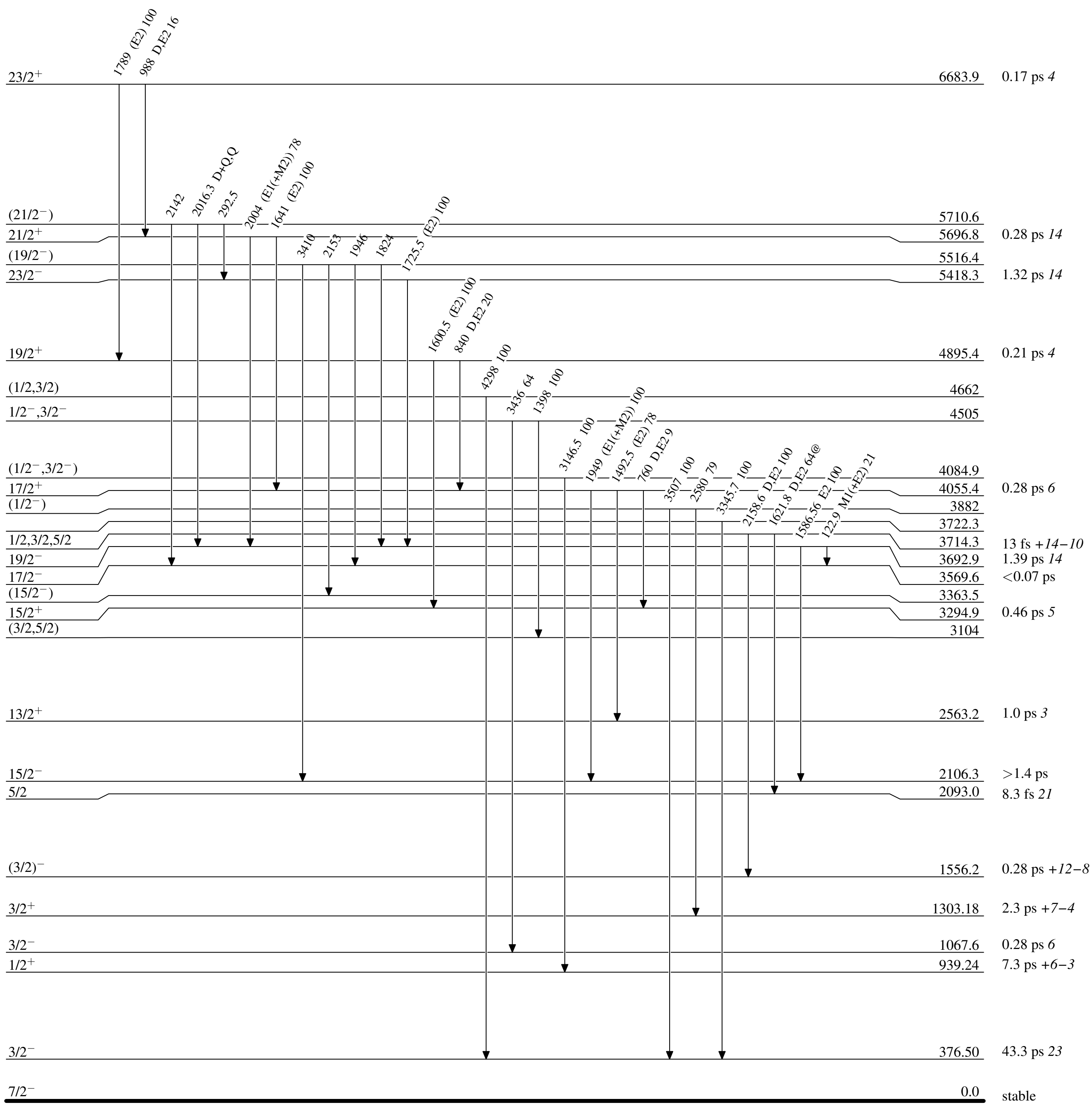


$^{45}_{21}Sc_{24}$

Adopted Levels, Gammas

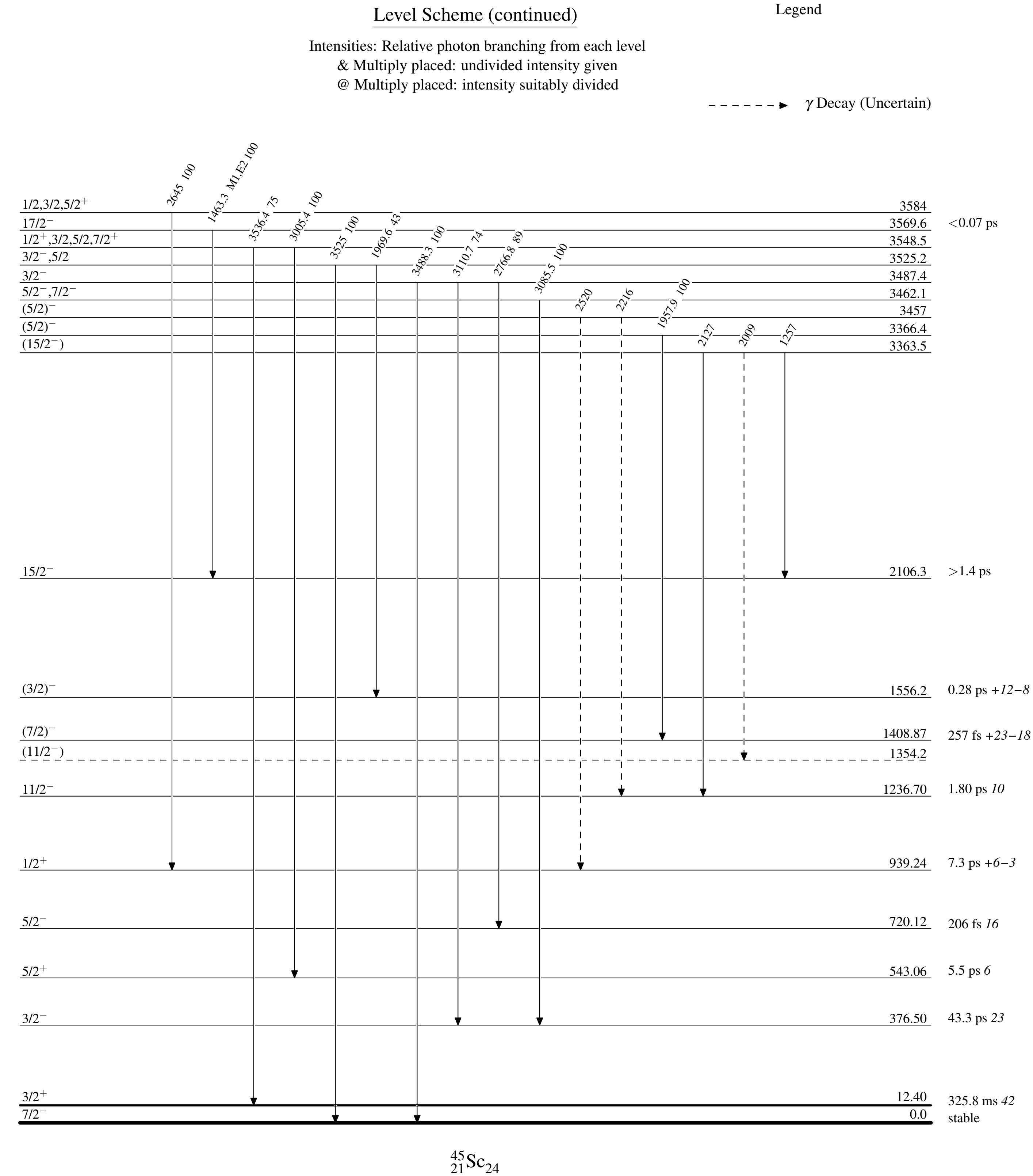
Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided



$^{45}_{21}Sc_{24}$

Adopted Levels, Gammas



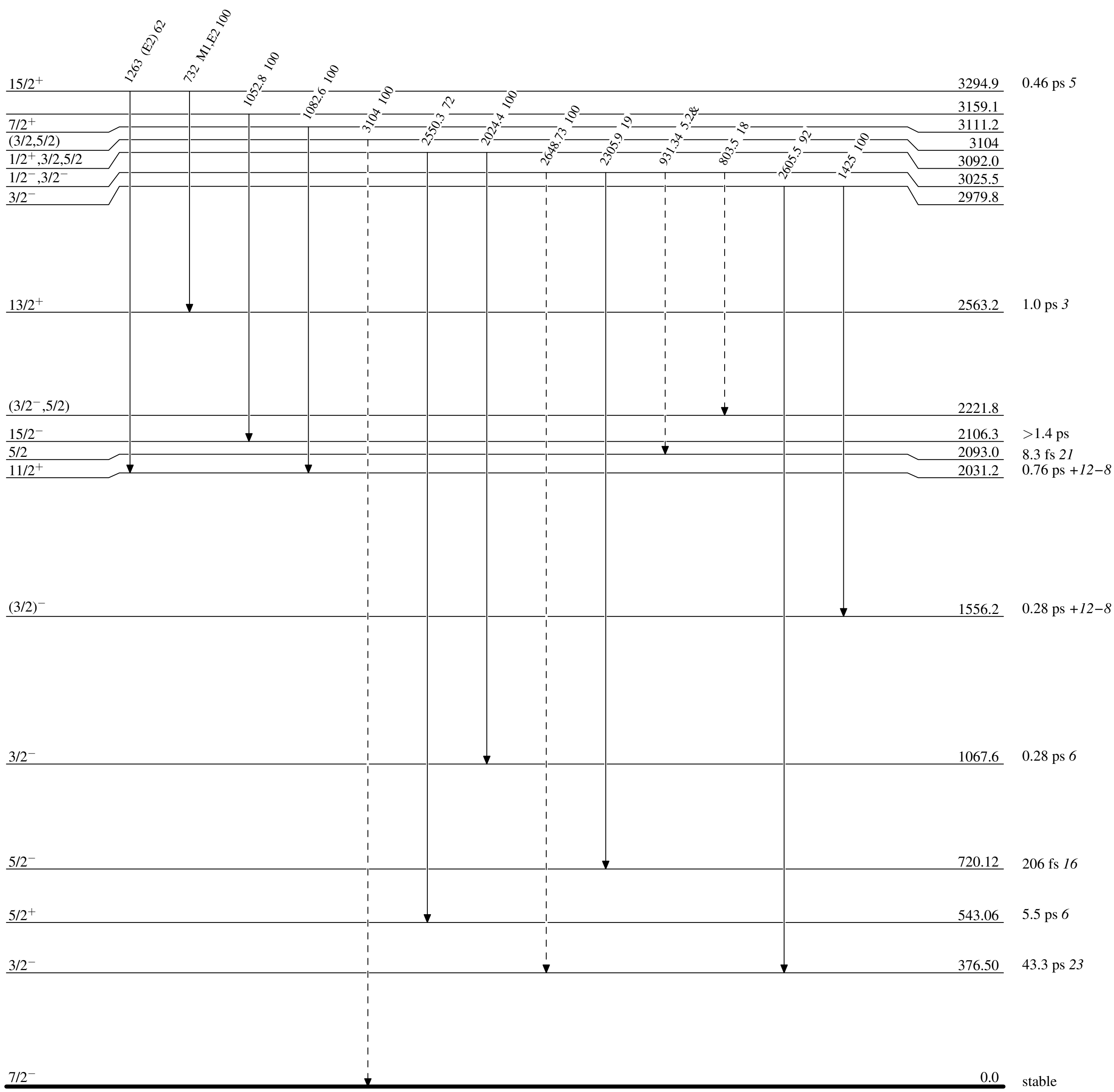
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

Legend

γ Decay (Uncertain)



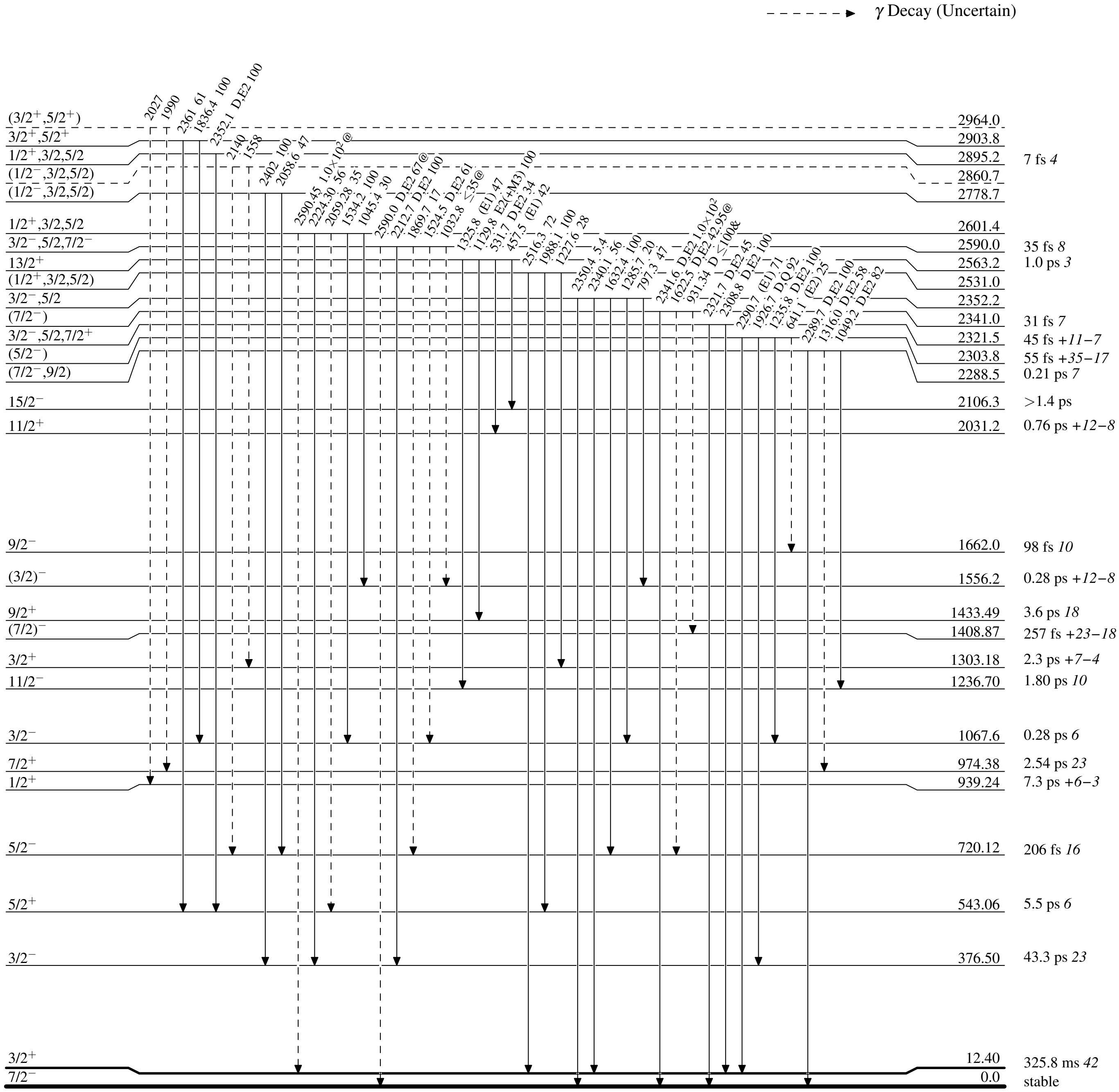
$^{45}_{21}Sc_{24}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

Legend



$^{45}_{21}Sc_{24}$

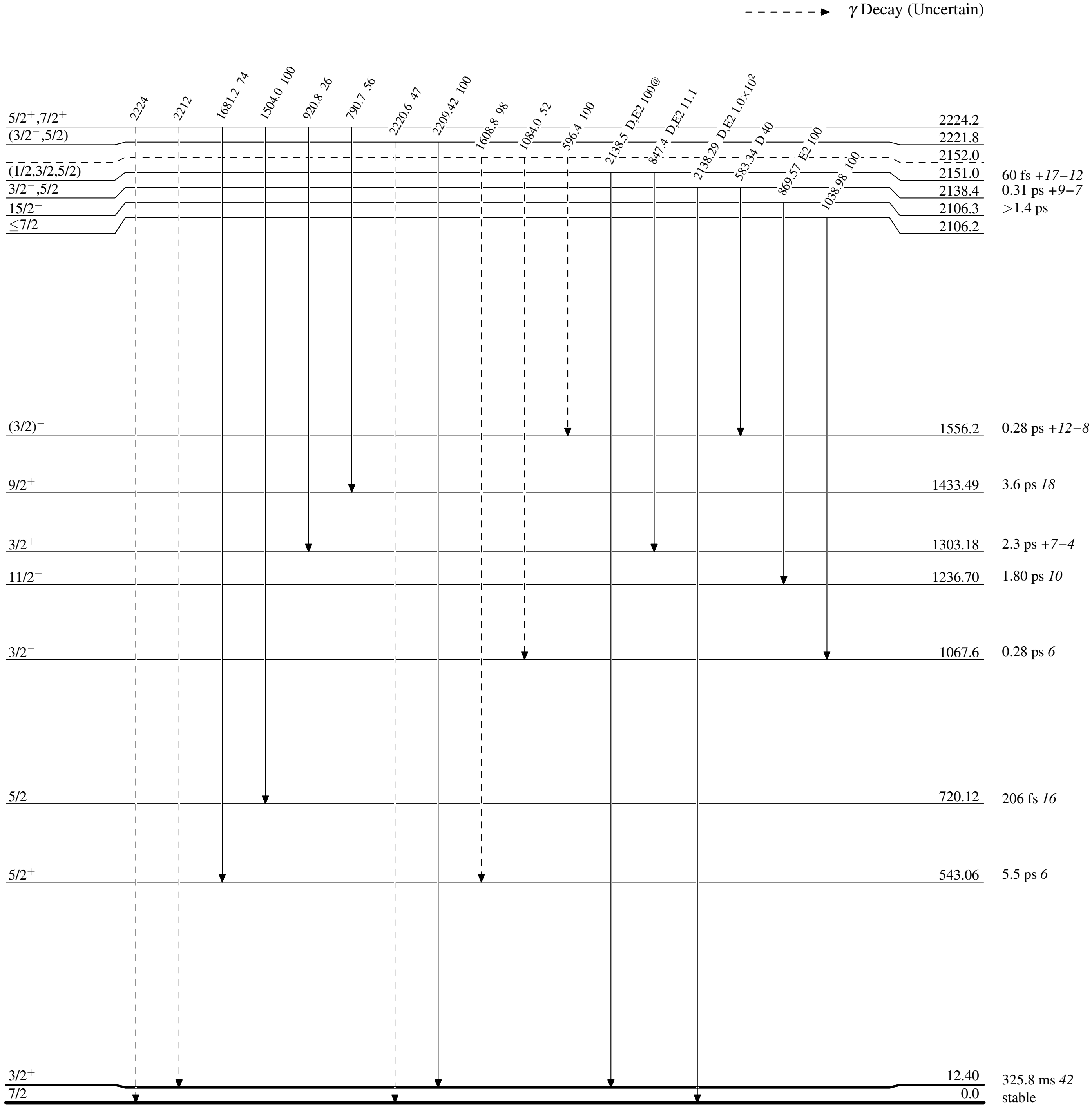
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

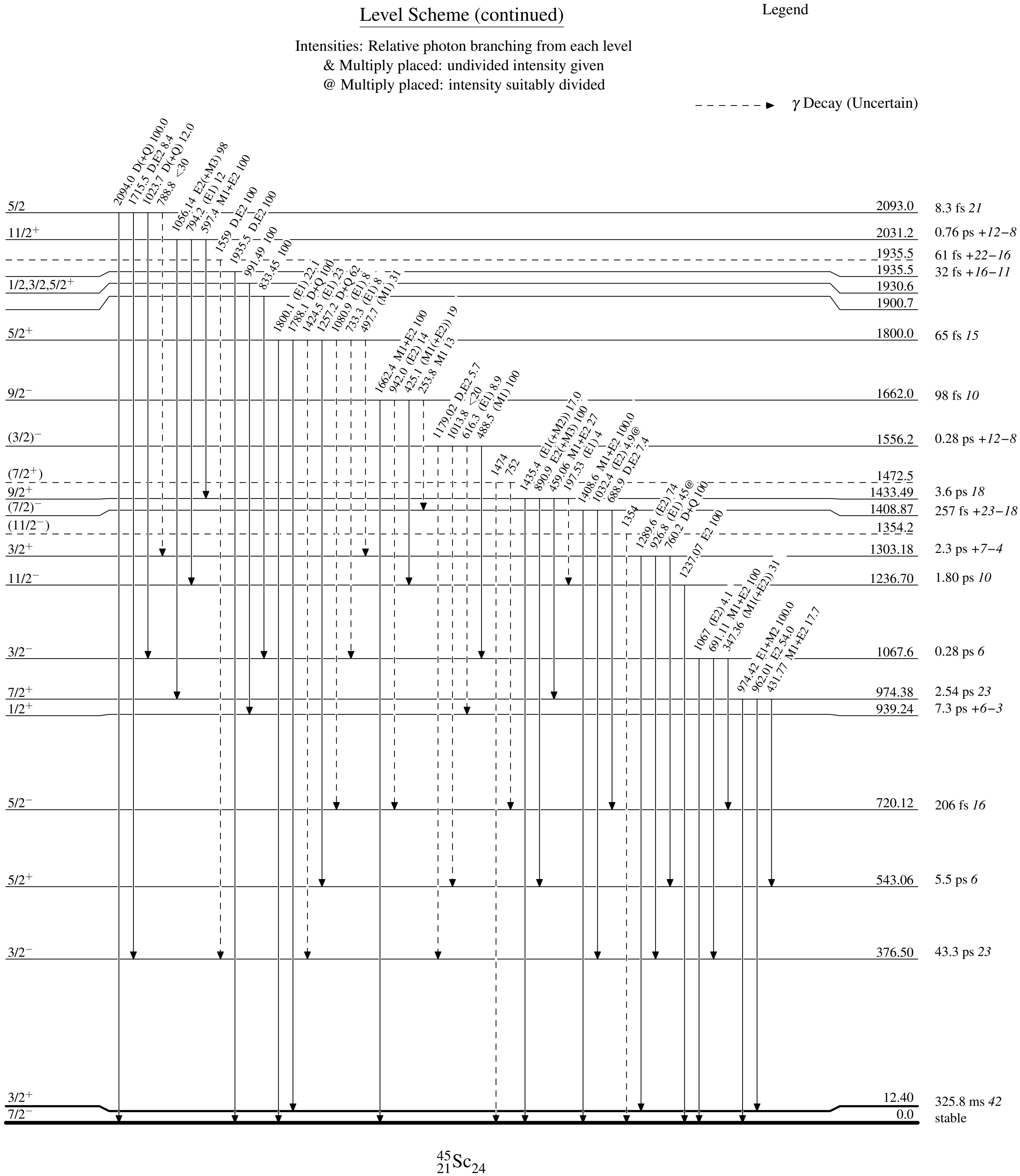
Legend

γ Decay (Uncertain)



$^{45}_{21}Sc_{24}$

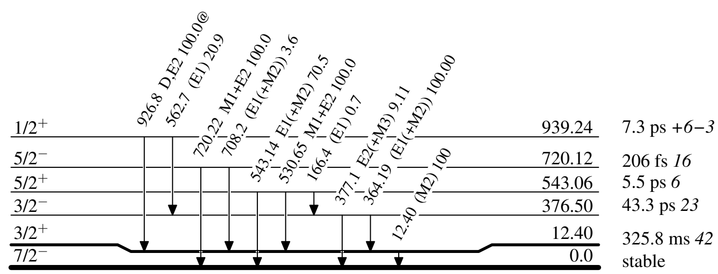
Adopted Levels, Gammas



Adopted Levels, Gammas

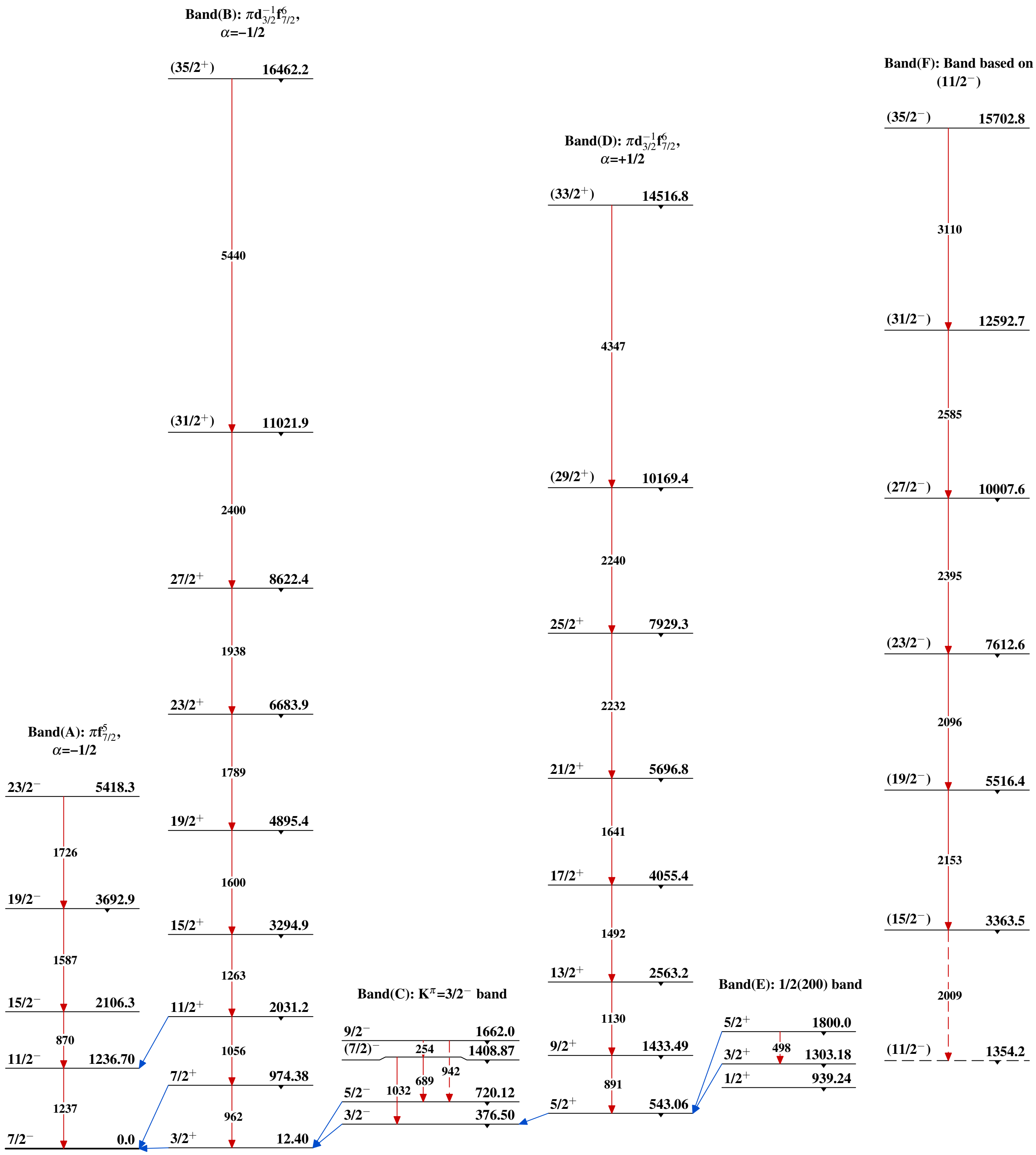
Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided



$^{45}_{21}Sc_{24}$

Adopted Levels, Gammas



$^{45}_{21}Sc_{24}$

Adopted Levels, Gammas (continued)

$^{45}_{21}Sc_{24}$