Adopted Levels, Gammas

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 190,1 (2023)	20-Jun-2023

Q(β^-)=−267.4 *19*; S(n)=9699.2 *26*; S(p)=6696.1 *17*; Q(α)=−6705.5 *18* 2021Wa16
Q(ε)=3652.7 *18*, S(2n)=21837.7 *18*, S(2p)=17371.9 *18* (2021Wa16).
1934Zy01: first identification of ^{44}Sc from irradiation of potassium chloride with α particles from radon decay. Measured activity and half-life, with possible assignment to ^{44}Sc decay.
1948Wa13:
Other measurements:
^{45}Sc(γ,n): 1972Vo03, 1974Ve06, 1975Er04, 1981No12, 1990Zh17, 1993Is07, 1995Is07, 2000Zh13, 2007Ng01, 2008Do22, 2011Ng02.
^{45}Sc(n,2n): 1967Pr01, 1972Ne08, 1975Ka01, 1977Ve07, 1978Hu14, 1979Fr13, 1980Ma47, 1994Bo01, 1997Bo20, 1997Su25.
^{45}Sc(α,αn): 1983Be35 (deduced isomeric ratios), 1985Ko34 (measured residuals yields).
^{44}Ca(^{12}C,^{12}B): 1988Vo06 (measured σ, deduced spin-flip giant resonances).
^{44}Ca(^{6}Li,^{6}He): 1975Wh01 (measured σ(E(^{6}He))).
^{44}Ca(α,3np): 2000Zh13 (analyzed isomer ratios).
^{nat}Ti(γ,xnp): 2011Ng02, 2022Ho04 (measured isomeric ratio).
^{nat}Ti(d,X): 1997Ta08, 2000He04, 2010Ga03.
^{nat}Ti(α,X): 1999He20.
^{41}K(^{3}He,γ): 1967Ca16 (measured σ(E)).
(p,X) on ^{nat}W, ^{181}Ta, ^{93}Nb, ^{nat}Ni, ^{nat}Cr, ^{56}Fe: 2011Ti05, 2011Ti04, 2011Ti03 (measured reaction products).
Theoretical structure calculations:
2023Ha07: calculated energy levels, J^π using shell model and several effective interactions.
2017Va30: calculated levels, J^π using IBM, p-IBM and shell-model with KB3G interaction.
2016Za01: calculated levels in the middle part of the excitation energy, J^π using single j shell approach and seniority arguments.
2005St36: calculated high-spin levels, J^π, proton and neutron occupation numbers using shell model.
1994Ri08: calculated nucleon transfer spectroscopic factors, B(λ) using shell model with a new effective interaction.
1981Co09: calculated levels, J^π, spectroscopic factors using shell-model with modified Kuo-Brown interactions.
1978Sa30: calculated levels, J^π, B(λ), static moments using Hartree-Fock projection formalism with band mixing.
1973Mc10: calculated levels, J^π, spectroscopic factors, B(E2), B(M1) using shell model.
Other theoretical calculations: 38 other references for structure and two for radioactive decays retrieved from the NSR database (www.nndc.bnl.gov/nsr/) are listed in document records which can be accessed via web-based ENSDF database.
Additional information 1.

^{44}Sc Levels

Band assignments are from (^{18}O,p3nγ) (2005La19).

Cross Reference (XREF) Flags

A	^{44}Ti ε decay (59.1 y)	I	^{30}Si(^{18}O,p3nγ)	Q	^{44}Ca(p,nγ)
B	^{44}Sc IT decay (58.61 h)	J	^{41}K(α,nγ),(α,n)	R	^{44}Ca(^{3}He,t)
C	^{10}B(^{36}Ar,2pγ)	K	^{41}Ca(α,p)	S	^{45}Sc(p,d)
D	^{24}Mg(^{24}Mg,3pnγ)	L	^{42}Ca(^{3}He,p)	T	^{45}Sc(p,dγ)
E	^{27}Al(^{19}F,pnγ)	M	^{42}Ca(α,d)	U	^{45}Sc(d,t)
F	^{28}Si(^{18}O,pnγ)	N	^{43}Ca(p,γ)	V	^{45}Sc(^{3}He,α)
G	^{28}Si(^{19}F,2pnγ)	O	^{43}Ca(^{3}He,d)	W	^{46}Ti(p,^{3}He)
H	^{30}Si(^{16}O,pnγ)	P	^{44}Ca(p,n)	X	^{46}Ti(pol d,α),(d,α)

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Adopted Levels, Gammas (continued)

^{44}Sc Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$[#]	XREF	Comments
0.0[a]	2^+	4.0420 h *25*	ABCDEFGHIJKL NOPQRSTUVWX	%ε+%$β^+$=100 μ=+2.498 *5* (2011Av01,2019StZV) Q=+0.16 *4* (2011Av01) Evaluated rms charge radius ($<r^2>)^{1/2}$=3.5432 fm *16* (2013An02). Evaluated change in charge radius δ$<r^2>$(^{44}Sc−^{45}Sc)=−0.019 fm^2 *11* (2013An02). Jπ: spin from atomic beam method (1966Co13); parity from L(^{3}He,d)=L(p,d)=L(d,t) from 7/2$^-$; also natural parity from (pol d,α). $T_{1/2}$: from 2016Ga24, weighted average of four measurements using an ionization chamber and three measurements using an HPGe detector. Others: 4.042 h *7* (2022Du13), 3.927 h *8* (1969Ra16), 4.00 h *2* (1966Ta01), 4.05 h *3* (1969Sa34), 3.92 h *3* (1945Hi05); values without uncertainties: 3.9 h (1963Di06), 4.04 h (1961Ra06), 4.01 h (1961Kh06), 3.90 h (1954An25), 3.96 h (1948Wa13), 3 h (1934Zy01). Due to discrepancies between some values, weighted average cannot be obtained with an acceptable small χ^2 from those values listed with uncertainties. Unweighted average of all the values with uncertainties is 3.997 h *24*. μ,Q: from collinear laser spectroscopy (2011Av01, also 2006Ga47). Others: μ=+2.56 *3* from atomic beam method (1966Co13, 1963Ha37, 1963Ha44); Q=+0.10 *5* (atomic beam method, 1966Co13, 1963Ha37, 1963Ha44). Note that 2021StZZ evaluation, and earlier 2016St14 and 2014StZZ compilations, incorrectly, quote Q=+0.10 *5* from 2011Av01, and +0.16 *4* from 1966Co13, whereas values in these references are given as +0.16 *4* in 2011Av01 and +0.10 *5* in 1966Co13. Evaluators have adopted +0.16 *4* from 2011Av01. Measured rms charge radius δ$<r^2>$(^{45}Sc,^{44}Sc)=−0.019 fm^2 *44* (2011Av01, also 2006Ga47); measured using collinear laser spectroscopy with an uncertainty of 0.011 fm^2 (stat) and 0.043 fm^2 (syst). 2021Ko26 recalibrated charge radii and listed the following value: δ$<r^2>$(^{45}Sc,^{44}Sc)=−0.081 fm^2 *11* (stat) *87* (syst); and rms charge radius=3.535 fm^2 *3* (stat) *12* (syst). Adopted (1977En02) spectroscopic factors S: 0.60 *15* (L=3) (proton stripping), 0.34 *5* (L=3) (neutron pickup).
67.8680[c] *14*	1^-	154.8[@] ns *8*	A CDEFG IJ N PQR T X	μ=+0.342 *6* (1967Ri06,2020StZV) Q=0.21 *2* (1973Ha61,2021StZZ) Jπ: 67.9γ E1 to 2^+; 78.3γ M1 to 0^-. μ,Q: from time-dependant perturbed angular correlation (TDPAC) in 1967Ri06 for μ and in 1973Ha61 for Q.
146.1915 *20*	0^-	51.0[@] μs *3*	A G J N PQR X	Jπ: from analyzing powers in (pol d,α).
234.78[b] *12*	2^-	6.16 ns *8*	CDEFGHIJ N PQR T X	μ=+0.68 *10* (1975Br12,2020StZV) Jπ: 234.85γ D(+Q) to 2^+, 166.9γ D(+Q) to 1^-; L(^{3}He,t)=3 from 0^+; unnatural parity from analyzing power in (pol d,α). $T_{1/2}$: from γγ(t) with fast timing in (p,dγ). Others: 6.12 ns *23* from γγ(t) in (p,nγ); 12.7 ns *22* from RDM in (^{18}O,pnγ) is discrepant.

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Adopted Levels, Gammas (continued)

^{44}Sc Levels (continued)

E(level)†	Jπ	$T_{1/2}$#	XREF	Comments
				μ=+0.68 *10* (1975Br12,2020StZV) Jπ: 234.85γ D(+Q) to 2+, 166.9γ D(+Q) to 1−; L(^{3}He,t)=3 from 0+; unnatural parity from analyzing power in (pol d,α). $T_{1/2}$: from γγ(t) with fast timing in (p,dγ). Others: 6.12 ns *23* from γγ(t) in (p,nγ); 12.7 ns *22* from RDM in (^{18}O,pnγ) is discrepant. μ: from time-dependent perturbed angular distribution (TDPAD) in 1975Br12. See also 1975Ch37, 1974Dr10, 1976Dr03.
271.241[a] *10*	6+	58.61 h *10*	BCD G IJKL NO RS UV	%IT=98.77 *1*; %ε+%β+=1.23 *1* (1976Co06) μ=+3.831 *12* (2011Av01,2019StZV) Q=−0.21 *9* (2011Av01) Jπ: spin from atomic beam method (1966Co13); parity from L(^{3}He,d)=L(p,d)=L(d,t)=3 from 7/2−. $T_{1/2}$: from 1969Ra16. Others: 58.7 h *3* (2022Du13), 58.6 h *5* (1956Ru45), 59.0 h (1954An25), 61.2 h *17* (1952Ru23), 56.9 h *19* (1950Br52), 58.6 h *7* (1945Hi05), 52 h (1940Wa01). μ,Q: from collinear laser spectroscopy (2011Av01, also 2006Ga47). Others: μ=+3.88 *1*, Q=−0.19 *2* (atomic beam, 1966Co13, 1963Ha37, 1963Ha44). Note that 2021StZZ evaluation, and earlier 2016St14 and 2014StZZ compilations, incorrectly, quote Q=−0.19 *2* from 2011Av01, and −0.21 *9* from 1966Co13, whereas values in these references are given as −0.21 *9* in 2011Av01 and −0.19 *2* in 1966Co13. Evaluators have adopted −0.21 *9* from 2011Av01. Measured rms charge radius δ<r^2>(^{45}Sc,^{44m}Sc)=−0.070 fm^2 (2011Av01); measured using collinear laser spectroscopy. The *15* uncertainty is 0.011 fm^2 statistical and 0.010 fm^2 systematic. 2021Ko26 recalibrated charge radii and listed the following value: δ<r^2>(^{45}Sc,^{44m}Sc)=−0.072 fm^2 *11* (stat) *3* (syst). Adopted (1977En02) spectroscopic factors S: 0.63 *13* (L=3) (proton stripping), 0.49 *7* (L=3) (neutron pickup).
349.86 *9*	4+	3.067 ns *14*	CDEFGHIJKL NOPQRSTUV X	μ=+3.6 *5* (1975Ch37,2020StZV) XREF: L(360). Jπ: 349.87γ ΔJ=2, E2 to 2+; L(^{3}He,t)=L(^{3}He,p)=4 from 0+. $T_{1/2}$: from γγ(t) in (p,dγ). Others: 3.12 ns *28* from RDM in (^{18}O,pnγ), 3.1 ns *3* from RDM in (^{19}F,2pnγ), 3.13 ns *19* from γ(t) in (^{16}O,pnγ), and 3.13 ns *19* from γγ(t) in (p,nγ). μ: from integral perturbed angular distribution in 1975Ch37. Adopted (1977En02) spectroscopic factors S: 0.57 *12* (L=3) and 0.03 *1* (L=1) (proton stripping); 0.37 *5* (L=3) and 0.03 *1* (L=1) (neutron pickup).
424.82[c] *8*	3−	366 ps *10*	CDEFG IJ NO QR TU X	Jπ: 356.92γ E2, ΔJ=2 to 1−. $T_{1/2}$: weighted average of 378 ps *42* from RDM in (^{18}O,pnγ), 380 ps *40* from RDM in (^{19}F,2pnγ), and 364 ps *10* from γγ(t) in (p,dγ). Adopted (1977En02) spectroscopic factors S: 0.57 *6* (L=2) (proton stripping); 0.06 *2* (L=2) (neutron pickup).
531.42[e] *14*	3(−)	>3.8 ps	C EFG IJ NO QR X	XREF: O(521).

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Adopted Levels, Gammas (continued)

^{44}Sc Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$[#]	XREF	Comments
				Jπ: 464.8γ ΔJ=2 to 1⁻ is most likely E2. $T_{1/2}$: other: <35 ns from (^{18}O,pnγ) using RDM.
631.07[b] *10*	4⁻	353 ps *21*	CDEFG IJ NO QR TU X	XREF: O(637). Jπ: L(^{3}He,d)=0 from 7/2⁻; L(^{3}He,t)=5 from 0⁺; unnatural parity from analyzing power in (pol d,γ). $T_{1/2}$: weighted average of 381 ps *56* from RDM in (^{19}F,pnγ), 411 ps *30* from RDM in (^{18}O,pnγ), and 336 ps *15* from γγ(t) in (p,dγ). Adopted (1977En02) spectroscopic factors S: 0.05 *2* (L=0) (proton stripping); 0.13 *4* (L=2) (neutron pickup).
641.3 *10*			J N s v	XREF: N(?)s(646)v(654). E(level): the 642 level proposed by 1971PoZP in (p,γ) based on a 496γ to 146 level is proved to be erroneous by 1973Dr08 in (α,nγ) due to non-observation of the 496γ. The 641 level here is proposed by 1973Ar14 in (α,nγ) based on a 573.4γ to 68 level and is adopted by the evaluators. It could be questionable considering this level and the associated 573.4γ are not reported in 1973Dr08.
666.5 *5*	1⁺	51 fs *+16−14*	E JKL NOPQRs UvwX	XREF: L(680)s(646)v(654)w(700). Jπ: L(d,α)=0+2 from 0⁺; unnatural parity from analyzing power in (pol d,α); 666.7γ M1(+E2) to 2⁺. $T_{1/2}$: weighted average of 55 fs *+28−14* from DSAM in (^{19}F,pnγ) and 49 fs *+16−19* from DSAM in (α,nγ). Adopted (1977En02) spectroscopic factors S: 0.53 *14* (L=3) (proton stripping); 0.33 *5* (L=3) (neutron pickup).
725 *15*	(1⁺,2⁺,3⁺)		N Rs w	XREF: N(745)s(748)w(700). Jπ: L(^{3}He,t)=(2) from 0⁺.
762.0 *7*	3⁺	231 fs *56*	E JKLMNO QRs UV X	XREF: M(773)s(748)V(756). Jπ: L(pol d,α)=L(α,d)=2 from 0⁺; L(p,d)=L(d,t)=L(^{3}He,α)=3 from 7/2⁻; L(^{3}He,t)=4 from 0⁺; unnatural parity from analyzing power in (pol d,α). $T_{1/2}$: weighted average of 250 fs *+69−56* from (^{19}F,pnγ) and 215 fs *56* from (α,nγ). Adopted (1977En02) spectroscopic factors S: 0.25 *7* (L=3) and 0.08 *2* (L=1) (proton stripping); 0.19 *3* (L=3) (neutron pickup).
829.0 *20*			J N X	
968.33[a] *13*	7⁺	<3.5 ps	CD G IJk M o RS Uv X	XREF: k(976)o(980)R(982)S(952)v(976). Jπ: spin=7 from γ(θ) in (^{19}F,2pnγ); L(p,d)=L(d,t)=3 from 7/2⁻; unnatural parity from analyzing power in (pol d,α). $T_{1/2}$: from RDM in (^{19}F,2pnγ).
986.2 *10*	3⁺	1.39 ps *+71−59*	E JkL No Q v X	XREF: k(976)o(980)v(976). Jπ: L(^{3}He,d)=L(^{3}He,α)=3 from 7/2⁻ and

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Adopted Levels, Gammas (continued)

^{44}Sc Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$[#]	XREF	Comments
				L(^{3}He,p)=2+4 for (968+987) doublet; unnatural parity from analyzing power in (pol d,α). $T_{1/2}$: other: >0.9 ps from DSAM in (^{19}F,pnγ).
1006.53[d] *28*	(4$^-$)	<35 ns	C F IJ N Q s U	XREF: s(1025)U(1012). Jπ: 375.6γ to 4$^-$, 656.5γ to 4$^+$, 771.7γ to 2$^-$; L(d,t)=(0) from 7/2$^-$; 4$^-$ proposed by 2005La19 in (^{18}O,p3nγ). $T_{1/2}$: from RDM in (^{18}O,pnγ). Other: ≥5.5 ps from DSAM in (α,nγ).
1046.91? *22*			G	XREF: G(?). E(level): this level could be the same level as the 1051.6 level.
1051.3 *10*	5$^+$	170 fs *+69−59*	C JKlMNO Rs Uv X	XREF: l(1070)s(1025)v(1043). Jπ: L(^{3}He,α)=3 and L(^{3}He,d)=L(d,t)=1+3 from 7/2$^-$; L(α,d)=L(pol d,α)=L(^{3}He,p)=4 from 0$^+$; L(^{3}He,t)=6 from 0$^+$; unnatural parity from analyzing power in (pol d,α).
1102.1 *6*	(1$^-$,2)		J	Jπ: 436.7γ to 1$^+$, 1034.0γ to 1$^-$; 569.9γ to 3$^{(-)}$.
1143 *4*	1$^+$		L Rs X	XREF: L(1160)s(1165). E(level): from (^{3}He,t). Other: 1142 *6* from (pol d,α). Jπ: L(^{3}He,t)=2 and L(pol d,α)=(2) from 0$^+$; unnatural parity from analyzing power in (pol d,α); 1$^+$,(2$^+$) from σ(θ) in (^{3}He,t).
1185.7 *5*	3$^+$	38 fs *+14−7*	E JKLMNO QRs UVwX	XREF: L(1210)O(1197)s(1165)w(1200). Jπ: L(α,d)=2 and L(^{3}He,t)=4 from 0$^+$; unnatural parity from analyzing power in (pol d,α). $T_{1/2}$: from DSAM in (^{19}F,pnγ). Other: 39 fs *15* from DSAM in (α,nγ).
1197.49[c] *9*	5$^-$	<35 ns	CD FG IJ N T wX	XREF: w(1200). Jπ: 772.48γ E2, ΔJ=2 to 3$^-$, 566.39γ M1 to 4$^-$. $T_{1/2}$: from RDM in (^{18}O,pnγ). Other: >2 ps from DSAM in (α,nγ).
1292 *13*			R X	E(level): weighted average of 1303 *10* from (^{3}He,t) and 1277 *12* from (pol d,α).
1326.0 *7*	3$^+$	125 fs *34*	J N QR X	Jπ: 1326γ M1+E2 to 2$^+$; L(^{3}He,t)=4 from 0$^+$; unnatural parity from analyzing power in (pol d,α).
1416 *10*	(1,3,5)$^-$		S UV x	XREF: x(1427). E(level): weighted average of 1410 *20* from (p,d), 1415 *10* from (d,t), and 1424 *20* from (^{3}He,α). The evaluators consider this level different from 1426 level seen in γ-ray studies. See comments for 1426 level. Jπ: L(d,t)=2 and L(p,d)=L(^{3}He,α)=(2) from 7/2$^-$; probable natural parity from analyzing power in (pol d,α) for a group at 1427 *6*.
1425.9 *5*	2$^+$	42 fs *21*	E J N Q x	XREF: x(1427). E(level): level populated in γ-ray studies in (α,nγ), (p,nγ) and (^{19}F,pnγ) is considered different from that in particle-transfer reactions since spin-parity from 1426γ M1+E2 to 2$^+$, based on 1426γ(θ) in (p,nγ) and measured $T_{1/2}$ using 1426γ in (^{19}F,pnγ), is inconsistent with L(d,t)=2 and L(p,d)=L(^{3}He,α)=(2) from 7/2$^-$ and L(^{3}He,t)=4

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Adopted Levels, Gammas (continued)

^{44}Sc Levels (continued)

E(level)†	Jπ	$T_{1/2}$#	XREF	Comments
				from 0^+. It is likely there are more than one levels at about this energy. See 1416 and 1428 levels. Jπ: 1426γ M1+E2 to 2^+; 1358γ D(+Q) to 1^-; 1^+ ruled out by 1001γ to 3^- since it would result in a B(M2)(W.u.)=13500 greatly exceeding RUL=3. Also note that analyzing power in (pol d,α) indicates probable natural parity for a group at 1427 *6*. $T_{1/2}$: from RDM in (^{19}F,pnγ).
1428 *4*	$(4)^+$		O R x	XREF: O(1433)x(1427). E(level): from (^{3}He,t). The evaluators consider this level different from 1426 level seen in γ-ray studies. See comments for 1426 level. Jπ: L(^{3}He,t)=4 from 0^+; probable natural parity from analyzing power in (pol d,α) for a group at 1427 *6*; L(^{3}He,d)=1+3 for a group at 1433 *18*.
1506.6 *9*	$(4,5)^+$		J NO S	XREF: O(1512)S(1510). Jπ: L(^{3}He,d)=1+3 from $7/2^-$; 1235.2γ to 6^+.
1531.3 *10*	5^+		JKLMNO Rs UV X	XREF: L(1550)s(1510). Jπ: L(^{3}He,d)=L(d,t)=1+3 from $7/2^-$; L(^{3}He,t)=6 from 0^+; unnatural parity from analyzing power in (pol d,α).
1567.2 *9*	$(3)^-$		J N R U X	Jπ: L(d,t)=0+2 from $7/2^-$; probable natural parity from analyzing power in (pol d,α).
1592.4 *20*	(2^+)		Jkl No	XREF: k(1599)l(1610)o(1598). E(level): see comments for 1608 level. Jπ: 1524.5γ to 1^-; L(^{3}He,d)=1+3 from $7/2^-$ for a group at 1598 *12*, which could be a doublet.
1608 *8*	$(3,4)^+$		kl o R	XREF: k(1599)l(1610)o(1598). E(level): this level populated in (^{3}He,t) is considered different from the 1592 level in (α,nγ) since the 1524.5γ from 1592 level to 1^- is inconsistent with L(^{3}He,t)=4 from 0^+. Also note that the group at 1598 *12* with L=1+3 in (^{3}He,d) could be a doublet. Jπ: L(^{3}He,t)=4 from 0^+, $(3,4)^+$ proposed based on σ(θ) by 1972Ma50 in (^{3}He,t).
1648.3 *5*	$(1,2,3^-)$	122 fs *19*	J o rs u	XREF: o(1653)r(1652)s(1660)u(1654). E(level): levels at 1653 *12* from (^{3}He,d), 1652 *5* from (^{3}He,t), 1660 *20* from (p,d), and 1654 *10* from (d,t) could be a doublet corresponding to 1648.3+1651.6. Jπ: 1580.4γ to 1^-; L(^{3}He,t)=3 from $7/2^-$ for a probable doublet at 1654 *10*. But L(^{3}He,d)=1 from $7/2^-$ for a group at 1653 *12*, giving π=+, is inconsistent, which may indicate a different level from those populated in (^{3}He,t), (p,d) and (d,t), which all have have negative parity based on measured L-transfers.
1651.6 *5*	$(1,2,3,4^+)$	107 fs *24*	J o rs u	XREF: o(1653)r(1652)s(1660)u(1654). E(level): see comments for 1648 level. Jπ: 1651.6γ to 2^+; see comments for 1648 level.
1680.4 *5*	(2^-)	97 fs *23*	Jkl No s uv X	XREF: l(1700)s(1660)u(1688). Additional information 2. E(level): see comments for 1683 level. Jπ: 1612.7γ to 1^-; possible 1677γ to 2^+; L(pol d,α)=(1,3) from 0^+ and unnatural parity from analyzing power for a group at 1681 *6*, which is considered different from the 1683 level due to different spins.

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Adopted Levels, Gammas (continued)

^{44}Sc Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$[#]	XREF	Comments
1683.29[e] *30*	(5)$^-$		I klM o Rs uv	XREF: l(1700)s(1660)u(1688). E(level): the evaluators consider this level different from the 1680 seen in (α,nγ) and the 1681 in (pol d,α) based on different spins or parities. Jπ: spin=5 is proposed by 2005La19 in (^{18}O,p3nγ), but supporting data are not given; L(α,d)=L(^{3}He,t)=5 from 0$^+$; 1052.3γ to 4$^-$, 1151.8γ to 3$^{(-)}$; band assignment.
1728.0 *5*			G l	XREF: l(1700).
1755.23[b] *9*	6$^-$		I	Jπ: 1124.1γ Q, ΔJ=2 to 4$^-$, 1484.0γ to 6$^+$; band assignment.
1767.6 *5*	2$^-$	55 fs *12*	JKl NO R U X	XREF: l(1790)O(1773). Jπ: L(d,t)=2 from 7/2$^-$; unnatural parity from analyzing power; 1699.7γ to 1$^-$ cannot be M2 or higher based on RUL with measured $T_{1/2}$. But L(^{3}He,d)=1+3 from 7/2$^-$ giving π=+ for a group at 1773 *13* is inconsistent, which may indicate a different level at about this energy.
1812 *4*	1$^+$,3$^+$		l N R X	XREF: l(1790). E(level): weighted average of 1813 *4* from (^{3}He,t) and 1811 *6* from (pol d,α). Jπ: L(^{3}He,t)=0,2 from 0$^+$; unnatural parity from analyzing power in (pol d,α).
1866 *2*	3$^+$,5$^+$		NO R X	Jπ: L(^{3}He,d)=1 from 7/2$^-$; unnatural parity from analyzing power in (pol d,α).
1903 *11*			NO	E(level): from (^{3}He,d).
1958 *4*	(2,4)$^+$		K O R X	E(level): weighted average of 1958 *15* from (α,p), 1956 *10* from (^{3}He,d), 1959 *4* from (^{3}He,t), and 1957 *6* from (pol d,α). Jπ: L(^{3}He,d)=1 from 7/2$^-$; probable natural parity from analyzing power in (pol d,α).
1986 *5*	3$^-$,4$^-$		R U	E(level): from (d,t). Other: 1984 *10* from (^{3}He,t). Jπ: L(d,t)=0 from 7/2$^-$.
2032 *2*			K NO R U X	XREF: O(2035)U(2038). E(level): weighted average of 2029 *15* from (α,p), 2035 *10* from (^{3}He,d), 2036 *10* from (^{3}He,t), 2038 *8* from (d,t), 2031 *6* from (pol d,α). Jπ: unnatural parity from (pol d,α); 2$^+$ to 5$^+$ from L(^{3}He,d)=1+3, inconsistent with 3$^-$,4$^-$ from L(d,t)=0+2, levels populated in the two reactions may be different.
2069 *4*	1$^+$[‡]		R	
2106 *5*			JK NO R Uv X	XREF: J(?)v(2110). E(level): weighted average of 2107 *15* from (α,p), 2104 *6* from (^{3}He,d), 2106 *5* from (^{3}He,t), 2108 *5* from (d,t), and 2104 *6* from (pol d,α). Levels populated in these reactions may be different due to different spin-parities. Jπ: inconsistency among 2$^+$ to 5$^+$ from L(^{3}He,d)=1+3, 1$^-$ to 6$^-$ from L(d,t)=2, 5$^+$,6$^+$,7$^+$ from L(^{3}He,t)=6, 4$^-$,6$^-$ from L(d,α)=5 and π=unnatural from analyzing power. levels populated in these reactions may be different.
2115 *6*			N v X	XREF: v(2110). E(level): from (pol d,α). Jπ: unnatural parity from (pol d,α).
2177 *5*			JK NO R U X	XREF: J(?)U(2186). E(level): weighted average of 2175 *15* from (α,p), 2173 *11* from (^{3}He,d), 2174 *5* from (^{3}He,t), 2186 *10* from (d,t), and

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Adopted Levels, Gammas (continued)

^{44}Sc Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$[#]	XREF	Comments
				XREF: J(?)U(2186). E(level): weighted average of 2175 *15* from (α,p), 2173 *11* from (^{3}He,d), 2174 *5* from (^{3}He,t), 2186 *10* from (d,t), and 2179 *6* from (pol d,α). Levels populated in these reactions may be different due to different spin-parities. Jπ: natural parity from (pol d,α); inconsistency between 2^+ to 5^+ from L(^{3}He,d)=1+3 and 1^- to 6^- from L(d,t)=2, levels populated in these reactions may be different.
2210.55[d] *25*	(6^-)	162 ps *9*	I T	Jπ: 1204.0γ to (4^-); band assignment. $T_{1/2}$: from γγ(t) in (p,dγ).
2212 *5*			R UV X	E(level): weighted average of 2210 *5* from (^{3}He,t), 2213 *5* from (d,t), 2210 *20* from (^{3}He,α), and 2213 *6* from (pol d,α). Levels populated in these reactions may be different due to different spin-parities. Jπ: unnatural parity from (pol d,α); inconsistency among (3^+,4^+,5^+) from L(^{3}He,t)=(4), (1^- to 6^-) from L(^{3}He,α)=(2), and 3^-,4^- from L(d,t)=0+2, levels populated in these reactions may be different.
2241 *5*			KL O R U X	E(level): weighted average of 2241 *15* from (α,p), 2250 *14* from (^{3}He,d), 2240 *5* from (^{3}He,t), 2243 *10* from (d,t), and 2241 *6* from (pol d,α). Levels populated in these reactions may be different due to different spin-parities. Jπ: natural parity from (pol d,α); inconsistency 0^+ to 7^+ from L(^{3}He,d)=3, 1^- to 6^- from L(d,t)=2, 1^+,2^+,3^+ from L(^{3}He,p)=2, levels populated in these reactions may be different.
2294 *9*	$2^+,3^+,4^+,5^+$		K NO	E(level): weighted average of 2292 *15* from (α,p) and 2295 *9* from (^{3}He,d). Jπ: L(^{3}He,d)=1+3 from $7/2^-$.
2332 *5*	$(1 \text{ to } 6)^-$		K NO R U X	E(level): weighted average of 2333 *15* from (α,p), 2334 *5* from (^{3}He,d), 2325 *8* from (^{3}He,t), 2333 *10* from (d,t), and 2333 *6* from (pol d,α). Jπ: L(d,t)=2 from $7/2^-$.
2382 *5*			O R X	E(level): weighted average of 2383 *5* from (^{3}He,d), 2374 *10* from (^{3}He,t), and 2383 *6* from (pol d,α). Jπ: unnatural parity from (pol d,α).
2425 *4*	$(3,4)^+$		JK NO R	XREF: J(?). E(level): weighted average of 2423 *15* from (α,p), 2427 *10* from (^{3}He,d), and 2425 *4* from (^{3}He,t). Jπ: L(^{3}He,d)=1+3 from $7/2^-$; L(^{3}He,t)=(4) from 0^+; $(3,4)^+$ proposed based on analysis of σ(θ) in (^{3}He,t).
2474 *10*	$2^+,3^+,4^+,5^+$		K O	E(level): weighted average of 2470 *15* from (α,p) and 2476 *10* from (^{3}He,d). Jπ: L(^{3}He,d)=1+3 from $7/2^-$.
2489 *5*	4^-		R U X	E(level): weighted average of 2484 *5* from (^{3}He,t), 2492 *5* from (d,t), and 2492 *6* from (pol d,α). Jπ: unnatural parity from (pol d,α) and L(d,t)=0 from $7/2^-$.
2518 *4*	$(1 \text{ to } 6)^-$		NO R U	E(level): weighted average of 2525 *11* from (^{3}He,d),

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Adopted Levels, Gammas (continued)

^{44}Sc Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$[#]	XREF	Comments
				2516 *4* from (^{3}He,t), and 2526 *10* from (d,t). Jπ: L(d,t)=2 from 7/2$^-$.
2556 *10*			O	
2586 *5*	3$^-$,4$^-$		K NO R UV	XREF: O(2591). E(level): weighted average of 2589 *15* from (α,p), 2585 *10* from (^{3}He,t), 2586 *5* from (d,t), and 2584 *20* from (^{3}He,α). Other: 2591 *14* probably a different level. Jπ: L(d,t)=0 and L(^{3}He,α)=(0) from 7/2$^-$, L(^{3}He,t)=(3) from 0$^+$, but L(^{3}He,d)=1+3 from 7/2$^-$ for a group at 2591 *14* is inconsistent, which may indicate a different level.
2606.75[c] *11*	7$^-$	180 ps *10*	IJ T	Jπ: 1409.2γ E2, ΔJ=2 to 5$^-$; 2335.6γ ΔJ=1 to 6$^+$. $T_{1/2}$: from $\gamma\gamma$(t) in (p,dγ).
2617 *3*	3$^-$,4$^-$		MNO R U	E(level): weighted average of 2616 *15* from (α,d), 2615 *3* from (p,γ), 2617 *10* from (^{3}He,d), 2625 *10* from (^{3}He,t), and 2622 *8* from (d,t). Jπ: L(d,t)=0+2 from 7/2$^-$.
2631.1 *28*			JK NO U	XREF: K(2638)U(2643).
2671.73[a] *16*	9$^+$	1.7 ps *3*	CDE G I	Jπ: spin from $\gamma(\theta)$ in (^{19}F,2pnγ); 1703.3γ E2, ΔJ=2 to 7$^+$. $T_{1/2}$: from RDM in (^{19}F,2pnγ).
2691 *5*			JK NO v	XREF: K(2678)v(2696).
2704 *4*	2$^+$,3$^+$,4$^+$,5$^+$		NO R v	XREF: v(2696). E(level): weighted average of 2712 *8* from (^{3}He,d) and 2702 *4* from (^{3}He,t). Jπ: L(^{3}He,d)=1+3 from 7/2$^-$.
2719.4 *20*			J	
2751 *10*	3$^-$,4$^-$		K N Uv	XREF: K(2768)N(2769)v(2763). Jπ: L(d,t)=0+2 from 7/2$^-$.
2780 *4*	0$^+$		KL N R UVw	T=2 XREF: K(2768)L(2796)N(2769)V(2763)w(2830). E(level): from (^{3}He,t). Others: 2768 *15* from (α,p), 2784 *10* from (d,t), and 2763 *20* from (^{3}He,α), and 2830 *50* from (p,^{3}He). Jπ: L(^{3}He,p)=L(^{3}He,t)=L(p,^{3}He)=0 from 0$^+$.
2789.47[e] *15*	(7$^-$)		I	Jπ: 1106.2γ to (5)$^-$; band assignment.
2796 *5*			O w	XREF: w(2830). Jπ: L(^{3}He,d)=3 from 7/2$^-$.
2849 *10*			K R w	XREF: w(2830). E(level): weighted average of 2836 *15* from (α,p) and 2854 *10* from (^{3}He,t).
2878 *9*			O	
2918 *4*	(2,3)$^+$		KLMNO R UV	XREF: L(2930)M(2930)O(2931)V(2907). E(level): weighted average of 2924 *15* from (α,p), 2930 *30* from (α,d), 2931 *10* from (^{3}He,d), 2916 *4* from (^{3}He,t), 2912 *10* from (d,t), and 2907 *20* from (^{3}He,α). Jπ: L(d,t)=L(^{3}He,d)=1+3 from 7/2$^-$; L(^{3}He,p)=2 from 0$^+$.
2989.19[b] *12*	8$^-$		I T	Jπ: 1234.0γ Q, ΔJ=2 to 6$^-$, 2020.8γ D, ΔJ=1 to 7$^+$; band assignment.
2990 *10*	3$^-$,4$^-$		k N R Uv	XREF: k(2995)v(3004). E(level): weighted average of 2991 *10* from (^{3}He,t)

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Adopted Levels, Gammas (continued)

^{44}Sc Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$[#]	XREF	Comments
				and 2989 *10* from (d,t). Jπ: L(d,t)=0+2 from 7/2⁻.
3011 *10*	3⁻,4⁻		kL No r Uv	XREF: k(2995)L(3000)r(3014)v(3004). E(level): weighted average of 3010 *11* from (^{3}He,d) and 3011 *10* from (d,t). Jπ: L(d,t)=0+2 from 7/2⁻; but inconsistent with L(^{3}He,p)=2 from 0⁺ for a group at 3000, and L(^{3}He,t)=0 from 0⁺ for a group at 3014 *40*, levels populated in these reactions may be different.
3035 *10*			O r	XREF: r(3014).
3052 *10*			K O r	XREF: r(3014). E(level): weighted average of 3057 *15* from (α,p) and 3049 *10* from (^{3}He,d).
3078 *4*	2⁺,3⁺,4⁺,5⁺		O R	E(level): weighted average of 3071 *8* from (^{3}He,d) and 3080 *4* from (^{3}He,t). Jπ: L(^{3}He,d)=1+3 from 7/2⁻.
3101 *10*	2⁺,3⁺,4⁺,5⁺		K O R	E(level): weighted average of 3098 *15* from (α,p), 3097 *10* from (^{3}He,d), and 3105 *10* from (^{3}He,t). Jπ: L(^{3}He,d)=1+3 from 7/2⁻.
3152 *4*	1⁺‡		L O R	XREF: L(3160). E(level): from (^{3}He,t). Other: 3152 *10* from (^{3}He,d). Jπ: also L(^{3}He,p)=0+2.
3178 *8*			m O U	XREF: m(3190). E(level): weighted average of 3176 *8* from (^{3}He,d) and 3183 *15* from (d,t).
3216 *6*			m O R U	XREF: m(3190). E(level): weighted average of 3204 *7* from (^{3}He,d), 3221 *4* from (^{3}He,t), and 3206 *10* from (d,t).
3288 *4*	(5)⁺		KL O R	E(level): weighted average of 3275 *15* from (α,p), 3281 *15* from (^{3}He,d), and 3289 *4* from (^{3}He,t). Jπ: L(^{3}He,d)=1+3 from 7/2⁻ and L(^{3}He,p)=6 from 0⁺. But L(^{3}He,t)=(0) from 0⁺ is inconsistent, which may indicate a different level.
3326 *4*	(5,6,7)⁺		K R	E(level): from (^{3}He,t). Other: 3321 *15* from (α,p). Jπ: L(^{3}He,p)=6 from 0⁺.
3364.09[d] *15*	(8⁻)	164 ps *12*	I T	Jπ: 1153.5γ to (6⁻); band assignment. $T_{1/2}$: from γγ(t) in (p,dγ).
3368 *14*	2⁺,3⁺,4⁺,5⁺		K O	E(level): weighted average of 3366 *15* from (α,p) and 3370 *14* from (^{3}He,d). Jπ: L(^{3}He,d)=1+3 from 7/2⁻.
3418 *4*	(1⁺)‡		KL R	XREF: L(3400). E(level): weighted average of 3406 *15* from (α,p) and 3419 *4* from (^{3}He,t). Jπ: L(^{3}He,t)=(0) from 0⁺.
3431 *11*	2⁺,3⁺,4⁺,5⁺		K O	E(level): weighted average of 3439 *15* from (α,p) and 3427 *11* from (^{3}He,d). Jπ: L(^{3}He,d)=1 from 7/2⁻.
3458 *4*	1⁺‡		R	
3483 *12*	2⁺,3⁺,4⁺,5⁺		K O	E(level): from (^{3}He,d). Other: 3483 *15* from (α,p). Jπ: L(^{3}He,d)=1+3 from 7/2⁻.
3560 *5*			O R	E(level): weighted average of 3568 *6* from (^{3}He,d) and 3557 *4* from (^{3}He,t).

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Adopted Levels, Gammas (continued)

^{44}Sc Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$[#]	XREF	Comments
3567.23[a] *17*	11^+	47.6 ps *31*	CDE G I	$T_{1/2}$: weighted average of 35 ps *7* from RDM in (^{19}F,pnγ) and 48.3 ps *17* from RDM in (^{19}F,2pnγ). Jπ: spin from γ(θ) in (^{19}F,2pnγ); 854.5γ E2, ΔJ=2 to 9^+.
3626 *10*	$2^+,3^+,4^+,5^+$		O	Jπ: L(^{3}He,d)=1+3.
3641 *4*	1^+‡		L R	XREF: L(3630).
3711 *4*	1^+‡		L R	XREF: L(3720).
3826 *4*			R	
3829.08[c] *12*	9^-		I T	Jπ: 1222.3γ Q, ΔJ=2 to 7^-, 465.0γ D, ΔJ=1 to 8^-; band assignment.
3851 *6*	$2^+,3^+,4^+,5^+$		O	Jπ: L(^{3}He,d)=1.
3905 *4*	1^+‡		L R	XREF: L(3900).
3956? *4*			R	XREF: R(?).
3967 *12*	$(1,2,3)^+$		L O R	XREF: L(3980)R(3973?). E(level): from (^{3}He,d). Jπ: L(^{3}He,p)=2 from 0^+.
3975.46 *23*	(13^+)		G	Jπ: 408.2γ (E2) to 11^+.
4024 *13*			O	
4040 *14*	$(1)^+$		kL O	XREF: k(4042). E(level): weighted average of 4042 *15* from (α,p) and 4038 *14* from (^{3}He,d). Jπ: L(^{3}He,p)=0+2 from 0^+.
4054 *4*	1^+‡		k O R	XREF: k(4042). E(level): from (^{3}He,t). Other: 4053 *15* from (^{3}He,d).
4087 *7*	$2^+,3^+,4^+,5^+$		O	Jπ: L(^{3}He,d)=1 from $7/2^-$.
4107.36[e] *22*	(9^-)		I	Jπ: 1317.8γ to (7^-); band assignment.
4114.21[a] *18*	(10^+)	<0.35 ps	CD G I	Jπ: 1442.3γ to 9^+; 547.0γ D to 11^+; 10^+ proposed in (^{18}O,p3nγ). $T_{1/2}$: from RDM in (^{19}F,2pnγ).
4140 *4*	$(1,2,3)^+$		KL O R	E(level): weighted average of 4132 *15* from (α,p), 4150 *10* from (^{3}He,d), and 4139 *4* from (^{3}He,t). Jπ: L(^{3}He,p)=2 from 0^+.
4185 *10*			O	
4254 *11*	$(2,3)^+$		KL O	Jπ: L(^{3}He,d)=1 from $7/2^-$; L(^{3}He,p)=2 from 0^+.
4261 *4*	1^+‡		R	
4296 *15*	$2^+,3^+,4^+,5^+$		K O	E(level): weighted average of 4298 *15* from (α,p) and 4293 *15* from (^{3}He,d). Jπ: L(^{3}He,d)=1+3 from $7/2^-$.
4323 *4*	1^+‡		Lm R	XREF: L(4330)m(4340).
4363 *11*	$2^+,3^+,4^+,5^+$		m O	XREF: m(4340). Jπ: L(^{3}He,d)=1 from $7/2^-$.
4391 *14*	$^+$		O	Jπ: L(^{3}He,d)=3.
4422.21 *31*	(9)		I	Jπ: proposed in (^{18}O,p3nγ).
4430 *4*			R	
4461 *14*	$2^+,3^+,4^+,5^+$		O R	XREF: R(4470?). Jπ: L(^{3}He,d)=1+3 from $7/2^-$.
4500 *16*			O R	XREF: R(4490?).
4533 *10*	$2^+,3^+,4^+,5^+$		O	Jπ: L(^{3}He,d)=1.
4540.58[b] *17*	10^-		I	Jπ: 711.9γ D, ΔJ=1 to 9^-; 973.1γ D, ΔJ=1 to 11^+; band assignment.

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Adopted Levels, Gammas (continued)

^{44}Sc Levels (continued)

E(level)[†]	Jπ	XREF	Comments
4558 *4*	1+‡	L R	XREF: L(4560).
4595 *10*		O	
4622 *12*		O	
4645 *14*		O R	XREF: R(4641?).
4658? *4*		R	XREF: R(?).
4697 *10*	(3,4,5)+	L O	XREF: L(4690). Jπ: L(^{3}He,d)=1+3 from 7/2−; L(^{3}He,p)=4 from 0+.
4718 *4*		R	
4746 *14*	(1 to 6)−	O	Jπ: L(^{3}He,d)=2.
4762 *10*		O	
4791 *4*	1+‡	R	
4820 *10*	2+,3+,4+,5+	O R	XREF: R(4832?). Jπ: L(^{3}He,d)=1 from 7/2−.
4857 *4*	1+‡	R	
4949.91[d] *18*	(10−)	I	Jπ: 1585.6γ to (8−); band assignment.
5001 *4*	1+‡	L O R	XREF: R(5000). E(level): weighted average of 5012 *15* from (^{3}He,d) and 5000 *4* from (^{3}He,t).
5065 *4*	1+‡	R	
5096 *4*	1+‡	R	
5200 *4*	1+‡	R	
5262 *4*	1+‡	R	
5277 *10*		O	
5295 *4*		R	
5336 *6*		O	
5358.12[c] *16*	11−	I	Jπ: 1528.8γ Q, ΔJ=2 to 9−; 1790.8γ to 11+; band assignment.
5404 *4*	1+‡	R	
5439? *4*		R	XREF: R(?).
5463? *4*		R	XREF: R(?).
5506 *4*	1+‡	L R	XREF: L(5500).
5526 *13*	+	O	Jπ: L(^{3}He,d)=3 from 7/2−.
5553 *11*	(1 to 6)−	O	Jπ: L(^{3}He,d)=2.
5559 *4*	1+‡	R	
5608 *5*		L O R	XREF: L(5590)R(5612?).
5636 *4*	1+‡	R	
5700? *4*		R	XREF: R(?).
5716 *13*		O	
5724 *4*	1+‡	R	
5774 *4*	(1+)‡	R	
5822 *4*	1+‡	R	
5854? *4*		R	XREF: R(?).
5880 *4*	1+‡	R	
5926 *4*		R	
5980 *4*		R	
6013 *4*	1+‡	R	
6043? *4*		R	XREF: R(?).
6099 *4*		R	
6156 *4*	1+‡	R	
6201 *4*		R	
6246 *4*		M R	XREF: M(6260).

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Adopted Levels, Gammas (continued)

^{44}Sc Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$[#]	XREF	Comments
6303 *4*			R	
6367 *4*			R	
6376.72[b] *22*	12^-	0.31[&] ps *10*	I	Jπ: 2809.3γ D, ΔJ=1 to 11^+; 1836.3γ to 10^-; band assignment.
6404 *4*	1^+[‡]		R	
6429? *4*			R	XREF: R(?).
6440.64 *25*	(12^-)	80[&] fs *24*	I	Jπ: 2873.4γ D, ΔJ=1 to 11^+; 12^- proposed in (^{18}O,p3nγ).
6464 *4*	1^+[‡]		R	
6547 *4*			R	
6574 *4*			R	
6635 *4*	1^+[‡]		R	
6678? *4*			R	XREF: R(?).
6690 *30*			M R	XREF: R(6696?).
6737 *4*	1^+[‡]		R	
6776 *4*	1^+[‡]		R	
6818 *4*	1^+[‡]		m R	XREF: m(6830).
6857 *4*	1^+[‡]		m R	XREF: m(6830).
6893 *4*	1^+[‡]		R	
6990 *4*			R	
7038 *4*	1^+[‡]		R	
7068? *4*			R	XREF: R(?).
7092.11[c] *22*	13^-	195[&] fs *69*	I	Jπ: 1733.9γ E2, ΔJ=2 to 11^-; 715.4γ ΔJ=1 to 12^-; band assignment.
7104 *4*	1^+[‡]		R	
7150 *4*	1^+[‡]		R	
7171? *4*			R	XREF: R(?).
7198 *4*	1^+[‡]		R	
7265? *4*			R	XREF: R(?).
7291? *4*			R	XREF: R(?).
7321 *4*			R	
7351 *4*	(1^+)[‡]		R	
7374? *4*			R	XREF: R(?).
7407 *4*	1^+[‡]		R	
7494? *4*			R	XREF: R(?).
7514? *4*			R	XREF: R(?).
7568 *4*	1^+[‡]		R	
7595 *4*	1^+[‡]		R	
7654 *4*	(1^+)[‡]		R	
7696 *4*	1^+[‡]		R	
7763? *4*			R	XREF: R(?).
7797 *4*	1^+[‡]		R	
7873? *4*			R	XREF: R(?).
7896 *4*			R	
7942 *4*	1^+[‡]		R	
8016 *4*	1^+[‡]		R	
8051? *4*			R	XREF: R(?).
8095.58[b] *27*	14^-	177[&] fs *56*	I	Jπ: 1654.9γ E2, ΔJ=2 to 12^-; 1003.5γ ΔJ=1 to 13^-; band assignment.

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Adopted Levels, Gammas (continued)

^{44}Sc Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$[#]	XREF	Comments
8164 *6*			R	
8193 *6*			R	
8230 *6*	1^+[‡]		R	
8296 *6*			R	
8356 *6*			R	
8385? *6*			R	XREF: R(?).
8428 *6*	1^+[‡]		R	
8458 *6*			R	
8510 *6*	1^+		R	
8594 *6*	(1^+)[‡]		R	
8657 *6*	(1^+)[‡]		R	
8715 *6*	1^+[‡]		R	
8754 *6*	1^+[‡]		R	
8812 *6*	(1^+)[‡]		R	
8848? *6*			R	XREF: R(?).
8862? *6*			R	XREF: R(?).
8906 *6*	1^+[‡]		R	
8945? *6*			R	XREF: R(?).
8960 *6*	(1^+)[‡]		R	
9010 *6*	1^+[‡]		R	
9035 *6*	1^+[‡]		R	
9101 *6*	(1^+)[‡]		R	
9134 *6*	1^+[‡]		R	
9141.07[c] *31*	15^-	118[&] fs *21*	I	Jπ: 2048.9γ E2, ΔJ=2 to 13^-; 1045.5γ ΔJ=1 to 14^-; band assignment.
9166 *6*	1^+[‡]		R	
9199 *6*			R	
9239 *6*	1^+[‡]		R	
9307 *6*	(1^+)[‡]		R	
9343? *6*			R	XREF: R(?).
9363? *6*			R	XREF: R(?).
9381 *6*	(1^+)[‡]		R	
9411 *6*			R	
9439 *6*			R	
9463? *6*			R	XREF: R(?).
9487? *6*			R	XREF: R(?).
9516 *6*	1^+[‡]		R	
9561 *6*			R	
9600 *6*	1^+[‡]		R	
9631? *6*			R	XREF: R(?).
9653? *6*			R	XREF: R(?).
9683 *6*	1^+[‡]		R	
9735 *6*			R	
9765 *6*	1^+[‡]		R	
9798 *6*	1^+[‡]		R	
9836? *6*			R	XREF: R(?).
9860? *6*			R	XREF: R(?).
9892? *6*			R	XREF: R(?).
9920? *6*			R	XREF: R(?).
9956 *6*			R	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{44}Sc Levels (continued)

E(level)†	Jπ	XREF	Comments
9984? *6*		R	XREF: R(?).
10007 *6*	1+‡	R	
10075? *6*		R	XREF: R(?).
10094? *6*		R	XREF: R(?).
10112? *6*		R	XREF: R(?).
10140? *6*		R	XREF: R(?).
10188 *6*	1+‡	R	
10235? *6*		R	XREF: R(?).
10263? *6*		R	XREF: R(?).
10294 *6*	1+‡	R	
10364 *6*	1+‡	R	
10397 *6*	1+‡	R	
10455 *6*		R	
10487 *6*	(1+)‡	R	
10514? *6*		R	XREF: R(?).
10573 *6*		R	
10653? *6*		R	XREF: R(?).
10682? *6*		R	XREF: R(?).
10712? *6*		R	XREF: R(?).
10749 *6*		R	
10781? *6*		R	XREF: R(?).
10803? *6*		R	XREF: R(?).
10865 *6*	(1+)‡	R	
10897 *6*	(1+)‡	R	
10954 *6*	(1+)‡	R	
10993? *6*		R	XREF: R(?).
11023? *6*		R	XREF: R(?).
11052? *6*		R	XREF: R(?).
11174 *6*		R	
11251? *6*		R	XREF: R(?).
11273? *6*		R	XREF: R(?).
11319 *10*		R	
11383? *10*		R	XREF: R(?).
11415? *10*		R	XREF: R(?).
11455 *10*		R	
11489 *10*		R	
11575 *10*	(1+)‡	R	T=(2)
11611? *10*		R	XREF: R(?).
11656? *10*		R	XREF: R(?).
11683? *10*		R	XREF: R(?).
11750 *10*	(1+)‡	R	T=2
11783? *10*		R	T=2 XREF: R(?).
11815? *10*		R	XREF: R(?).
11836? *10*		R	XREF: R(?).
11865? *10*		R	T=(2) XREF: R(?).
11931? *10*		R	T=(2) XREF: R(?).
11956? *10*		R	XREF: R(?).
11979? *10*		R	XREF: R(?).
12100	(1+)‡	R	
12560	(1+)‡	R	T=(2)

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Adopted Levels, Gammas (continued)

^{44}Sc Levels (continued)

E(level)[†]	Jπ	XREF	Comments
12630	(1^+)[‡]	R	T=2
12820	(1^+)[‡]	R	T=1
13100	(1^+)[‡]	R	T=(2)
13380	(1^+)[‡]	R	T=2
13530	(1^+)[‡]	R	T=2
13680	(1^+)[‡]	R	T=2

[†] From a least-squares fit to γ-ray energies for levels connected with γ rays, assuming ΔEγ=0.5 keV for Eγ quoted to nearest tenth keV and 1 keV for Eγ as integer where ΔEγ is not available. In other cases, weighted averages are taken of values available from different reactions. Many additional levels are reported in unpublished (p,γ) work of 1971PoZP, that are not included here due to the tentative nature of the work by 1971PoZP and also the fact that most of transitions (almost all transitions from levels above 1425 level) reported in 1971PoZP are not seen and not confirmed in other studies such as (α,nγ) (1973Ar14 and 1973Dr08).

[‡] L(^{3}He,t)=0 or (0) from 0^+; interpreted as Gamow-Teller transitions by 2013Fu08 in (^{3}He,t).

[#] From (α,nγ) using DSAM, unless otherwise noted.

[@] From ^{44}Ti ε decay using delayed-coincidence method.

[&] From (^{18}O,p3nγ) using DSAM.

[a] Seq.(C): $\pi f_{7/2}\nu f^3_{7/2}$.

[b] Band(A): Band based on 67.9, α=0. Configuration=$\pi(d^{-1}_{3/2}f^2_{7/2})\nu f^3_{7/2}$.

[c] Band(a): Band based on 234.6, α=1. Configuration=$\pi(d^{-1}_{3/2}f^2_{7/2})\nu f^3_{7/2}$.

[d] Band(B): Band based on 531.4, α=0.

[e] Band(b): Band based on 1006.5, α=1.

Adopted Levels, Gammas (continued)

γ(^{44}Sc)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[#]	α[a]	Comments
67.8680	1⁻	67.8679 *14*	100	0.0	2⁺	E1		0.0846 *12*	B(E1)(W.u.)=1.034×10^{-5} *6* E_γ,Mult.: from ^{44}Ti ε decay, with mult from ce data.
146.1915	0⁻	78.3234 *14*	100.0 *11*	67.8680	1⁻	M1		0.0302 *4*	B(M1)(W.u.)=8.71×10^{-7} *5* E_γ,I_γ,Mult.: from ^{44}Ti ε decay, with mult from ce data.
		146.22	0.095 *3*	0.0	2⁺	[M2]		0.0459 *6*	B(M2)(W.u.)=0.000673 *26* E_γ,I_γ: from ^{44}Ti ε decay. Other: Eγ=146.3 *5* from (α,nγ).
234.78	2⁻	88.7 *10*	<3	146.1915	0⁻	[E2]		0.496 *24*	B(E2)(W.u.)<41
		166.9 *5*	45 *3*	67.8680	1⁻	M1(+E2)	+0.02 *2*	0.00432 *8*	B(M1)(W.u.)=2.34×10^{-4} *25*; B(E2)(W.u.)<0.042 E_γ: other: 167 *1* from (^{19}F,2pnγ). I_γ: from (α,nγ). Other: 45 *3* from (p,nγ). Mult.,δ: or δ(Q/D)=+2.5 *2* from γ(θ) in (p,nγ).
		234.80 *25*	100 *3*	0.0	2⁺	E1(+M2)	0.00 *5*	1.82×10^{-3} *3*	B(E1)(W.u.)=4.61×10^{-6} *+12−14*; B(M2)(W.u.)<1.8 E_γ: weighted average of 234.85 *25* from (^{19}F,2pnγ) and 234.6 *5* from (α,nγ). I_γ: from (α,nγ). Others: 100 *15* from (^{19}F,2pnγ) and 100.0 *30* from (p,nγ). Mult.,δ: δ(Q/D) from γ(θ) in (p,nγ).
271.241	6⁺	271.241 *10*	100	0.0	2⁺	E4		0.1390 *19*	B(E4)(W.u.)=1.3942 *35* E_γ: from ^{44}Sc IT decay. Others: 271.16 *15* from (^{19}F,2pnγ) and 270.6 *5* from (α,nγ). I_γ,Mult.: from IT decay with mult from ce data.
349.86	4⁺	349.87 *10*	100	0.0	2⁺	E2		0.00258 *4*	B(E2)(W.u.)=3.805 *19* E_γ: from (^{19}F,2pnγ). Other: 349.5 *5* from (α,nγ). Mult.: from γ(θ,pol) in (^{19}F,2pnγ) with ΔJ=2.
424.82	3⁻	189.9 *5*	45 *3*	234.78	2⁻	M1(+E2)	+0.02 *6*	0.00314 *14*	B(M1)(W.u.)=0.00228 *+29−27*; B(E2)(W.u.)<1.3 E_γ: weighted average of 190.0 *8* from (^{19}F,2pnγ) and 189.8 *5* from (α,nγ). I_γ: from (α,nγ). Other: 45 *4* from (p,nγ).
		356.92 *12*	100 *3*	67.8680	1⁻	E2		2.40×10^{-3} *3*	B(E2)(W.u.)=16.7 *7* E_γ: weighted average of 356.94 *12* from (^{19}F,2pnγ) and 356.5 *5* from (α,nγ). I_γ: from (α,nγ). Other: 100 *4* from (p,nγ). Mult.: Q with ΔJ=2 from γ(θ) in (p,nγ); M2 ruled out by RUL.
		424.74 *12*	28.0 *30*	0.0	2⁺	E1(+M2)	+0.03 *6*		B(E1)(W.u.)=3.1×10^{-6} *5*; B(M2)(W.u.)<0.74 E_γ: from (^{19}F,2pnγ). Other: 424.5 *5* from (α,nγ). I_γ: from (α,nγ). Others: 1.0E2 *5* from (^{19}F,2pnγ) and 28 *4* from (p,nγ).

$^{44}_{21}Sc_{23}$-17

Adopted Levels, Gammas (continued)

γ(^{44}Sc) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[#]	α[a]	Comments
531.42	3(−)	181.6 *10*	4 *2*	349.86	4+	[E1]		0.00396 *9*	B(E1)(W.u.)<7.5×10^{-4}
		296.77 *20*	100 *4*	234.78	2−	(M1(+E2))	−0.02 *3*	1.08×10^{-3} *2*	B(M1)(W.u.)<0.12; B(E2)(W.u.)<9.2 E_γ: weighted average of 296.84 *20* from (^{19}F,2pnγ) and 296.3 *5* from (α,nγ).
		464.8 *5*	20 *4*	67.8680	1−	(E2)			B(E2)(W.u.)<91 Mult.: δ(O/Q)=+0.02 from γ(θ) in (p,nγ) with ΔJ=2; M2 is less likely.
		531.01 *21*	80 *4*	0.0	2+	(E1(+M2))	−0.04 *3*		B(E1)(W.u.)<4.1×10^{-4} B(M2)(W.u.)<9.7 upper limit exceeds RUL=3, which would require $T_{1/2}$>41 ps for δ(M2/E1)=−0.04 *3*. E_γ: weighted average of 530.95 *15* from (^{19}F,2pnγ) and 531.7 *5* from (α,nγ).
631.07	4−	206.3 *5*	18 *2*	424.82	3−	(M1)		0.00256 *4*	B(M1)(W.u.)=6.3×10^{-4} *8* E_γ: weighted average of 206.4 *5* from (^{19}F,2pnγ) and 206.1 *5* from (α,nγ). Mult.: (D) from γ(θ) in (^{19}F,2pnγ); Δπ=no from level scheme.
		281.2 *2*	100 *4*	349.86	4+	E1[@]		1.07×10^{-3} *2*	B(E1)(W.u.)=3.38×10^{-5} *+24−21* E_γ: from (^{19}F,2pnγ). Other: 281.0 *5* from (α,nγ). I_γ: from (α,nγ). Others: 100 *15* from (^{19}F,2pnγ) and 100 *4* from (p,nγ).
		396.26 *12*	86 *4*	234.78	2−	E2		1.66×10^{-3} *2*	B(E2)(W.u.)=7.5 *5* E_γ: from (^{19}F,2pnγ). Other: 396.0 *5* from (α,nγ). I_γ: other: 103 *15* from (^{19}F,2pnγ).
641.3		573.4 *10*	100	67.8680	1−				
666.5	1+	666.7	100	0.0	2+	M1(+E2)	−0.09 *11*		B(M1)(W.u.)=1.5 *+6−4* B(E2)(W.u.)<250, upper limit exceeds RUL=100, which would require |δ(E2/M1)|<0.089.
762.0	3+	412.6 *10*	7.5 *20*	349.86	4+	[M1+E2]			δ: δ(E2/M1)<0.22 from RUL=100 for B(E2)(W.u.). B(M1)(W.u.)=0.095 *+40−29* if pure M1.
		761.9 *10*	100 *2*	0.0	2+	M1+E2	−0.06 *4*		B(M1)(W.u.)=0.20 *+6−4*; B(E2)(W.u.)=4 *+7−3*
829.0		829 *2*	100	0.0	2+				
968.33	7+	697.0 *2*	100	271.241	6+	M1[@]			B(M1)(W.u.)>0.019 E_γ: weighted average of 697.04 *20* from (^{19}F,2pnγ) and 696.0 *10* from (α,nγ).
986.2	3+	986.2 *10*	100	0.0	2+	[M1,E2]			B(M1)(W.u.)=0.017 *+12−6* if pure M1, B(E2)(W.u.)=47 *+35−16* if pure E2.
1006.53	(4−)	375.6[‡]	88 *20*	631.07	4−	[M1,E2]		0.0013 *7*	B(M1)(W.u.)>2.4×10^{-6} if pure M1, B(E2)(W.u.)>0.047 if pure E2. E_γ: other: 375 from (α,nγ).
		475.1[‡]		531.42	3(−)				

$^{44}_{21}Sc_{23}$-18

Adopted Levels, Gammas (continued)

γ(^{44}Sc) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[#]	Comments
1006.53	(4$^-$)	581.5 *10*	100 *15*	424.82	3$^-$	[M1,E2]		E_γ: other: 581.7 from (^{18}O,p3nγ). B(M1)(W.u.)>7.9×10^{-7} if pure M1, B(E2)(W.u.)>0.0065 if pure E2.
		656.4 *10*	56 *24*	349.86	4$^+$	[E1]		B(E1)(W.u.)>5.4×10^{-9}
		771.7 *10*	53 *18*	234.78	2$^-$	[E2]		B(E2)(W.u.)>6.6×10^{-4} E_γ,I_γ: probably for a doublet. Other: Eγ=771.9 from (^{18}O,p3nγ).
1046.91?		697.04[b] *20*	100	349.86	4$^+$			
1051.3	5$^+$	701.4 *10*	100	349.86	4$^+$	[M1+E2]		δ: δ(E2/M1)<0.18 from RUL=100 for B(E2)(W.u.). B(M1)(W.u.)=0.38 *+20−11* if pure M1.
1102.1	(1$^-$,2)	436.7 *10*	60	666.5	1$^+$			
		569.9 *10*	100	531.42	3$^{(-)}$			
		1034.0 *10*	100	67.8680	1$^-$			
1185.7	3$^+$	835.1 *10*	100 *10*	349.86	4$^+$	[M1+E2]		B(M1)(W.u.)=0.60 *+14−16* if pure M1. δ: δ(E2/M1)<0.19 from RUL=100 for B(E2)(W.u.).
		1185.8	67 *10*	0.0	2$^+$	M1(+E2)	+0.02 *4*	B(M1)(W.u.)=0.14 *+6−5*; B(E2)(W.u.)<1.4
1197.49	5$^-$	566.39 *15*	100 *12*	631.07	4$^-$	M1[@]		B(M1)(W.u.)>8.9×10^{-7} E_γ: from (^{19}F,2pnγ). Other: 566.4 *10* from (α,nγ).
		772.48 *15*	64 *19*	424.82	3$^-$	E2[@]		B(E2)(W.u.)>8.7×10^{-4} E_γ: weighted average of 772.50 *15* from (^{19}F,2pnγ) and 771.7 *10* from (α,nγ).
		848.9 *10*	72	349.86	4$^+$	[E1]		B(E1)(W.u.)>4.3×10^{-9} E_γ: weighted average of 848 *1* from (^{19}F,2pnγ) and 849.8 *10* from (α,nγ).
		926.35 *15*	74 *12*	271.241	6$^+$	(E1)		B(E1)(W.u.)>3.5×10^{-9} E_γ: from (^{19}F,2pnγ). Other: 926.0 *10* from (α,nγ). Mult.: D from γ(θ) in (^{19}F,2pnγ); Δπ=yes from level scheme.
1326.0	3$^+$	976	100 *9*	349.86	4$^+$	[M1,E2]		δ: δ(E2/M1)<0.55 from RUL=100 for B(E2)(W.u.). B(M1)(W.u.)=0.106 *+40−23* if pure M1.
		1326	79 *9*	0.0	2$^+$	M1+E2	+0.06 *4*	B(M1)(W.u.)=0.033 *+13−8*; B(E2)(W.u.)=0.19 *+36−16*
1425.9	2$^+$	1001	56 *9*	424.82	3$^-$	[E1]		B(E1)(W.u.)=0.0030 *+27−11*
		1191	37 *9*	234.78	2$^-$	[E1]		B(E1)(W.u.)=0.0012 *+11−5*
		1280[b]	<23	146.1915	0$^-$	[M2]		
		1358	40 *5*	67.8680	1$^-$	(E1(+M2))	0.00 *9*	B(E1)(W.u.)=0.0008 *+8−3* Mult.: D(+Q) from γ(θ) in (p,nγ); Δπ=yes from level scheme.
		1426 *2*	100 *7*	0.0	2$^+$	M1+E2	−0.23 *7*	B(M1)(W.u.)=0.07 *+6−3*; B(E2)(W.u.)=5 *+6−3* Mult.: D+Q from γ(θ) in (p,nγ); M2 excluded by RUL.
1506.6	(4,5)$^+$	745 *2*	30	762.0	3$^+$			
		1235.2 *10*	100	271.241	6$^+$			
1531.3	5$^+$	1260.0 *10*	100	271.241	6$^+$			
1567.2	(3)$^-$	806 *2*	100	762.0	3$^+$			
		1567	75	0.0	2$^+$			

$^{44}_{21}Sc_{23}$-19

Adopted Levels, Gammas (continued)

γ(^{44}Sc) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	Comments
1592.4	(2$^+$)	1524.5 *20*	100	67.8680	1$^-$		
1648.3	(1,2,3$^-$)	1580.4 *5*	100	67.8680	1$^-$		
1651.6	(1,2,3,4$^+$)	1651.6 *5*	100	0.0	2$^+$		
1680.4	(2$^-$)	1612.7 *5*	100	67.8680	1$^-$	[M1,E2]	B(M1)(W.u.)=0.050 *+16−10* if pure M1, B(E2)(W.u.)=54 *+17−11* if pure E2.
		1677 *2*	<15	0.0	2$^+$	[E1]	B(E1)(W.u.)<2.0×10^{-4}
1683.29	(5)$^-$	1052.3[‡]		631.07	4$^-$		
		1151.8[‡]		531.42	3$^{(-)}$		
1728.0		681.1 *4*		1046.91?			E$_\gamma$: from (^{19}F,2pnγ) only.
1755.23	6$^-$	786.8[‡]	3[‡] *1*	968.33	7$^+$	(D)[&]	
		1124.1[‡] *2*	31[‡] *4*	631.07	4$^-$	Q[&]	
		1484.0[‡] *1*	100[‡] *3*	271.241	6$^+$		
1767.6	2$^-$	1699.7 *5*	<28	67.8680	1$^-$	[M1,E2]	B(M1)(W.u.)<0.023 if pure M1, B(E2)(W.u.)<22 if pure E2.
		1767 *2*	100	0.0	2$^+$	[E1]	B(E1)(W.u.)=0.00157 *+46−30*
2210.55	(6$^-$)	1013.0[‡]		1197.49	5$^-$		
		1204.0[‡]		1006.53	(4$^-$)		
2606.75	7$^-$	396.2[‡]	7[‡] *2*	2210.55	(6$^-$)	(M1)[&]	B(M1)(W.u.)=1.17×10^{-4} *32*
		1409.2[‡] *1*	100[‡] *3*	1197.49	5$^-$	E2[&]	B(E2)(W.u.)=0.0520 *+33−30* E$_\gamma$: other: 1409 *2* from (α,nγ).
		2335.6[‡] *3*	11[‡] *2*	271.241	6$^+$	E1[&]	B(E1)(W.u.)=2.21×10^{-8} *39*
2631.1		1802 *2*	100	829.0			
2671.73	9$^+$	1703.31 *20*		968.33	7$^+$	E2[@]	B(E2)(W.u.)=2.5 *+5−4* E$_\gamma$: from (^{19}F,2pnγ).
2691		1929 *5*	100	762.0	3$^+$		
2719.4		1751 *2*	100	968.33	7$^+$		
2789.47	(7$^-$)	578.9[‡]		2210.55	(6$^-$)		
		1034.4[‡]		1755.23	6$^-$		
		1106.2[‡]		1683.29	(5)$^-$		
		2518.4[‡]		271.241	6$^+$		
2989.19	8$^-$	199.7[‡] *2*	5[‡] *1*	2789.47	(7$^-$)		
		382.4[‡]	13[‡] *3*	2606.75	7$^-$		
		1234.0[‡] *2*	100[‡] *3*	1755.23	6$^-$	Q	
		2020.8[‡] *1*	86[‡] *7*	968.33	7$^+$	D	
3364.09	(8$^-$)	574.6[‡]		2789.47	(7$^-$)		
		757.4[‡]		2606.75	7$^-$		
		1153.5[‡]		2210.55	(6$^-$)		

$^{44}_{21}Sc_{23}$-20

Adopted Levels, Gammas (continued)

γ(^{44}Sc) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	α[a]	Comments
3567.23	11^+	895.49 *12*	100	2671.73	9^+	E2[@]		B(E2)(W.u.)=2.24 +*16*−*14*
3829.08	9^-	465.0[‡] *1*	45[‡] *6*	3364.09	(8^-)	D		
		839.9[‡] *3*	80[‡] *8*	2989.19	8^-			
		1039.7[‡] *2*	14[‡] *4*	2789.47	(7^-)			
		1157.5[‡] *3*	40[‡] *8*	2671.73	9^+			
		1222.3[‡] *1*	100[‡] *9*	2606.75	7^-	Q		
3975.46	(13^+)	408.22 *15*	100	3567.23	11^+	(E2)[@]	1.50×10^{-3} *2*	E_γ: from (^{19}F,2pnγ).
4107.36	(9^-)	743.2[‡]		3364.09	(8^-)			
		1118.1[‡]		2989.19	8^-			
		1317.8[‡]		2789.47	(7^-)			
4114.21	(10^+)	547.0[‡] *1*		3567.23	11^+	D		E_γ: other: 546 *1* from (^{19}F,2pnγ). Mult.: from (^{19}F,2pnγ).
		1442.3[‡]		2671.73	9^+			
4422.21	(9)	1058.0[‡]		3364.09	(8^-)			
		1433.0[‡]		2989.19	8^-			
4540.58	10^-	433.2[‡]	12[‡] *3*	4107.36	(9^-)			
		711.9[‡] *2*	100[‡] *8*	3829.08	9^-	D		
		973.1[‡] *3*	12[‡] *3*	3567.23	11^+	D		
		1551.4[‡]	14[‡] *4*	2989.19	8^-			
		1868.6[‡] *3*	16[‡] *3*	2671.73	9^+			
4949.91	(10^-)	527.6[‡]		4422.21	(9)			
		842.5[‡]		4107.36	(9^-)			
		1382.7[‡]		3567.23	11^+			
		1585.6[‡]		3364.09	(8^-)			
		2278.2[‡]		2671.73	9^+			
5358.12	11^-	408.2[‡] *1*	100[‡] *3*	4949.91	(10^-)	D		
		817.8[‡] *3*	10[‡] *2*	4540.58	10^-			
		1244.0[‡] *2*	80[‡] *5*	4114.21	(10^+)	D		
		1250.7[‡] *3*	16[‡] *2*	4107.36	(9^-)	Q		
		1528.8[‡] *2*	73[‡] *5*	3829.08	9^-	Q		
		1790.8[‡] *2*	27[‡] *3*	3567.23	11^+			
6376.72	12^-	1018.5[‡] *3*	28[‡] *5*	5358.12	11^-	[M1,E2]		B(M1)(W.u.)=0.011 +*6*−*3* if pure M1, B(E2)(W.u.)=30 +*16*−*9* if pure E2.
		1836.3[‡] *3*	38[‡] *5*	4540.58	10^-	[E2]		B(E2)(W.u.)=2.2 +*11*−*6*

$^{44}_{21}Sc_{23}$-21

Adopted Levels, Gammas (continued)

γ(^{44}Sc) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	α[a]	Comments
6376.72	12⁻	2809.3[‡] *4*	100[‡] *6*	3567.23	11⁺	(E1)	1.15×10^{-3} *2*	B(E1)(W.u.)=4.8×10^{-5} *+22−12* Mult.: D, ΔJ=1 from DCO in (^{18}O,p3nγ); ΔJ=yes from level scheme.
6440.64	(12⁻)	2873.4[‡] *4*	100[‡]	3567.23	11⁺	(E1)	1.19×10^{-3} *2*	B(E1)(W.u.)=0.00029 *+12−7* Mult.: D, ΔJ=1 from DCO in (^{18}O,p3nγ); ΔJ=yes from level scheme.
7092.11	13⁻	651.5 *2*	4 *1*	6440.64	(12⁻)	(M1)		B(M1)(W.u.)=0.015 *+9−5* Mult.: D, ΔJ=1 from DCO in (^{18}O,p3nγ); ΔJ=no from level scheme.
		715.4 *2*	7 *1*	6376.72	12⁻	(M1)		B(M1)(W.u.)=0.019 *+11−6* Mult.: D, ΔJ=1 from DCO in (^{18}O,p3nγ); ΔJ=no from level scheme.
		1733.9 *2*	100 *6*	5358.12	11⁻	E2		B(E2)(W.u.)=18 *+9−5*
8095.58	14⁻	1003.5[‡] *3*	100[‡] *8*	7092.11	13⁻	(M1)		B(M1)(W.u.)=0.066 *+30−16* Mult.: D, ΔJ=1 from DCO in (^{18}O,p3nγ); ΔJ=no from level scheme.
		1654.9[‡] *2*	87[‡] *10*	6440.64	(12⁻)	E2		B(E2)(W.u.)=13 *+6−3*
9141.07	15⁻	1045.5[‡] *3*	27[‡] *6*	8095.58	14⁻	(M1)		B(M1)(W.u.)=0.035 *+10−8* Mult.: D, ΔJ=1 from DCO in (^{18}O,p3nγ); ΔJ=no from level scheme.
		2048.9[‡] *3*	100[‡] *9*	7092.11	13⁻	E2		B(E2)(W.u.)=11.3 *+26−18*

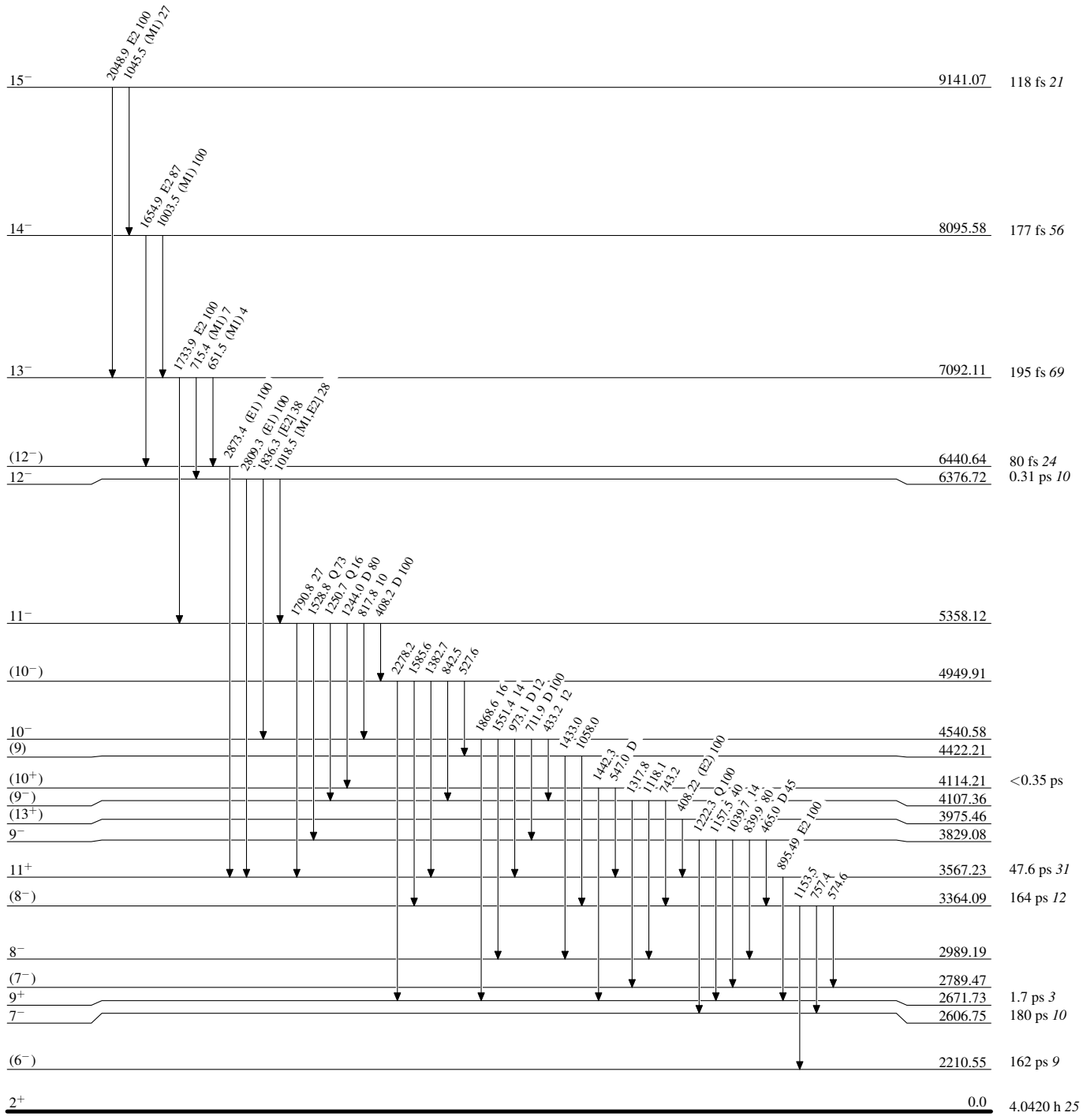
[†] From (α,nγ), unless otherwise noted.
[‡] From (^{18}O,p3nγ).
[#] From γ(θ) in (p,nγ), unless otherwise stated. Where $T_{1/2}$ is known, RUL is used to determine magnetic or electric character of a transition when polarization or ce data are absent.
[@] From γ(θ) and γ(pol) in (^{19}F,2pnγ).
[&] D or Q from γγ(DCO) in (^{18}O,p3nγ) and magnetic or electric character determined based on RUL where level $T_{1/2}$ is available.
[a] 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.
[b] Placement of transition in the level scheme is uncertain.

$^{44}_{21}Sc_{23}$-22

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

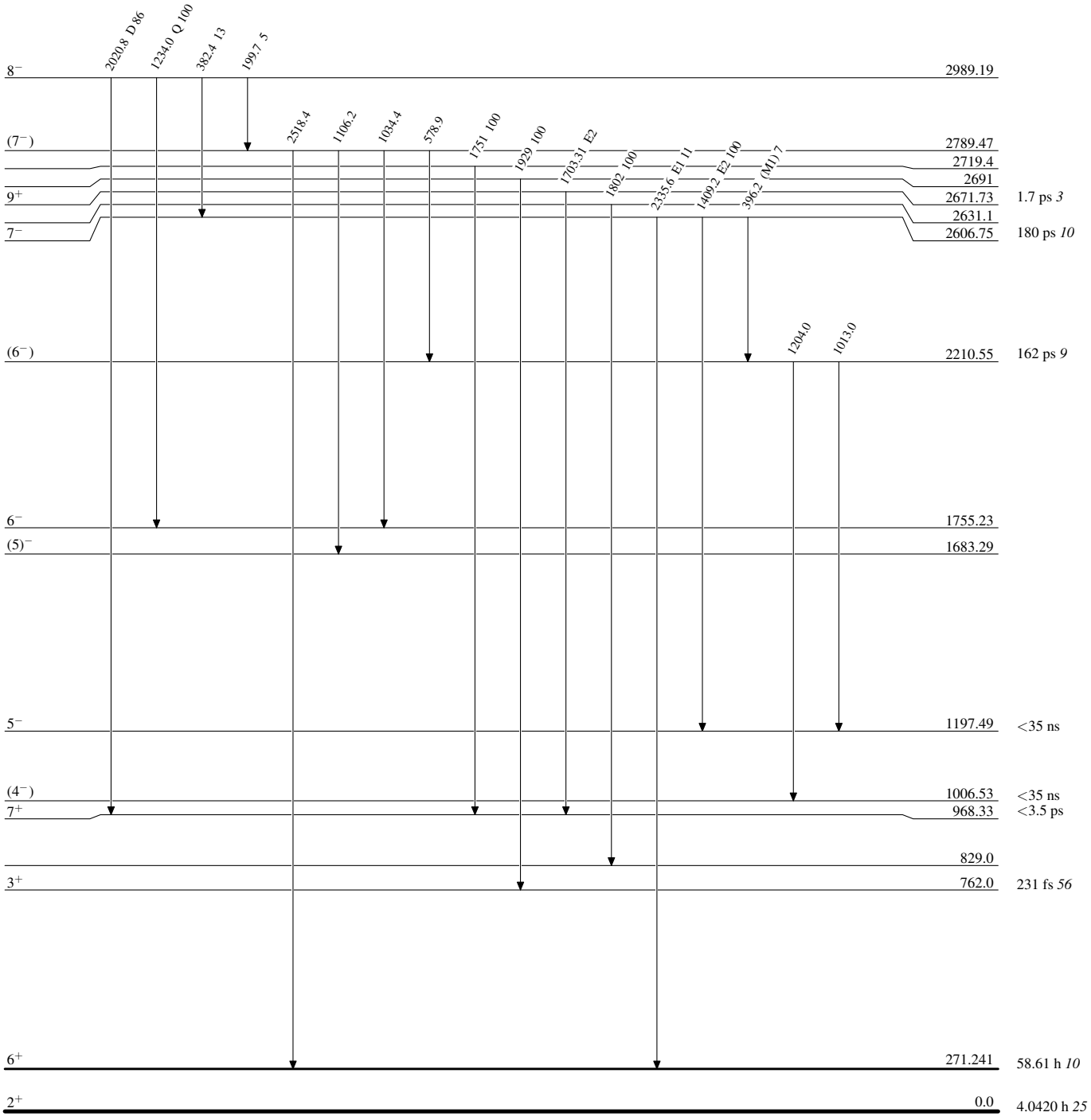


$^{44}_{21}Sc_{23}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

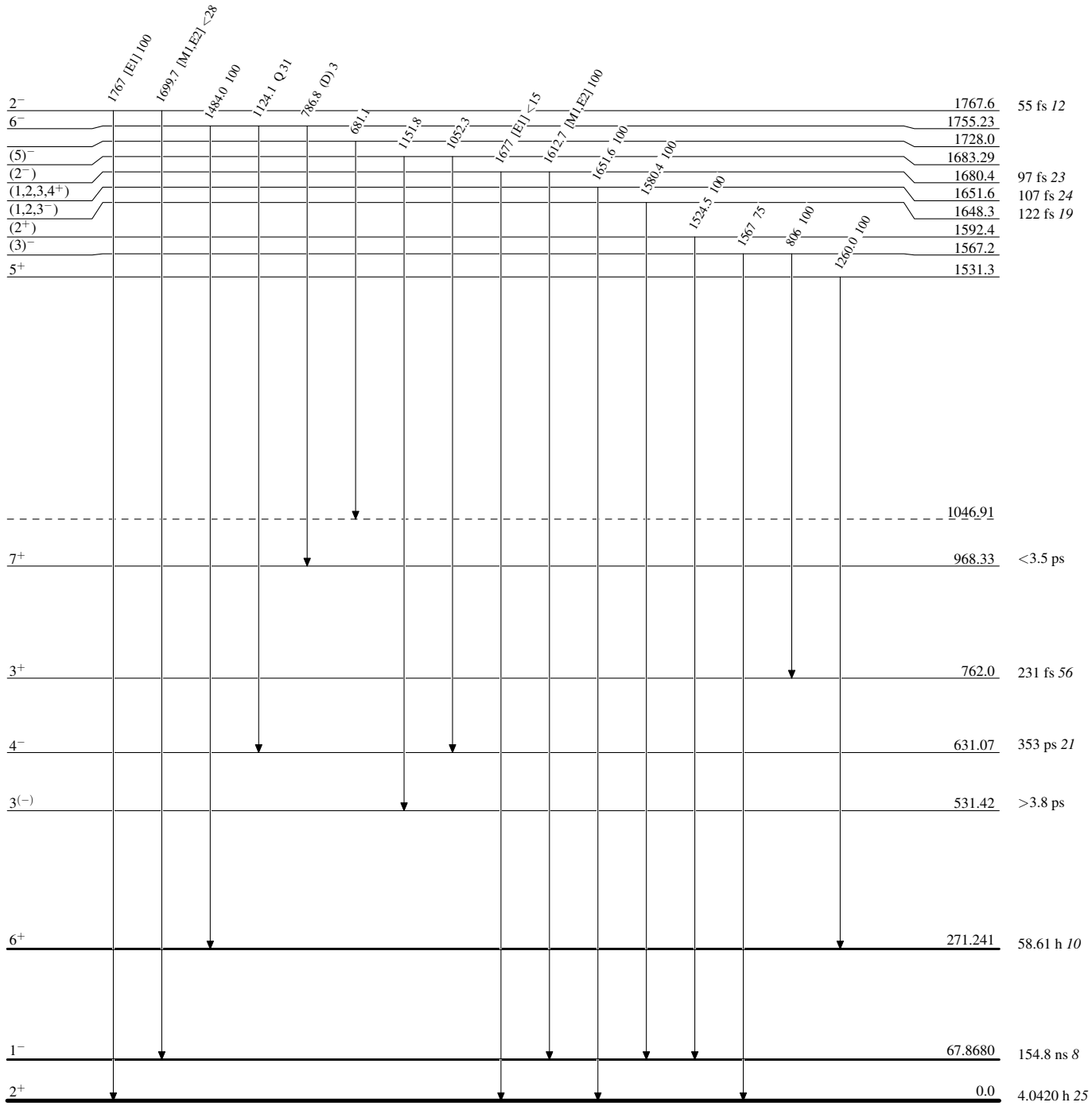


$^{44}_{21}Sc_{23}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{44}_{21}Sc_{23}$

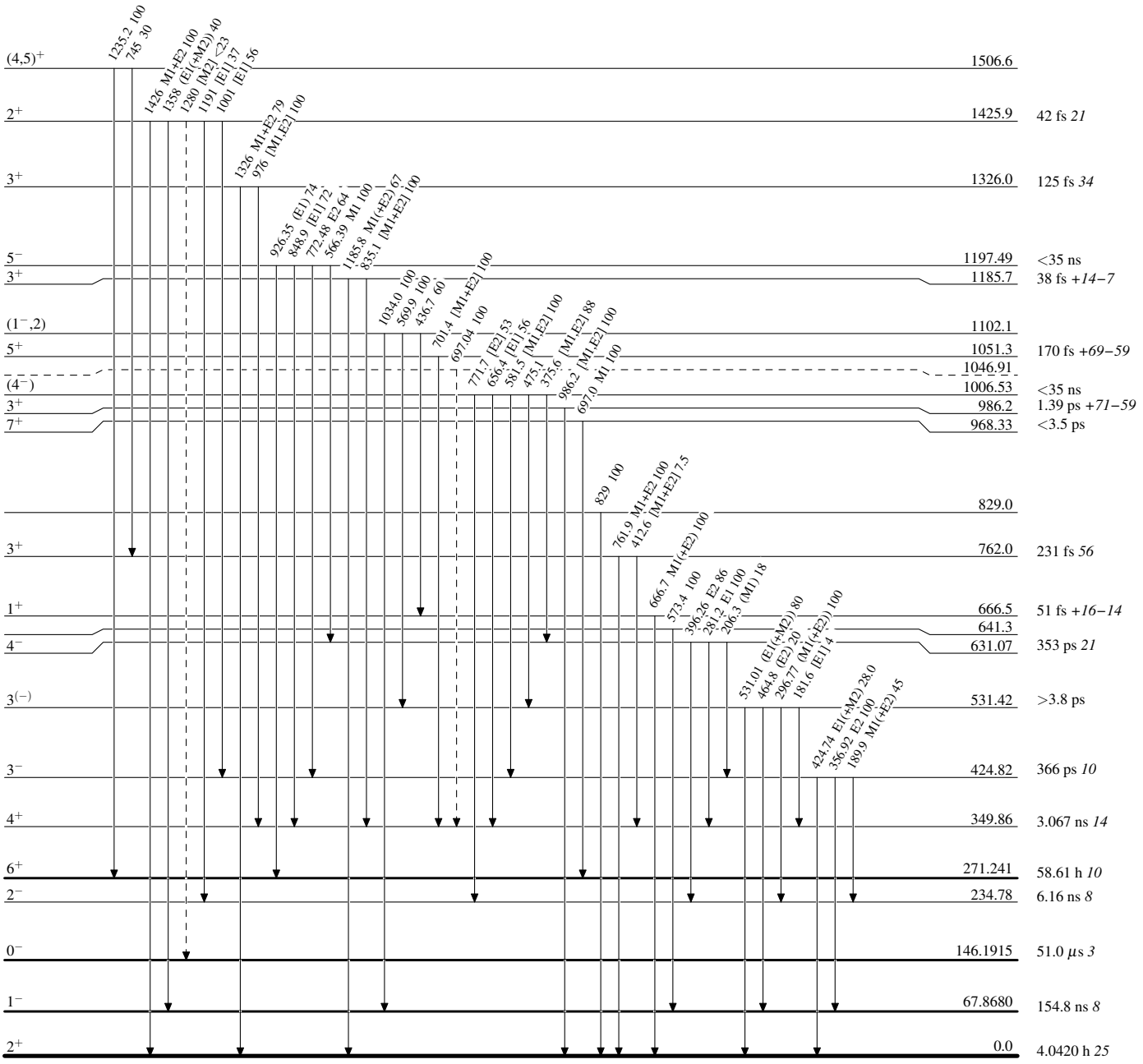
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

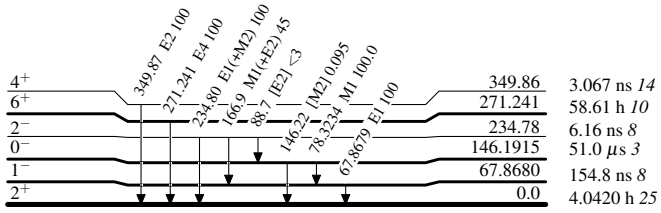


$^{44}_{21}Sc_{23}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



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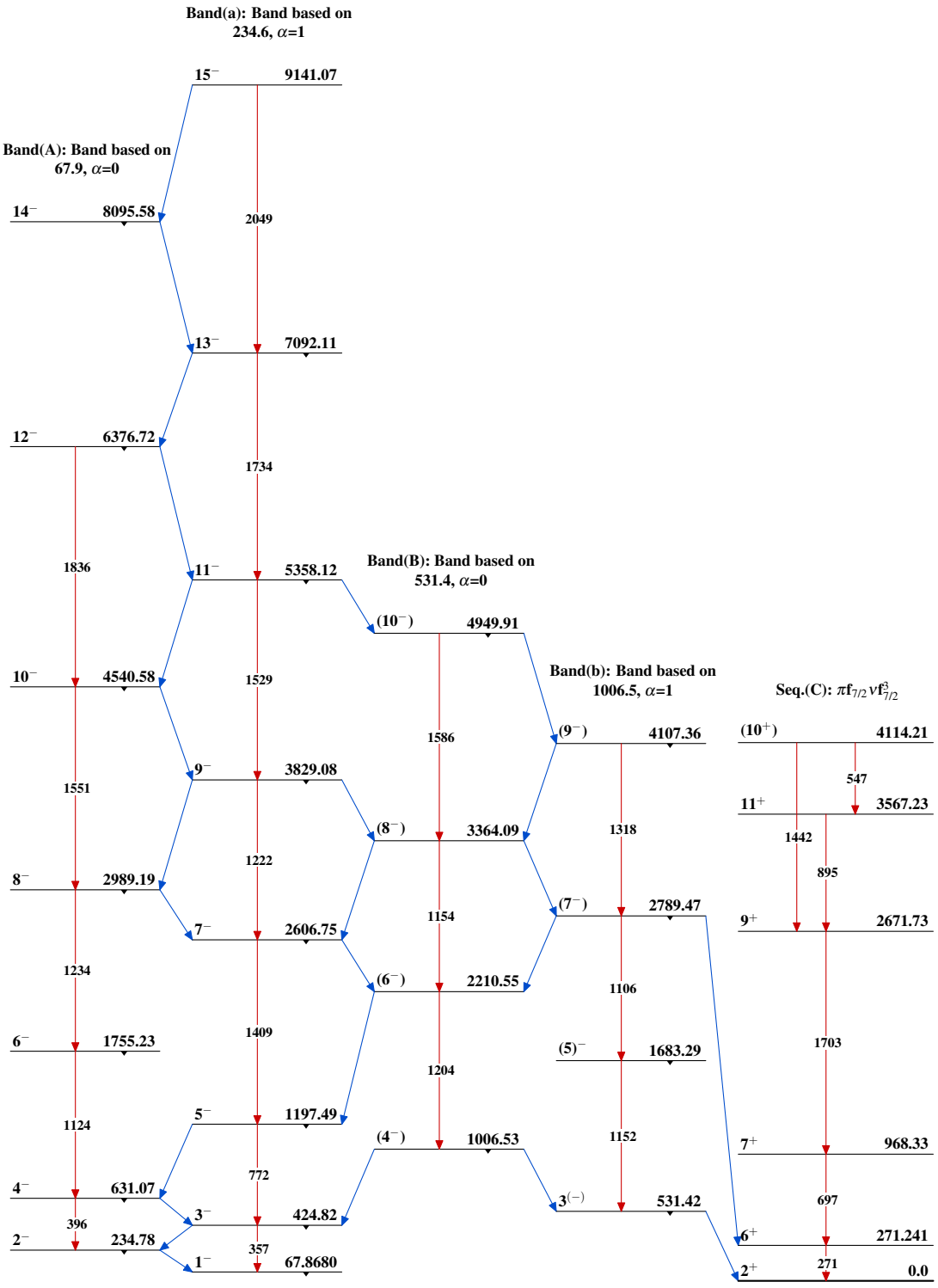
Adopted Levels, Gammas



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