Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 199,271 (2025)	1-Sep-2024

Q(β^-)=−8201 *90*; S(n)=12636 *8*; S(p)=2690 *6*; Q(α)=−3307 *6* 2021Wa16
S(2n)=24050 *80*, S(2p)=9488 *6* (2021Wa16).
Q(β-) from measured mass excess of −65720.7 keV *28* ^{81}Y (2023Xi01) [Other: −65713 keV *5* (2021Wa16)] and mass excess of −57520 keV *90* of ^{81}Zr (2021Wa16). Other: Q(β-)=−8190 *90* (2021Wa16).
The uncertainty of the weighted average is the lowest uncertainty of the experimental data.

^{81}Y Levels

Cross Reference (XREF) Flags

A ^{81}Zr ε decay (5.3 s)
B ^{58}Ni(^{28}Si,αpγ),^{28}Si(^{58}Ni,αpγ)
C ^{58}Ni(^{32}S,2αpγ)

E(level)[†]	J$^\pi$[@]	T$_{1/2}$[b]	XREF	Comments
0[o]	(5/2$^+$)[&]	70.4 s *11*	ABC	%ε+%β^+=100 T$_{1/2}$: weighted average of 72.0 s *15* (1981Li12), 74 s *3* (1982De36) and 69.0 s *11* (1993Mi11), from γ(t), and 70 s *5* (1982De36) from β(t). No evidence for the 5-min activity reported by 1970HaYC (1981Li12). Additional information 1.
113.30[n] *4*	(3/2$^-$)[a]	≤7[d] ns	ABC	J$^\pi$: D 113γ to (5/2$^+$) g.s.; analogy with neighboring isotones and isotopes.
149.632[p] *20*	(7/2$^+$)	≤7[d] ns	BC	J$^\pi$: 149.63γ D, ΔJ=1, to (5/2$^+$).
268.62[o] *7*	(9/2$^+$)	≤7[d] ns	BC	J$^\pi$: stretched E2 γ to (5/2$^+$); γ to (7/2$^+$).
288.66[m] *5*	(5/2$^-$)	≤7[d] ns	ABC	
343.48[l] *19*	(1/2$^-$)		A C	
537.14[n] *10*	(7/2$^-$)	≤7[d] ns	BC	
607.66[l] *22*	(5/2$^-$)		BC	
663.6[k] *3*	(5/2$^-$)		C	J$^\pi$: Jpi:
683.43[p] *12*	(11/2$^+$)	≤7[d] ns	BC	J$^\pi$: E2 γ to (7/2$^+$); band assignment.
825.58[m] *13*	(9/2$^-$)	≤7[d] ns	BC	
839.12[o] *15*	(13/2$^+$)	3.0 ps *4*	BC	J$^\pi$: E2 γ to (9/2$^+$); γ to (11/2$^+$). T$_{1/2}$: from recoil distance Doppler shift (1994Jo12) in (^{28}Si,αpγ). Q(transition)=3.59 *+28−23* (2002Ka61) from (^{32}S,2αpγ).
1107.4[l] *3*	(9/2$^-$)		BC	
1167.21[n] *18*	(11/2$^-$)	≤7[d] ns	BC	
1250.1[k] *5*	(9/2$^-$)		C	
1482.64[p] *20*	(15/2$^+$)	<7[d] ns	BC	Q(transition)<2.5 (2002Ka61) from (^{32}S,2αpγ). T$_{1/2}$: Other: ≥ 0.7 ps (^{32}S,2αpγ).
1530.14[m] *23*	(13/2$^-$)	≤7[d] ns	BC	
1550.2[h] *8*	(13/2$^+$)		C	
1653.29[o] *18*	(17/2$^+$)	0.66 ps *+21−14*	BC	Q(transition)=2.9 *5* (2002Ka61) from (^{32}S,2αpγ). J$^\pi$: E2 γ to (13/2$^+$); γ to (15/2$^+$). T$_{1/2}$: from DSA in (^{28}Si,αpγ). Other: 0.68 ps *+32−17* from DSA in (^{32}S,2αpγ).
1751.6[#] *8*	(17/2$^+$)		C	

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Adopted Levels, Gammas (continued)

^{81}Y Levels (continued)

E(level)[†]	Jπ[@]	$T_{1/2}$[b]	XREF	Comments
1782.6[l] *4*	(13/2⁻)		BC	
1951.93[n] *23*	(15/2⁻)	≤7[d] ns	BC	
1993.3[k] *6*	(13/2⁻)		C	
2373.7[m] *3*	(17/2⁻)	0.53 ps *+43−19*	BC	Q(transition)=2.6 *7* (2002Ka61) from (^{32}S,2αpγ).
2415.7[h] *7*	(17/2⁺)		BC	
2513.3[p] *7*	(19/2⁺)	0.28 ps *+12−8*	C	Q(transition)=2.2 *4* (2002Ka61) from (^{32}S,2αpγ).
2594.5[l] *6*	(17/2⁻)	>0.69 ps	BC	Q(transition)<2.7 (2002Ka61) from (^{32}S,2αpγ).
2686.7[o] *3*	(21/2⁺)	0.28 ps *+5−4*	BC	$T_{1/2}$: weighted average of 0.26 ps *+5−4* from (^{32}S,2αpγ) and 0.34 ps *+10−7* from DSA in (^{28}Si,αpγ). Q(transition)=2.52 *+23−21* (2002Ka61) from (^{32}S,2αpγ).
2860.6[n] *4*	(19/2⁻)	0.44 ps *+42−18*	BC	Q(transition)=2.2 *+7−6* (2002Ka61) from (^{32}S,2αpγ).
2866.5[k] *7*	(17/2⁻)		C	
2917.4[#] *9*	(21/2⁺)		C	
3342.6[m] *5*	(21/2⁻)	0.26 ps *+12−8*	BC	Q(transition)=2.6 *+5−4* (2002Ka61) from (^{32}S,2αpγ).
3360.9[j] *7*	(19/2⁻)		C	
3413.1[h] *9*	(21/2⁺)		C	
3559.6[l] *7*	(21/2⁻)	0.20 ps *+21−12*	BC	Q(transition)=3.2 *+18−10* (2002Ka61) from (^{32}S,2αpγ).
3739.1[k] *8*	(21/2⁻)		C	
3745.9[p] *9*	(23/2⁺)	0.16 ps *+9−7*	C	
3894.6[n] *6*	(23/2⁻)	0.44 ps *+15−11*	BC	Q(transition)=1.81 *+28−24* (2002Ka61) from (^{32}S,2αpγ).
3914.0[o] *4*	(25/2⁺)	0.15 ps *4*	BC	Q(transition)=2.06 *+36−23* (2002Ka61) from (^{32}S,2αpγ). $T_{1/2}$: determined from spectra gated from above the 1227γ. Other $T_{1/2}$: 0.15 ps *6* from DSA in (^{28}Si,αpγ).
3992.1[#] *10*	(25/2⁺)		C	
4183.2[j] *8*	(23/2⁻)	0.7 ps *+62−5*	C	Q(transition)=0.7 *+6−5* from 1323γ, 2.4 *+24−17* from 822γ (2002Ka61) from (^{32}S,2αpγ).
4440.1[m] *6*	(25/2⁻)	0.17 ps *+12−8*	BC	$T_{1/2}$: determined from spectra gated from above the 1098γ. Q(transition)=2.5 *+9−6* (2002Ka61) from (^{32}S,2αpγ).
4552.1[h] *11*	(25/2⁺)		C	
4701.4[k] *13*	(25/2⁻)		C	
4716.5[l] *14*	(25/2⁻)	0.82[c] ps *+66−22*	C	Q(transition)>1.0 (2002Ka61) from (^{32}S,2αpγ).
5032.1[f] *15*	(27/2⁺)		C	
5090.0[n] *7*	(27/2⁻)	0.10 ps *+10−8*	BC	Q(transition)=2.6 *+24−8* (2002Ka61) from (^{32}S,2αpγ).
5138.0[p] *15*	(27/2⁺)	0.25[c] ps *+10−8*	C	Q(transition)>1.2 (2002Ka61) from (^{32}S,2αpγ).
5213.1[j] *11*	(27/2⁻)	0.30 ps *12*	C	Q(transition)=2.7 *+8−4* (2002Ka61) from (^{32}S,2αpγ).
5270.9[o] *6*	(29/2⁺)	0.062 ps *28*	BC	$T_{1/2}$: ≈0.20 ps, without correction for feeding (1994Jo12), in (^{28}Si,αpγ). Q(transition)=2.5 *+8−4* (2002Ka61) from (^{32}S,2αpγ).
5499.8[#] *13*	(29/2⁺)		C	
5664.3[m] *10*	(29/2⁻)	0.12 ps *+6−5*	BC	Q(transition)=2.3 *+7−4* (2002Ka61) from (^{32}S,2αpγ).
5744.5[i] *12*	(29/2⁻)	0.18 ps *+12−10*	C	Q(transition)=1.6 *+8−4* (2002Ka61) from (^{32}S,2αpγ).
5753.5[k] *17*	(29/2⁻)		C	
5836.5[h] *12*	(29/2⁺)		C	
6046.1[l] *19*	(29/2⁻)		C	
6386.7[j] *12*	(31/2⁻)	0.37[c] ps *+22−14*	C	Q(transition)>0.8 from 1297γ, >1.26 from 1174γ (2002Ka61) from (^{32}S,2αpγ).
6469.9[n] *16*	(31/2⁻)	0.35[c] ps *+17−12*	C	Q(transition)>1.0 (2002Ka61) from (^{32}S,2αpγ).
6509.1[f] *17*	(31/2⁺)		C	

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Adopted Levels, Gammas (continued)

^{81}Y Levels (continued)

E(level)[†]	Jπ[@]	$T_{1/2}$[b]	XREF	Comments
6629.3[o] 12	(33/2+)	0.083 ps 21	BC	Q(transition)=2.09 +32−22 (2002Ka61) from (^{32}S,2αpγ).
6672.7[p] 22	(31/2+)		C	
6893.3[k] 20	(33/2−)		C	
6911.6[m] 13	(33/2−)	0.14 ps +14−11	C	Q(transition)=1.3 +16−4 from 1167γ, 1.7 +21−5 from 1247γ (2002Ka61) from (^{32}S,2αpγ).
6951.1[#] 16	(33/2+)		C	
7090.3[i] 14	(33/2−)	0.05 ps +5−4	C	Q(transition)=1.1 +10−4 from 1347γ, 2.2 +19−7 from 1425γ (2002Ka61) from (^{32}S,2αpγ).
7315.3[h] 15	(33/2+)		C	
7511.7[l] 25	(33/2−)		C	
7710.8[j] 18	(35/2−)		C	
7864.4 21	(35/2−)		C	
7892.3 21	(35/2−)		C	
7928.6 22	(35/2−)		C	
7947.7[f] 22	(35/2+)		C	
8079.7[o] 19	(37/2+)	0.08 ps +5−4	BC	XREF: B(8089.5). Q(transition)=1.9 +9−4 (2002Ka61) from (^{32}S,2αpγ).
8096.9 23	(35/2−)		C	
8160[p] 3	(35/2+)		C	
8276.0[m] 19	(37/2−)	0.10 ps +15−8	C	Q(transition)=1.9 +22−7 (2002Ka61) from (^{32}S,2αpγ).
8504.8[#] 17	(37/2+)		C	
8519.8[i] 20	(37/2−)	0.22[c] ps 7	C	Q(transition)>1.1 (2002Ka61) from (^{32}S,2αpγ).
8583.9[g] 20	(37/2−)		C	
8917.8[h] 22	(37/2+)		C	
9167.7[j] 23	(39/2−)		C	
9323[f] 3	(39/2+)		C	
9594.3[o] 25	(41/2+)	0.028 ps +55−21	C	Q(transition)=2.7 +27−12 (2002Ka61) from (^{32}S,2αpγ).
9807.9[m] 24	(41/2−)	0.021 ps +55−14	C	Q(transition)=3.0 +22−15 (2002Ka61) from (^{32}S,2αpγ).
9818[#] 3	(39/2+)		C	
9981[#] 3	(41/2+)		C	
10063[g] 3	(41/2−)		C	
10193[i] 3	(41/2−)		C	
10777[j] 3	(43/2−)		C	
10884[f] 3	(43/2+)		C	
11234[o] 3	(45/2+)	0.05 ps +10−4	C	Q(transition)=1.7 +28−7 (2002Ka61) from (^{32}S,2αpγ).
11520[m] 3	(45/2−)	0.11[c] ps +10−6	C	Q(transition)>1.0 (2002Ka61) from (^{32}S,2αpγ).
11545[#] 4	(45/2+)		C	
11617[g] 3	(45/2−)		C	
12014[i] 4	(45/2−)		C	
12570[j] 4	(47/2−)		C	
12579[f] 4	(47/2+)		C	
13088[o] 4	(49/2+)	0.12[c] ps +22−8	C	Q(transition)>0.8 (2002Ka61) from (^{32}S,2αpγ).
13282[#] 4	(49/2+)		C	
13423[m] 4	(49/2−)		C	
14099[i] 4	(49/2−)		C	
14483[f] 4	(51/2+)		C	
14806?[j] 4	(51/2−)		C	

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Adopted Levels, Gammas (continued)

^{81}Y Levels (continued)

E(level)[†]	Jπ[@]	XREF	Comments
15248[o] 5	(53/2$^+$)	C	
15523?[m] 4	(53/2$^-$)	C	
15572? 4	(53/2$^-$)	C	
16440?[i] 5	(53/2$^-$)	C	
16785?[f] 5	(55/2$^+$)	C	
17670?[o] 5	(57/2$^+$)	C	
0+x[‡e]		C	Additional information 2.
1225.0+x[e] 12		C	
2659.6+x[e] 19		C	
4261.5+x[e] 25		C	
6034+x[e] 3		C	
8004+x[e] 4		C	

[†] From a least-squares fit to Eγ, except as noted.
[‡] x>5.3 MeV.
[#] Member of a π=(+) sequence of states which feed members of 5/2[422], α=+1/2 band. No extended band structure(s) connected with transitions from these levels could be established (1997Sc17).
[@] Based on γ(θ) and/or DCO ratio data from ^{58}Ni(^{28}Si,αpγ), and on intensities and deduced band structure from ^{58}Ni(^{28}Si,αpγ) and ^{58}Ni(^{32}S,2αpγ), except as noted.
[&] Based on the stronger ε+β$^+$ feeding to 3/2$^+$; 5/2$^+$; and 7/2$^+$ states and weaker feeding to 1/2$^+$ and 3/2$^-$ states, authors of 1985Li12 assign 5/2$^+$ to the ^{81}Y parent g.s., presuming observed population of 1/2$^+$ and 3/2$^-$ levels to be indirect, and ascribing the weaker feeding of 221-keV (3/2$^+$) and 336-keV (5/2$^+$) levels to inhibition arising from the ΔK=2 selection rule. By contrast, 1982De36 argue that, from level systematics for Z=39 and even N, the g.s. and first excited state spins should be 1/2$^-$ and 9/2$^+$. Since the latter would be excluded by log *ft*=5.05 *3* to (1/2$^-$) (based on their very different decay normalization), they favor a J^π=1/2$^-$ parent; 9/2$^+$ is also unlikely since no ε branch is observed to the (9/2$^+$) 132 level. However, 1/2$^-$ would be tenable only if ^{81}Sr J^π assignments from (HI,xnγ) were incorrect. The evaluator adopts (5/2$^+$) from 1985Li12, consistent with energy systematics for 5/2$^+$ states in ^{85}Y and ^{87}Y. Probable 5/2[422] bandhead (1988Mo17).
[a] D γ to (5/2$^+$); π=− consistent with very small signature splitting (1985Li12); K^π=3/2$^-$ favored by analogy with ^{75}Kr (N=39) and ^{83}Y (Z=39). However, K=5/2 has been suggested, based on level energy systematics within the band as a function of K (1985Li12).
[b] From DSAM in ^{58}Ni(^{32}S,2αpγ), corrected for side-feeding, except as noted.
[c] Effective half-life from DSAM in ^{58}Ni(^{32}S,2αpγ); uncorrected for side-feeding.
[d] $T_{1/2}$≤7 ns from γγ(t) and particle-γ(t) data in (^{28}Si,αpγ).
[e] Band(A): π=(+) band (1997Sc17). This band populates the 25/2$^+$ and 29/2$^+$ members of g.s. band. From γγ coin and intensity balances, 1997Sc17 deduce that bandhead for this band lies above the 5266-keV 29/2$^+$ member of the g.s. band, but could not identify any transitions which connect it to that band.
[f] Band(B): π=+, α=−1/2 band (1997Sc17).
[g] Band(C): Possible π=−, α=+1/2 band fragment (1997Sc17).
[h] Band(D): π=+, α=+1/2 band (1997Sc17).
[i] Band(E): π=−, α=+1/2 band (1997Sc17).
[j] Band(F): π=−, α=−1/2 band (1997Sc17).
[k] Band(G): π 5/2[303], α=+1/2 band (1997Sc17).
[l] Band(H): π 1/2[301], α=+1/2 band (1997Sc17). Band parameters are too highly dependent on levels included in fit to be meaningful.
[m] Band(I): K$^\pi$=3/2$^-$, α=+1/2 band (1997Sc17). 1997Sc17 propose a π 3/2[301] configuration, analogous to ^{75}Kr (N=39) and ^{83}Y (Z=39); however, 1994Jo12 propose a π 3/2[312] configuration. The band crossing at ħω=0.67 MeV is attributed to alignment of $g_{9/2}$ neutrons (1993Mi11, 1994Jo12).
[n] Band(i): K$^\pi$=3/2$^-$, α=−1/2 band (1997Sc17). See comment on signature partner band.

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Adopted Levels, Gammas (continued)

^{81}Y Levels (continued)

[o] Band(J): π 5/2[422] g.s., α=+1/2 band (1997Sc17). Probable band assignment.
[p] Band(j): π 5/2[422] g.s., α=−1/2 band (1997Sc17). Probable band assignment.

Adopted Levels, Gammas (continued)

$\gamma(^{81}Y)$

Additional information 3.

E_i(level)	J_i^π	E_γ[†]	I_γ[&]	E_f	J_f^π	Mult.[c]	α[e]	Comments
113.30	(3/2$^-$)	113.31[‡] *4*	100	0	(5/2$^+$)	(E1)	0.0745 *10*	α(K)=0.0658 *9*; α(L)=0.00733 *10*; α(M)=0.001243 *17* α(N)=0.0001641 *23*; α(O)=1.048×10^{-5} *15* E_γ: 113.5 *1* (1994Jo12) and 113.29 *3* (1985Li12) both in (^{28}Si,αpγ), and 113.4 *1* in (^{32}S,2αpγ).
149.632	(7/2$^+$)	149.63[‡] *2*	100	0	(5/2$^+$)	(M1)	0.0605 *8*	α(K)=0.0532 *7*; α(L)=0.00608 *9*; α(M)=0.001040 *15* α(N)=0.0001395 *20*; α(O)=9.55×10^{-6} *13* E_γ: 149.7 *1* (1994Jo12), 149.62 *2* (1985Li12) both in (^{28}Si,αpγ), and 149.7 *1* in (^{32}S,2αpγ).
268.62	(9/2$^+$)	119.06[#] *10*	100.0[b] *15*	149.632	(7/2$^+$)	(M1+E2)	0.34 *23*	α(K)=0.29 *19*; α(L)=0.042 *31*; α(M)=0.007 *5* α(N)=9.E−4 *7*; α(O)=4.5×10^{-5} *27* E_γ: 119.1 *1* (1994Jo12), 118.87 *2* (1985Li12) both in (^{28}Si,αpγ), and 119.2 *1* in (^{32}S,2αpγ).
		268.60[‡] *10*	63 *13*	0	(5/2$^+$)	E2[d]	0.0300 *4*	α(K)=0.0261 *4*; α(L)=0.00323 *5*; α(M)=0.000552 *8* α(N)=7.21×10^{-5} *10*; α(O)=4.30×10^{-6} *6* E_γ: 268.7 *1* (1994Jo12), 268.47 *13* (1985Li12) both in (^{28}Si,αpγ), and 268.4 *3* in (^{32}S,2αpγ). I_γ: unweighted average of 76.0 *15* (1994Jo12), 49.3 *15* (1985Li12) in ^{58}Ni(^{28}Si,αpγ). Reason for the discrepancy is unknown. Mult.: Q from DCO ratio; not M2 from RUL.
288.66	(5/2$^-$)	175.38[‡] *3*	100 *3*	113.30	(3/2$^-$)	(M1)	0.0396 *6*	α(K)=0.0349 *5*; α(L)=0.00397 *6*; α(M)=0.000679 *10* α(N)=9.11×10^{-5} *13*; α(O)=6.26×10^{-6} *9* E_γ: 175.3 *1* (1994Jo12), 175.39 *3* (1985Li12) both in (^{28}Si,αpγ), and 175.3 *2* in (^{32}S,2αpγ).
		288.8[‡] *4*	46.3 *20*	0	(5/2$^+$)			E_γ: 289.2 *3* in (^{28}Si,αpγ), 288.4 *3* in (^{32}S,2αpγ).
343.48	(1/2$^-$)	230.1 *2*	100	113.30	(3/2$^-$)			
537.14	(7/2$^-$)	248.72[‡] *11*	100 *5*	288.66	(5/2$^-$)	(M1)	0.01601 *22*	α(K)=0.01411 *20*; α(L)=0.001587 *22*; α(M)=0.000272 *4* α(N)=3.65×10^{-5} *5*; α(O)=2.523×10^{-6} *35* E_γ: 248.6 *2* (1994Jo12), 248.79 *7* (1985Li12) both in (^{28}Si,αpγ), and 248.3 *2* in (^{32}S,2αpγ).
		387.1[#] *6*	25.4 *12*	149.632	(7/2$^+$)			E_γ: 387.7 *2* in (^{28}Si,αpγ), 386.5 *4* in (^{32}S,2αpγ).
		423.31[‡] *22*	44 *5*	113.30	(3/2$^-$)			E_γ: 422.8 *4* (1994Jo12), 423.50 *22* (1985Li12) both in (^{28}Si,αpγ), and 423.2 *4* in (^{32}S,2αpγ).
		536.5 *5*		0	(5/2$^+$)			
607.66	(5/2$^-$)	264.0 *3*		343.48	(1/2$^-$)			

$^{81}_{39}Y_{42}$-6

Adopted Levels, Gammas (continued)

γ(^{81}Y) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[&]	E_f	J_f^π	Mult.[c]	α[e]	Comments
607.66	(5/2⁻)	319.4[‡] *4*	100 *8*	288.66	(5/2⁻)			E_γ: 319.7 *3* in (^{28}Si,αpγ), 319.0 *3* in (^{32}S,2αpγ).
		494.3[‡] *5*	94 *8*	113.30	(3/2⁻)			E_γ: 494.8 *5* in (^{28}Si,αpγ), 493.8 *5* in (^{32}S,2αpγ).
663.6	(5/2⁻)	375.0 *4*		288.66	(5/2⁻)			
		549.9 *5*		113.30	(3/2⁻)			
683.43	(11/2⁺)	414.86[‡] *12*	95 *6*	268.62	(9/2⁺)	(M1)	0.00451 *6*	α(K)=0.00398 *6*; α(L)=0.000442 *6*; α(M)=7.55×10^{-5} *11* α(N)=1.016×10^{-5} *14*; α(O)=7.09×10^{-7} *10* E_γ: 414.9 *1* (1994Jo12), 414.87 *12* (1985Li12) both in (^{28}Si,αpγ), and 414.0 *4* in (^{32}S,2αpγ). I_γ: weighted average of 111 *5* (1994Jo12), 92.3 *19* (1985Li12) in (^{28}Si,αpγ).
		533.7[‡] *3*	100.0 *19*	149.632	(7/2⁺)	E2[d]	0.00323 *5*	α(K)=0.00285 *4*; α(L)=0.000326 *5*; α(M)=5.56×10^{-5} *8* α(N)=7.40×10^{-6} *10*; α(O)=4.88×10^{-7} *7* E_γ: 533.8 *2* (1994Jo12), 534.0 *3* (1985Li12) both in (^{28}Si,αpγ), and 532.6 *5* in (^{32}S,2αpγ).
825.58	(9/2⁻)	288.9[‡] *3*	59 *10*	537.14	(7/2⁻)			E_γ: 289.2 *3* in (^{28}Si,αpγ), 288.6 *3* in (^{32}S,2αpγ).
		537.2[#] *5*	100 *17*	288.66	(5/2⁻)			E_γ: 537.5 *2* (1994Jo12), 537.76 *15* (1985Li12) both in (^{28}Si,αpγ), and 536.3 *5* in (^{32}S,2αpγ).
		556.7[‡] *3*	31.5 *18*	268.62	(9/2⁺)			E_γ: 556.8 *2* in (^{28}Si,αpγ) and 556.0 *6* in (^{32}S,2αpγ).
		675.6 *2*	36.0 *18*	149.632	(7/2⁺)			E_γ: from (^{28}Si,αpγ). Other: 674.9 *7* in (^{32}S,2αpγ).
839.12	(13/2⁺)	155.63[#] *18*	15.0 *7*	683.43	(11/2⁺)	(M1)	0.0544 *8*	B(M1)(W.u.)=0.252 *+40−33* α(K)=0.0479 *7*; α(L)=0.00546 *8*; α(M)=0.000935 *13* α(N)=0.0001254 *18*; α(O)=8.60×10^{-6} *12* Mult.: D from DCO ratio; Δπ=(no) from level scheme. E_γ: 155.9 *1* (1994Jo12), 155.29 *2* (1985Li12) both in (^{28}Si,αpγ), and 155.7 *2* in (^{32}S,2αpγ).
		570.5[‡] *2*	100 *4*	268.62	(9/2⁺)	E2[d]	0.00266 *4*	B(E2)(W.u.)=129 *+19−16* α(K)=0.002345 *33*; α(L)=0.000267 *4*; α(M)=4.56×10^{-5} *6* α(N)=6.07×10^{-6} *9*; α(O)=4.03×10^{-7} *6* E_γ: 570.5 *1* in (^{28}Si,αpγ), 569.3 *6* in (^{32}S,2αpγ).
1107.4	(9/2⁻)	281.8 *3*		825.58	(9/2⁻)			
		499.8[‡] *4*	100 *10*	607.66	(5/2⁻)			E_γ: 499.9 *2* in (^{28}Si,αpγ), 498.9 *5* in (^{32}S,2αpγ).
		570.4[‡] *7*	25 *4*	537.14	(7/2⁻)			E_γ: 570.9 *4* in (^{28}Si,αpγ), 569.4 *6* in (^{32}S,2αpγ).
1167.21	(11/2⁻)	341.4[‡] *3*	37 *5*	825.58	(9/2⁻)			E_γ: unweighted average of 341.6 *2* (1994Jo12), 341.93 *7* (1985Li12) both in (^{28}Si,αpγ), and 340.8 *3* in (^{32}S,2αpγ).
		483.8[‡] *4*	15.1 *8*	683.43	(11/2⁺)			E_γ: 484.0 *3* in (^{28}Si,αpγ), 483.1 *5* in (^{32}S,2αpγ).
		630.0[#] *5*	100 *13*	537.14	(7/2⁻)	E2[d]	2.01×10^{-3} *3*	α(K)=0.001774 *25*; α(L)=0.0002005 *28*; α(M)=3.42×10^{-5} *5* α(N)=4.57×10^{-6} *6*; α(O)=3.06×10^{-7} *4*

$^{81}_{39}Y_{42}$-7

Adopted Levels, Gammas (continued)

γ(^{81}Y) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[&]	E_f	J_f^π	Mult.[c]	α[e]	Comments
								E_γ: 630.2 *2* (1994Jo12), 630.56 *10* (1985Li12) both in (^{28}Si,αpγ), and 629.1 *6* in (^{32}S,2αpγ).
1167.21	(11/2$^-$)	899.1[‡] *4*	52.9 *25*	268.62	(9/2$^+$)	(E1)	3.30×10^{-4} *5*	α(K)=0.000292 *4*; α(L)=3.16×10^{-5} *4*; α(M)=5.38×10^{-6} *8* α(N)=7.24×10^{-7} *10*; α(O)=5.06×10^{-8} *7* E_γ: 899.2 *3* in (^{28}Si,αpγ) and 897.8 *9* in (^{32}S,2αpγ). Mult.: (D) from DCO ratio; Δπ=(yes) from level scheme.
1250.1	(9/2$^-$)	585.8 *6*		663.6	(5/2$^-$)			
		713.0 *7*	*b*	537.14	(7/2$^-$)			
1482.64	(15/2$^+$)	643.7[#] *7*	42.6 *22*	839.12	(13/2$^+$)	(M1)	1.62×10^{-3} *2*	α(K)=0.001430 *20*; α(L)=0.0001568 *22*; α(M)=2.68×10^{-5} *4* α(N)=3.61×10^{-6} *5*; α(O)=2.53×10^{-7} *4* E_γ: 643.7 *2* (1994Jo12), 644.86 *18* (1985Li12) both in (^{28}Si,αpγ), and 642.5 *6* in (^{32}S,2αpγ).
		799.6[#] *4*	100 *4*	683.43	(11/2$^+$)	[E2]	1.07×10^{-3} *2*	α(K)=0.000945 *13*; α(L)=0.0001052 *15*; α(M)=1.796×10^{-5} *25* α(N)=2.405×10^{-6} *34*; α(O)=1.640×10^{-7} *23* E_γ: 799.3 *1* (1994Jo12), 800.30 *19* (1985Li12) both in (^{28}Si,αpγ), and 799.2 *8* in (^{32}S,2αpγ).
1530.14	(13/2$^-$)	363.0[‡] *4*	38 *12*	1167.21	(11/2$^-$)			E_γ: 363.1 *2* (1994Jo12), 363.62 *22* (1985Li12) both in (^{28}Si,αpγ), and 362.3 *4* in (^{32}S,2αpγ). I_γ: unweighted average of 26 *4* (1994Jo12), 49 *4* (1985Li12) in (^{28}Si,αpγ).
		704.1[‡] *5*	100 *13*	825.58	(9/2$^-$)	(E2)	1.49×10^{-3} *2*	α(K)=0.001313 *19*; α(L)=0.0001473 *21*; α(M)=2.51×10^{-5} *4* α(N)=3.36×10^{-6} *5*; α(O)=2.272×10^{-7} *32* E_γ: 704.3 *3* (1994Jo12), 704.93 *13* (1985Li12) both in (^{28}Si,αpγ), and 703.1 *7* in (^{32}S,2αpγ).
		847.2[‡] *4*	24 *4*	683.43	(11/2$^+$)			E_γ: 847.3 *2* in (^{28}Si,αpγ) and 845.8 *8* in (^{32}S,2αpγ).
1550.2	(13/2$^+$)	866.2 *9*	100	683.43	(11/2$^+$)			
1653.29	(17/2$^+$)	170.7[‡] *1*	3.6 *4*	1482.64	(15/2$^+$)			E_γ: 170.8 *1* and 170.5 *5* in (^{28}Si,αpγ), 170.5 *2* in (^{32}S,2αpγ).
		814.17[‡] *13*	100 *4*	839.12	(13/2$^+$)	(E2)[d]	1.02×10^{-3} *1*	B(E2)(W.u.)=111 *+30−27* α(K)=0.000903 *13*; α(L)=0.0001005 *14*; α(M)=1.715×10^{-5} *24* α(N)=2.297×10^{-6} *32*; α(O)=1.568×10^{-7} *22* E_γ: 814.1 *1* and 814.41 *17* in (^{28}Si,αpγ), 813.1 *8* in (^{32}S,2αpγ).
1751.6	(17/2$^+$)	911.8 *9*	100	839.12	(13/2$^+$)			
1782.6	(13/2$^-$)	675.2[‡] *3*	100	1107.4	(9/2$^-$)			E_γ: 675.3 *3* in (^{28}Si,αpγ), 674.5 *7* in (^{32}S,2αpγ).
1951.93	(15/2$^-$)	421.8[‡] *4*		1530.14	(13/2$^-$)			E_γ: 421.7 *5* in (^{28}Si,αpγ), 421.9 *4* in (^{32}S,2αpγ).
		784.7[‡] *2*	100 *13*	1167.21	(11/2$^-$)			E_γ: 784.7 *2* and 784.9 *3* in (^{28}Si,αpγ), 783.8 *8* in (^{32}S,2αpγ).
		1112.0[‡] *8*	45 *4*	839.12	(13/2$^+$)			E_γ: 1111.9 *8* in (^{28}Si,αpγ), 1112.3 *11* in (^{32}S,2αpγ).

$^{81}_{39}Y_{42}$-8

Adopted Levels, Gammas (continued)

γ(^{81}Y) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[&]	E_f	J_f^π	Mult.[c]	α[e]	Comments
1993.3	(13/2$^-$)	742.5 *7*	[b]	1250.1	(9/2$^-$)			
		826.3 *8*		1167.21	(11/2$^-$)			
2373.7	(17/2$^-$)	421.4[‡] *4*	13[a]	1951.93	(15/2$^-$)			E_γ: 421.9 *5* in (^{28}Si,αpγ), 421.1 *4* in (^{32}S,2αpγ).
		720.2 *7*	<5	1653.29	(17/2$^+$)			
		843.7[‡] *3*	100 *12*	1530.14	(13/2$^-$)	(E2)	9.37×10^{-4} *13*	α(K)=0.000827 *12*; α(L)=9.18×10^{-5} *13*; α(M)=1.566×10^{-5} *22* α(N)=2.099×10^{-6} *29*; α(O)=1.436×10^{-7} *20* E_γ: 843.6 *4* and 844.0 *3* in (^{28}Si,αpγ), 842.4 *8* in (^{32}S,2αpγ). Mult.: Q intraband γ from (^{28}Si,αpγ).
		890.1 *9*	<5	1482.64	(15/2$^+$)			
2415.7	(17/2$^+$)	864.9 *9*		1550.2	(13/2$^+$)			
		932.7 *9*	[b]	1482.64	(15/2$^+$)			
2513.3	(19/2$^+$)	859.9 *9*	32[a]	1653.29	(17/2$^+$)			
		1030.3 *10*	100[a]	1482.64	(15/2$^+$)	[E2]	5.82×10^{-4} *8*	B(E2)(W.u.)=63 *+26−19* α(K)=0.000515 *7*; α(L)=5.66×10^{-5} *8*; α(M)=9.65×10^{-6} *14* α(N)=1.296×10^{-6} *18*; α(O)=8.97×10^{-8} *13*
2594.5	(17/2$^-$)	811.9[‡] *4*	100	1782.6	(13/2$^-$)	[E2]	1.03×10^{-3} *1*	α(K)=0.000910 *13*; α(L)=0.0001012 *14*; α(M)=1.727×10^{-5} *24* α(N)=2.313×10^{-6} *33*; α(O)=1.579×10^{-7} *22* E_γ: 812.1 *4* in (^{28}Si,αpγ), 811.1 *8* in (^{32}S,2αpγ).
2686.7	(21/2$^+$)	1033.5[‡] *2*	100	1653.29	(17/2$^+$)	E2	5.78×10^{-4} *8*	B(E2)(W.u.)=82 *+14−13* α(K)=0.000511 *7*; α(L)=5.62×10^{-5} *8*; α(M)=9.58×10^{-6} *13* α(N)=1.287×10^{-6} *18*; α(O)=8.90×10^{-8} *12* E_γ: 1033.5 *2* and 1034 *1* in (^{28}Si,αpγ), 1032.8 *10* in (^{32}S,2αpγ). Mult.: Q from DCO ratio; not M2 from RUL.
2860.6	(19/2$^-$)	486.3 *5*	9[a]	2373.7	(17/2$^-$)			
		908.9[#] *7*	100 *12*	1951.93	(15/2$^-$)	[E2]	7.81×10^{-4} *11*	B(E2)(W.u.)=58 *+40−26* α(K)=0.000690 *10*; α(L)=7.63×10^{-5} *11*; α(M)=1.302×10^{-5} *18* α(N)=1.746×10^{-6} *25*; α(O)=1.200×10^{-7} *17* E_γ: 908.6 *3* and 910.1 *4* in (^{28}Si,αpγ), 907.9 *9* in (^{32}S,2αpγ).
		1208.1[‡] *6*	64 *5*	1653.29	(17/2$^+$)	[E1]	2.37×10^{-4} *3*	α(K)=0.0001674 *23*; α(L)=1.798×10^{-5} *25*; α(M)=3.06×10^{-6} *4* α(N)=4.13×10^{-7} *6*; α(O)=2.90×10^{-8} *4*; α(IPF)=4.77×10^{-5} *8* B(E1)(W.u.)=0.00017 *+12−8* E_γ: 1208.0 *6* in (^{28}Si,αpγ), 1208.7 *12* in (^{32}S,2αpγ). I_γ: other: 24 from (^{32}S,2αpγ).
2866.5	(17/2$^-$)	872.2 *9*	100	1993.3	(13/2$^-$)			
2917.4	(21/2$^+$)	1164.7 *12*	[b]	1751.6	(17/2$^+$)			
		1264.5 *13*		1653.29	(17/2$^+$)			
3342.6	(21/2$^-$)	481.9 *5*	12[a]	2860.6	(19/2$^-$)			

$^{81}_{39}Y_{42}$-9

Adopted Levels, Gammas (continued)

γ(^{81}Y) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[&]	E_f	J_f^π	Mult.[c]	α[e]	Comments
3342.6	(21/2⁻)	968.9[‡] *5*	100[a]	2373.7	(17/2⁻)	[E2]	6.71×10^{-4} *9*	B(E2)(W.u.)=109 *+47−34* α(K)=0.000593 *8*; α(L)=6.54×10^{-5} *9*; α(M)=1.116×10^{-5} *16* α(N)=1.497×10^{-6} *21*; α(O)=1.032×10^{-7} *15* E_γ: 968.8 *5* in (^{28}Si,αpγ), 969.2 *10* in (^{32}S,2αpγ).
3360.9	(19/2⁻)	494.6 *5*		2866.5	(17/2⁻)			
		1409.7 *14*		1951.93	(15/2⁻)			
		1709.7 *17*		1653.29	(17/2⁺)			
3413.1	(21/2⁺)	996.2 *10*	[b]	2415.7	(17/2⁺)			
		1760.5 *18*		1653.29	(17/2⁺)			
3559.6	(21/2⁻)	965.1[‡@] *4*	100	2594.5	(17/2⁻)			E_γ: 965.2 *4* in (^{28}Si,αpγ), 964.6 *10* in (^{32}S,2αpγ).
3739.1	(21/2⁻)	378.7 *4*		3360.9	(19/2⁻)			
		870.9 *9*	[b]	2866.5	(17/2⁻)			
3745.9	(23/2⁺)	1059.6 *11*	14[a]	2686.7	(21/2⁺)			
		1232.1 *12*	100[a]	2513.3	(19/2⁺)	[E2]	4.05×10^{-4} *6*	B(E2)(W.u.)=53 *+40−19* α(K)=0.000347 *5*; α(L)=3.79×10^{-5} *5*; α(M)=6.46×10^{-6} *9* α(N)=8.68×10^{-7} *12*; α(O)=6.05×10^{-8} *9*; α(IPF)=1.312×10^{-5} *28*
3894.6	(23/2⁻)	1033.9[‡] *5*	100	2860.6	(19/2⁻)	[E2]	5.78×10^{-4} *8*	B(E2)(W.u.)=52 *+17−13* α(K)=0.000511 *7*; α(L)=5.61×10^{-5} *8*; α(M)=9.58×10^{-6} *13* α(N)=1.286×10^{-6} *18*; α(O)=8.90×10^{-8} *12* E_γ: 1033.7 *4* in (^{28}Si,αpγ), 1035.2 *10* in (^{32}S,2αpγ).
3914.0	(25/2⁺)	1227.3[‡] *2*	100	2686.7	(21/2⁺)	E2	4.08×10^{-4} *6*	B(E2)(W.u.)=65 *+23−14* α(K)=0.000350 *5*; α(L)=3.82×10^{-5} *5*; α(M)=6.51×10^{-6} *9* α(N)=8.76×10^{-7} *12*; α(O)=6.10×10^{-8} *9*; α(IPF)=1.228×10^{-5} *18* E_γ: 1227.3 *2* and 1227 *3* in (^{28}Si,αpγ), 1226.0 *12* in (^{32}S,2αpγ). Mult.: Q from DCO ratio; not M2 from RUL.
3992.1	(25/2⁺)	1074.1 *11*	[b]	2917.4	(21/2⁺)			
		1306.3 *13*		2686.7	(21/2⁺)			
4183.2	(23/2⁻)	444.1 *4*	22[a]	3739.1	(21/2⁻)			
		821.9 *8*	100[a]	3360.9	(19/2⁻)	[E2]	9.99×10^{-4} *14*	B(E2)(W.u.)=5×10^{1} *+13−3* α(K)=0.000882 *13*; α(L)=9.81×10^{-5} *14*; α(M)=1.674×10^{-5} *24* α(N)=2.242×10^{-6} *32*; α(O)=1.532×10^{-7} *22*
		1322.6 *13*	82[a]	2860.6	(19/2⁻)	[E2]	3.70×10^{-4} *5*	α(K)=0.000299 *4*; α(L)=3.25×10^{-5} *5*; α(M)=5.55×10^{-6} *8* α(N)=7.46×10^{-7} *11*; α(O)=5.21×10^{-8} *7*; α(IPF)=3.23×10^{-5} *5* B(E2)(W.u.)=4 *+10−3*
4440.1	(25/2⁻)	1097.5[‡] *3*	100	3342.6	(21/2⁻)	[E2]	5.05×10^{-4} *7*	B(E2)(W.u.)=1.0×10^{2} *+9−4* α(K)=0.000446 *6*; α(L)=4.89×10^{-5} *7*; α(M)=8.35×10^{-6} *12* α(N)=1.122×10^{-6} *16*; α(O)=7.78×10^{-8} *11* E_γ: 1097.5 *3* in (^{28}Si,αpγ), 1097.0 *11* in (^{32}S,2αpγ).

$^{81}_{39}Y_{42}$-10

Adopted Levels, Gammas (continued)

γ(^{81}Y) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[&]	E_f	J_f^π	Mult.[c]	α[e]	Comments
4552.1	(25/2$^+$)	1137.8 *11*	[b]	3413.1	(21/2$^+$)			
		1865.5 *19*		2686.7	(21/2$^+$)			
4701.4	(25/2$^-$)	962.3 *10*	100	3739.1	(21/2$^-$)			
4716.5	(25/2$^-$)	1156.9 *12*	100	3559.6	(21/2$^-$)	[E2]	4.53×10^{-4} *6*	B(E2)(W.u.)=16 *6* α(K)=0.000397 *6*; α(L)=4.35×10^{-5} *6*; α(M)=7.42×10^{-6} *11* α(N)=9.97×10^{-7} *14*; α(O)=6.93×10^{-8} *10*; α(IPF)=3.29×10^{-6} *11*
5032.1	(27/2$^+$)	1286.0 *13*	100	3745.9	(23/2$^+$)			
5090.0	(27/2$^-$)	1195.4[‡] *4*	100	3894.6	(23/2$^-$)	[E2]	4.26×10^{-4} *6*	B(E2)(W.u.)=1.1×10^{2} *+16−6* α(K)=0.000370 *5*; α(L)=4.04×10^{-5} *6*; α(M)=6.90×10^{-6} *10* α(N)=9.28×10^{-7} *13*; α(O)=6.46×10^{-8} *9*; α(IPF)=7.35×10^{-6} *12* E_γ: 1195.3 *4* in (^{28}Si,αpγ), 1195.9 *12* in (^{32}S,2αpγ).
5138.0	(27/2$^+$)	1392.3 *14*	100	3745.9	(23/2$^+$)	[E2]	3.53×10^{-4} *5*	B(E2)(W.u.)=21 *+10−6* α(K)=0.000269 *4*; α(L)=2.92×10^{-5} *4*; α(M)=4.98×10^{-6} *7* α(N)=6.70×10^{-7} *9*; α(O)=4.69×10^{-8} *7*; α(IPF)=4.96×10^{-5} *8*
5213.1	(27/2$^-$)	1029.9 *10*		4183.2	(23/2$^-$)	[E2]	5.83×10^{-4} *8*	B(E2)(W.u.)=8×10^{1} *+5−2* α(K)=0.000515 *7*; α(L)=5.66×10^{-5} *8*; α(M)=9.66×10^{-6} *14* α(N)=1.298×10^{-6} *18*; α(O)=8.97×10^{-8} *13*
5270.9	(29/2$^+$)	1357.0[‡] *4*	100	3914.0	(25/2$^+$)	E2	3.61×10^{-4} *5*	B(E2)(W.u.)=1.0×10^{2} *+7−3* α(K)=0.000283 *4*; α(L)=3.08×10^{-5} *4*; α(M)=5.25×10^{-6} *7* α(N)=7.07×10^{-7} *10*; α(O)=4.94×10^{-8} *7*; α(IPF)=4.05×10^{-5} *6* E_γ: 1357.1 *4* and 1360 *5* in (^{28}Si,αpγ), 1356.0 *14* in (^{32}S,2αpγ). Mult.: stretched Q from DCO ratio; not M2 from RUL.
5499.8	(29/2$^+$)	1585.1 *16*	100	3914.0	(25/2$^+$)			
5664.3	(29/2$^-$)	1223.9[‡] *9*	100	4440.1	(25/2$^-$)	[E2]	4.10×10^{-4} *6*	B(E2)(W.u.)=8×10^{1} *+6−3* α(K)=0.000352 *5*; α(L)=3.84×10^{-5} *5*; α(M)=6.55×10^{-6} *9* α(N)=8.81×10^{-7} *12*; α(O)=6.14×10^{-8} *9*; α(IPF)=1.169×10^{-5} *22* E_γ: 1223.4 *9* in (^{28}Si,αpγ), 1224.8 *12* in (^{32}S,2αpγ).
5744.5	(29/2$^-$)	1305.1 *13*	100	4440.1	(25/2$^-$)	[E2]	3.75×10^{-4} *5*	B(E2)(W.u.)=40 *+42−17* α(K)=0.000307 *4*; α(L)=3.35×10^{-5} *5*; α(M)=5.71×10^{-6} *8* α(N)=7.68×10^{-7} *11*; α(O)=5.36×10^{-8} *8*; α(IPF)=2.82×10^{-5} *5*
5753.5	(29/2$^-$)	1052.0 *11*	100	4701.4	(25/2$^-$)			
5836.5	(29/2$^+$)	1282.8 *13*	[b]	4552.1	(25/2$^+$)			
		1925.1 *19*		3914.0	(25/2$^+$)			
6046.1	(29/2$^-$)	1329.5 *13*	100	4716.5	(25/2$^-$)			
6386.7	(31/2$^-$)	1173.6 *12*	100[a]	5213.1	(27/2$^-$)	[E2]	4.40×10^{-4} *6*	B(E2)(W.u.)=20 *+12−7* α(K)=0.000385 *5*; α(L)=4.21×10^{-5} *6*; α(M)=7.18×10^{-6} *10* α(N)=9.66×10^{-7} *14*; α(O)=6.72×10^{-8} *10*; α(IPF)=4.79×10^{-6} *14*
		1296.7 *13*	67[a]	5090.0	(27/2$^-$)	[E2]	3.78×10^{-4} *5*	B(E2)(W.u.)=8.0 *+48−32*

$^{81}_{39}Y_{42}$-11

Adopted Levels, Gammas (continued)

$\gamma(^{81}Y)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[&]	E_f	J_f^π	Mult.[c]	α[e]	Comments
								α(K)=0.000311 *4*; α(L)=3.39×10^{-5} *5*; α(M)=5.79×10^{-6} *8* α(N)=7.78×10^{-7} *11*; α(O)=5.43×10^{-8} *8*; α(IPF)=2.63×10^{-5} *5*
6469.9	(31/2$^-$)	1379.9 *14*	100	5090.0	(27/2$^-$)	[E2]	3.56×10^{-4} *5*	B(E2)(W.u.)=16 *+8−5* α(K)=0.000274 *4*; α(L)=2.97×10^{-5} *4*; α(M)=5.07×10^{-6} *7* α(N)=6.83×10^{-7} *10*; α(O)=4.78×10^{-8} *7*; α(IPF)=4.63×10^{-5} *7*
6509.1	(31/2$^+$)	1371.3 *14*	[b]	5138.0	(27/2$^+$)			
		1476.8 *15*		5032.1	(27/2$^+$)			
6629.3	(33/2$^+$)	1129.2 *11*	1.0[a]	5499.8	(29/2$^+$)	[E2]	4.76×10^{-4} *7*	B(E2)(W.u.)=1.8 *+7−5*
		1359.0 *14*	100[a]	5270.9	(29/2$^+$)	[E2]	3.60×10^{-4} *5*	B(E2)(W.u.)=70 *+24−14* α(K)=0.000282 *4*; α(L)=3.07×10^{-5} *4*; α(M)=5.24×10^{-6} *7* α(N)=7.05×10^{-7} *10*; α(O)=4.93×10^{-8} *7*; α(IPF)=4.10×10^{-5} *7*
6672.7	(31/2$^+$)	1534.7 *15*	100	5138.0	(27/2$^+$)			
6893.3	(33/2$^-$)	1139.8 *11*	100	5753.5	(29/2$^-$)			
6911.6	(33/2$^-$)	1167.0 *12*	43[a]	5744.5	(29/2$^-$)	[E2]	4.45×10^{-4} *6*	α(K)=0.000390 *6*; α(L)=4.26×10^{-5} *6*; α(M)=7.28×10^{-6} *10* α(N)=9.78×10^{-7} *14*; α(O)=6.80×10^{-8} *10*; α(IPF)=4.15×10^{-6} *13* B(E2)(W.u.)=27 *+36−15*
		1247.4 *12*	100[a]	5664.3	(29/2$^-$)	[E2]	3.98×10^{-4} *6*	B(E2)(W.u.)=5×10^{1} *+6−3* α(K)=0.000338 *5*; α(L)=3.69×10^{-5} *5*; α(M)=6.29×10^{-6} *9* α(N)=8.46×10^{-7} *12*; α(O)=5.90×10^{-8} *8*; α(IPF)=1.597×10^{-5} *32*
6951.1	(33/2$^+$)	1679.9 *17*	100	5270.9	(29/2$^+$)			
7090.3	(33/2$^-$)	1346.7 *13*	20[a]	5744.5	(29/2$^-$)	[E2]	3.63×10^{-4} *5*	α(K)=0.000288 *4*; α(L)=3.13×10^{-5} *4*; α(M)=5.34×10^{-6} *8* α(N)=7.19×10^{-7} *10*; α(O)=5.02×10^{-8} *7*; α(IPF)=3.80×10^{-5} *6* B(E2)(W.u.)=20 *+29−11*
		1424.9 *14*	100[a]	5664.3	(29/2$^-$)	[E2]	3.48×10^{-4} *5*	B(E2)(W.u.)=8×10^{1} *+11−4* α(K)=0.000256 *4*; α(L)=2.78×10^{-5} *4*; α(M)=4.75×10^{-6} *7* α(N)=6.39×10^{-7} *9*; α(O)=4.48×10^{-8} *6*; α(IPF)=5.88×10^{-5} *9*
7315.3	(33/2$^+$)	1478.4 *15*	[b]	5836.5	(29/2$^+$)			
		2045.1 *20*		5270.9	(29/2$^+$)			
7511.7	(33/2$^-$)	1465.6 *15*	100	6046.1	(29/2$^-$)			
7710.8	(35/2$^-$)	1324.1 *13*	100	6386.7	(31/2$^-$)			
7864.4	(35/2$^-$)	1394.5 *14*	100	6469.9	(31/2$^-$)			
7892.3	(35/2$^-$)	1422.4 *14*	100	6469.9	(31/2$^-$)			
7928.6	(35/2$^-$)	1458.7 *15*	100	6469.9	(31/2$^-$)			
7947.7	(35/2$^+$)	1438.6 *14*	100	6509.1	(31/2$^+$)			
8079.7	(37/2$^+$)	1450.4 *15*	100	6629.3	(33/2$^+$)	[E2]	3.46×10^{-4} *5*	B(E2)(W.u.)=5×10^{1} *+5−2* α(K)=0.0002473 *35*; α(L)=2.68×10^{-5} *4*; α(M)=4.58×10^{-6} *6* α(N)=6.16×10^{-7} *9*; α(O)=4.32×10^{-8} *6*; α(IPF)=6.68×10^{-5} *11*
8096.9	(35/2$^-$)	1627.0 *16*	100	6469.9	(31/2$^-$)			
8160	(35/2$^+$)	1487.4 *15*	100	6672.7	(31/2$^+$)			

$^{81}_{39}Y_{42}$-12

Adopted Levels, Gammas (continued)

$\gamma(^{81}Y)$ (continued)

E_i(level)	J_i^π	E_γ [†]	I_γ [&]	E_f	J_f^π	Mult. [c]	α [e]	Comments
8276.0	(37/2$^-$)	1364.4 *14*	100	6911.6	(33/2$^-$)	[E2]	3.59×10^{-4} *5*	B(E2)(W.u.)=6×10^{1} *+10−4* α(K)=0.000280 *4*; α(L)=3.05×10^{-5} *4*; α(M)=5.20×10^{-6} *7* α(N)=6.99×10^{-7} *10*; α(O)=4.89×10^{-8} *7*; α(IPF)=4.23×10^{-5} *7*
8504.8	(37/2$^+$)	1553.5 *16*	[b]	6951.1	(33/2$^+$)			
		1875.8 *19*		6629.3	(33/2$^+$)			
8519.8	(37/2$^-$)	1429.5 *14*	100	7090.3	(33/2$^-$)	[E2]	3.48×10^{-4} *5*	B(E2)(W.u.)=21 *+10−5* α(K)=0.000255 *4*; α(L)=2.76×10^{-5} *4*; α(M)=4.72×10^{-6} *7* α(N)=6.35×10^{-7} *9*; α(O)=4.45×10^{-8} *6*; α(IPF)=6.02×10^{-5} *9*
8583.9	(37/2$^-$)	1493.6 *15*	100	7090.3	(33/2$^-$)			
8917.8	(37/2$^+$)	1602.5 *16*	100	7315.3	(33/2$^+$)			
9167.7	(39/2$^-$)	1456.9 *15*	100	7710.8	(35/2$^-$)			
9323	(39/2$^+$)	1374.8 *14*	100	7947.7	(35/2$^+$)			
9594.3	(41/2$^+$)	1514.6[@] *15*	100	8079.7	(37/2$^+$)			
9807.9	(41/2$^-$)	1531.9[@] *15*	100	8276.0	(37/2$^-$)			
9818	(39/2$^+$)	1738.2 *17*	100	8079.7	(37/2$^+$)			
9981	(41/2$^+$)	1901.6 *19*	100	8079.7	(37/2$^+$)			
10063	(41/2$^-$)	1479.5 *15*	100	8583.9	(37/2$^-$)			
10193	(41/2$^-$)	1673.3 *17*	100	8519.8	(37/2$^-$)			
10777	(43/2$^-$)	1609.5 *16*	100	9167.7	(39/2$^-$)			
10884	(43/2$^+$)	1561.2 *16*	100	9323	(39/2$^+$)			
11234	(45/2$^+$)	1639.6 *16*	100	9594.3	(41/2$^+$)	[E2]	3.61×10^{-4} *5*	B(E2)(W.u.)=5×10^{1} *+9−3* α(K)=0.0001941 *27*; α(L)=2.099×10^{-5} *30*; α(M)=3.58×10^{-6} *5* α(N)=4.82×10^{-7} *7*; α(O)=3.39×10^{-8} *5*; α(IPF)=0.0001414 *21*
11520	(45/2$^-$)	1712.4 *17*	100	9807.9	(41/2$^-$)	[E2]	3.75×10^{-4} *5*	B(E2)(W.u.)=17 *+19−8* α(K)=0.0001785 *25*; α(L)=1.928×10^{-5} *27*; α(M)=3.29×10^{-6} *5* α(N)=4.43×10^{-7} *6*; α(O)=3.12×10^{-8} *4*; α(IPF)=0.0001733 *25*
11545	(45/2$^+$)	1950.9 *20*	100	9594.3	(41/2$^+$)			
11617	(45/2$^-$)	1553.1 *16*	100	10063	(41/2$^-$)			
12014	(45/2$^-$)	1820.7 *18*	100	10193	(41/2$^-$)			
12570	(47/2$^-$)	1792.9 *18*	100	10777	(43/2$^-$)			
12579	(47/2$^+$)	1695.3 *17*	100	10884	(43/2$^+$)			
13088	(49/2$^+$)	1854.0 *19*	100	11234	(45/2$^+$)	[E2]	4.11×10^{-4} *6*	B(E2)(W.u.)=10 *+18−6* α(K)=0.0001535 *22*; α(L)=1.655×10^{-5} *23*; α(M)=2.82×10^{-6} *4* α(N)=3.80×10^{-7} *5*; α(O)=2.68×10^{-8} *4*; α(IPF)=0.0002376 *34*
13282	(49/2$^+$)	2048.1 *20*	100	11234	(45/2$^+$)			
13423	(49/2$^-$)	1902.5 *19*	100	11520	(45/2$^-$)			
14099	(49/2$^-$)	2085.4 *21*	100	12014	(45/2$^-$)			
14483	(51/2$^+$)	1904.1 *19*	100	12579	(47/2$^+$)			
14806?	(51/2$^-$)	2235.5[f] *22*	100	12570	(47/2$^-$)			

$^{81}_{39}Y_{42}$-13

Adopted Levels, Gammas (continued)

$\gamma(^{81}Y)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[&]	E_f	J_f^π	E_i(level)	E_γ[†]	I_γ[&]	E_f
15248	(53/2$^+$)	2160.2 *22*	100	13088	(49/2$^+$)	1225.0+x	1225.0 *12*	100	0+x
15523?	(53/2$^-$)	2100.2[f] *21*	100	13423	(49/2$^-$)	2659.6+x	1434.6 *14*	100	1225.0+x
15572?	(53/2$^-$)	2149.2[f] *21*	100	13423	(49/2$^-$)	4261.5+x	1601.9 *16*	100	2659.6+x
16440?	(53/2$^-$)	2340.9[f] *23*	100	14099	(49/2$^-$)	6034+x	1772.3 *18*	100	4261.5+x
16785?	(55/2$^+$)	2301.8[f] *23*	100	14483	(51/2$^+$)	8004+x	1969.9 *20*	100	6034+x
17670?	(57/2$^+$)	2421.3[f] *24*	100	15248	(53/2$^+$)				

[†] From ^{58}Ni(^{32}S,2αpγ), except as noted.
[‡] Weighted average of listed data in the comments from ^{58}Ni(^{28}Si,αpγ) and ^{58}Ni(^{32}S,2αpγ). The uncertainty is the lowest input value, if yields lower than this value.
[#] Unweighted average of listed data in the comments from ^{58}Ni(^{28}Si,αpγ) and ^{58}Ni(^{32}S,2αpγ).
[@] Avoided listing of B(E2)(W.u.) for an expected [E2] transition, upper bound exceeds RUL=300. Larger uncertainty in input data (one or more).
[&] From ^{58}Ni(^{28}Si,αpγ); based on Iγ of 1994Jo12, except as noted.
[a] From ^{58}Ni(^{32}S,2αpγ) (2002Ka61); uncertainty unstated by authors.
[b] Based on transition line widths in the level scheme drawing of 1997Sc17 in ^{58}Ni(^{32}S,2αpγ), this is the most intense γ deexciting its parent level.
[c] From measured DCO ratios and/or $\gamma(\theta)$ in ^{58}Ni(^{28}Si,αpγ), except as noted; assigning $\Delta\pi$=(no) to intraband transitions.
[d] Q from $\gamma(\theta)$ and/or DCO ratio in ^{58}Ni(^{28}Si,αpγ); not M2 from RUL and $T_{1/2}$ (or $T_{1/2}$ limit).
[e] Additional information 4.
[f] Placement of transition in the level scheme is uncertain.

$^{81}_{39}Y_{42}$-14

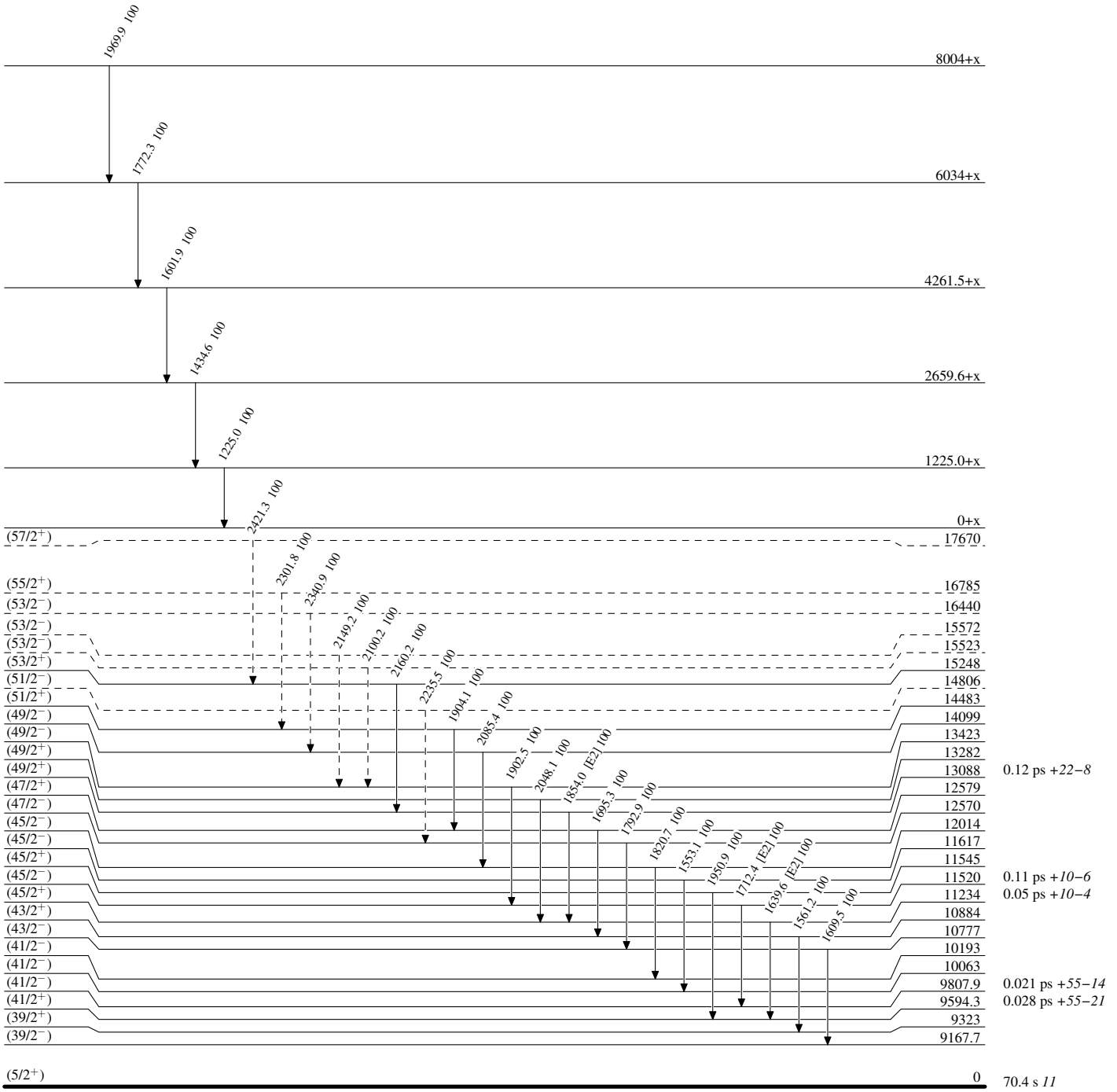
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

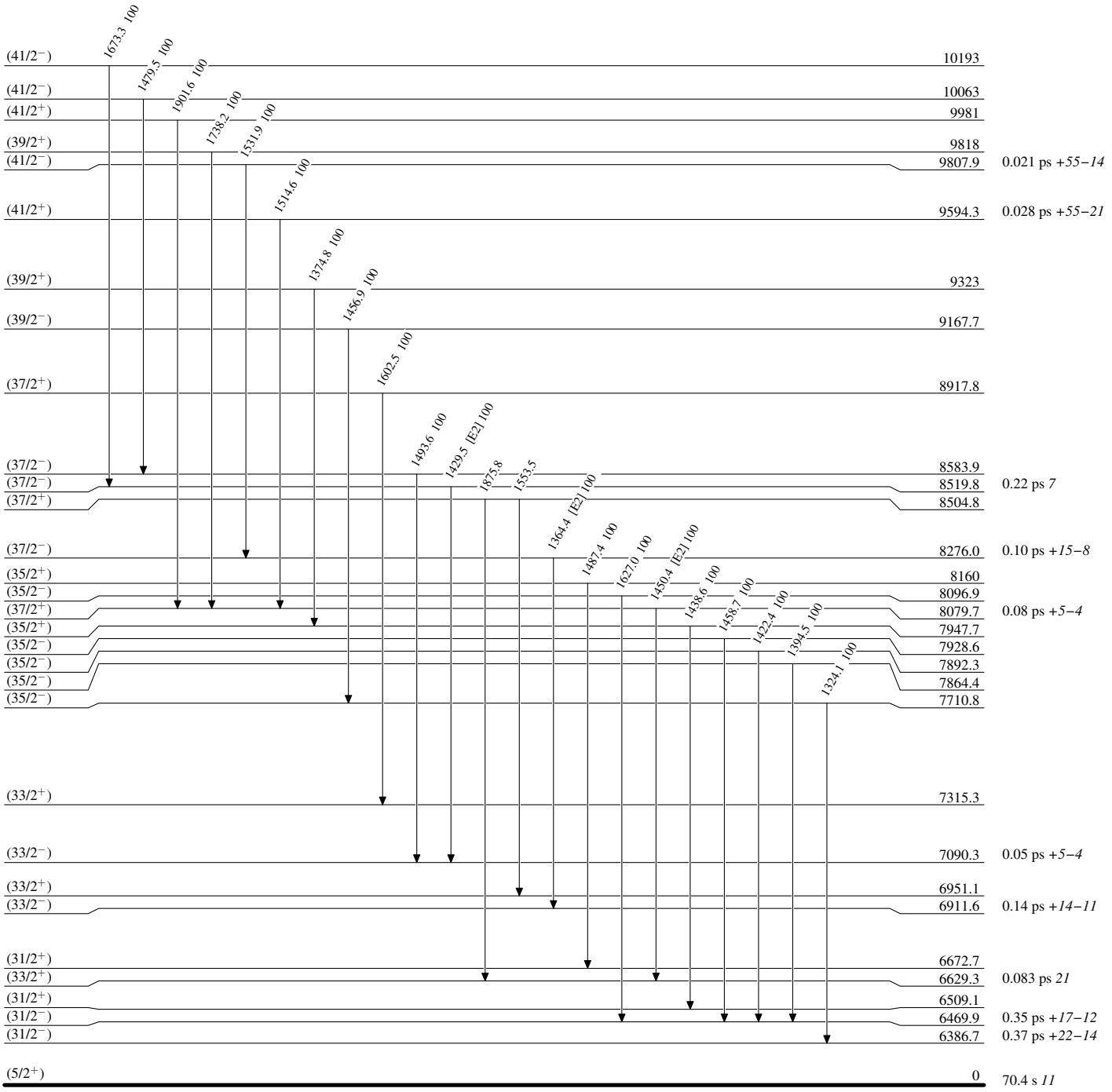


$^{81}_{39}Y_{42}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

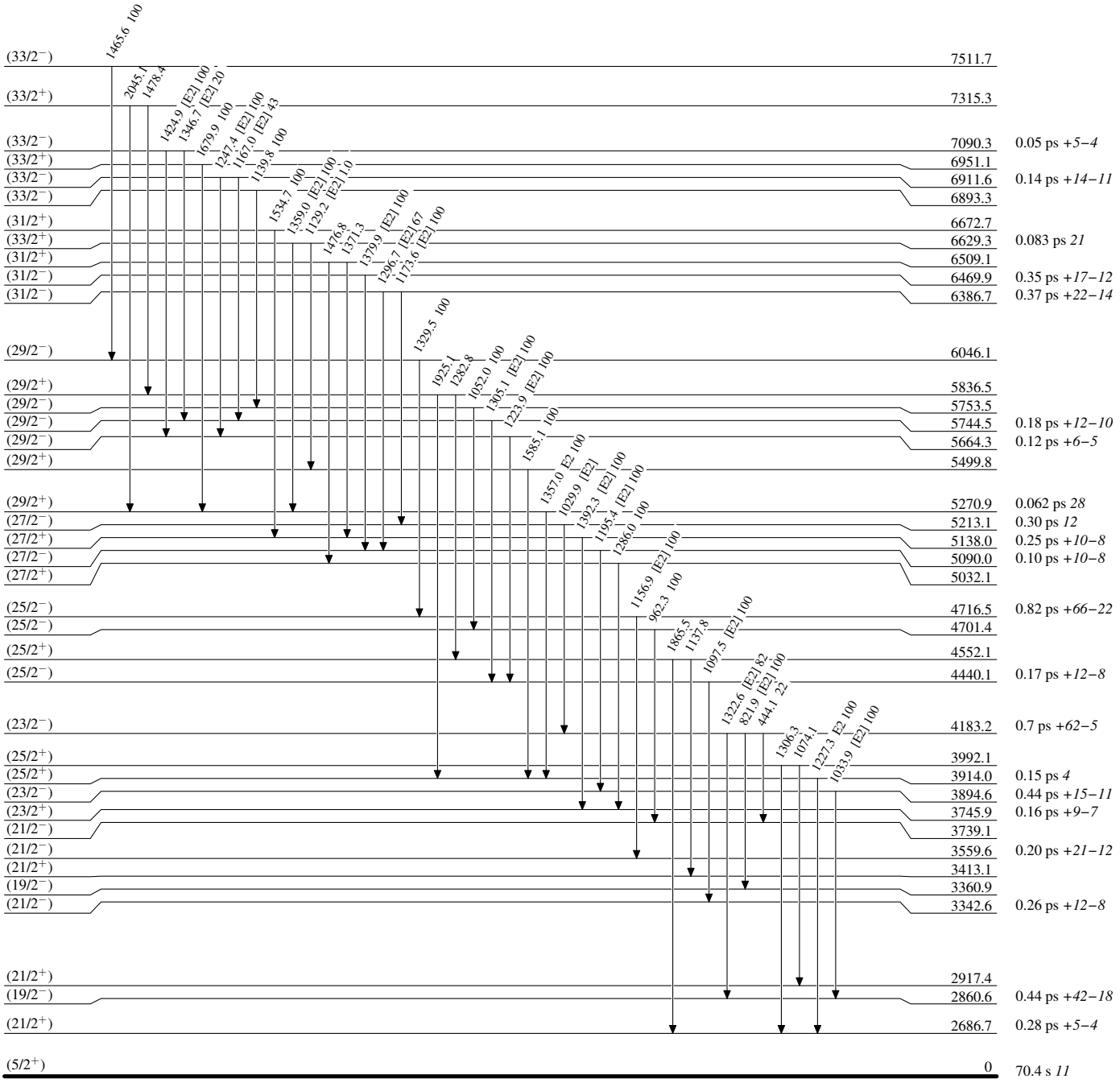


$^{81}_{39}Y_{42}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

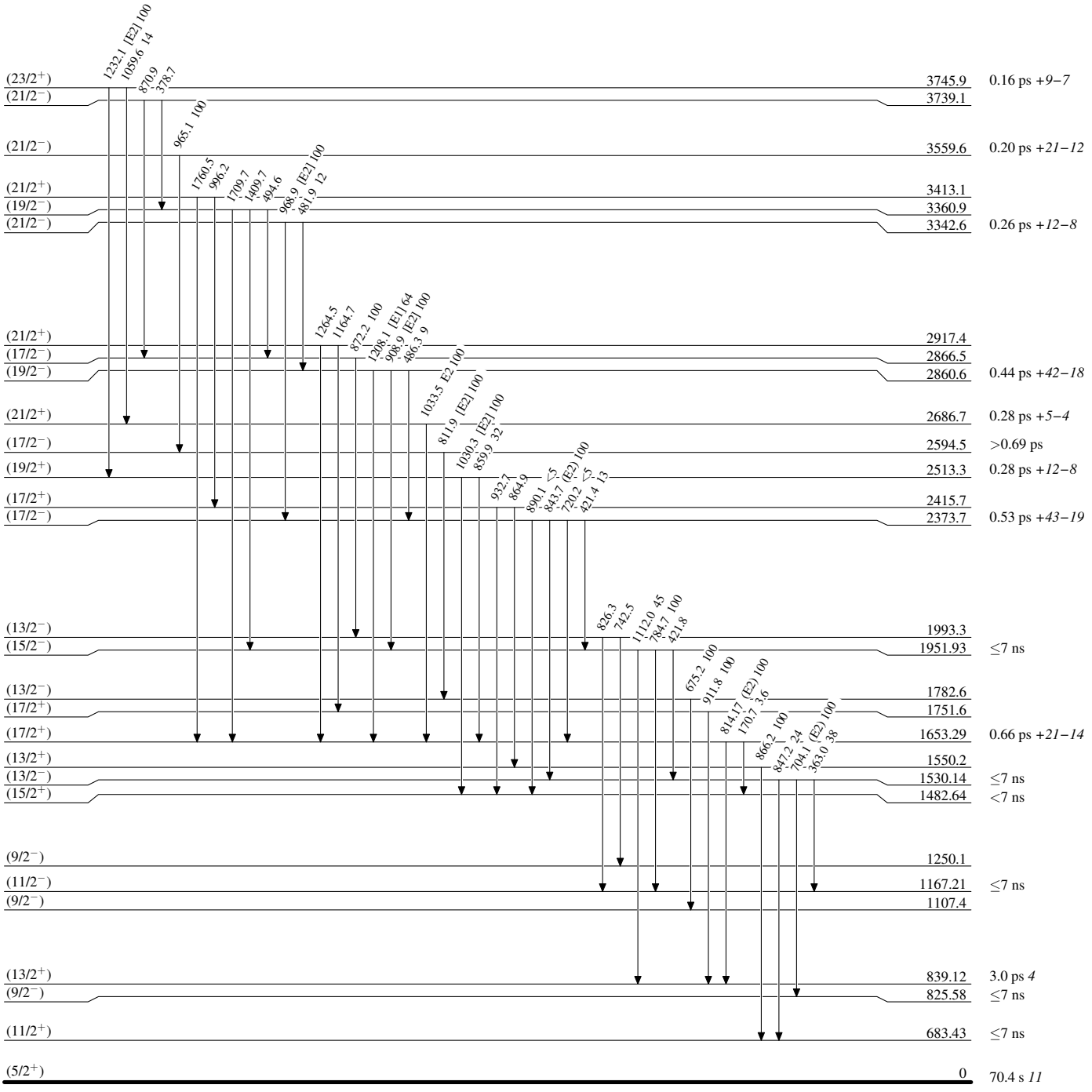


$^{81}_{39}Y_{42}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

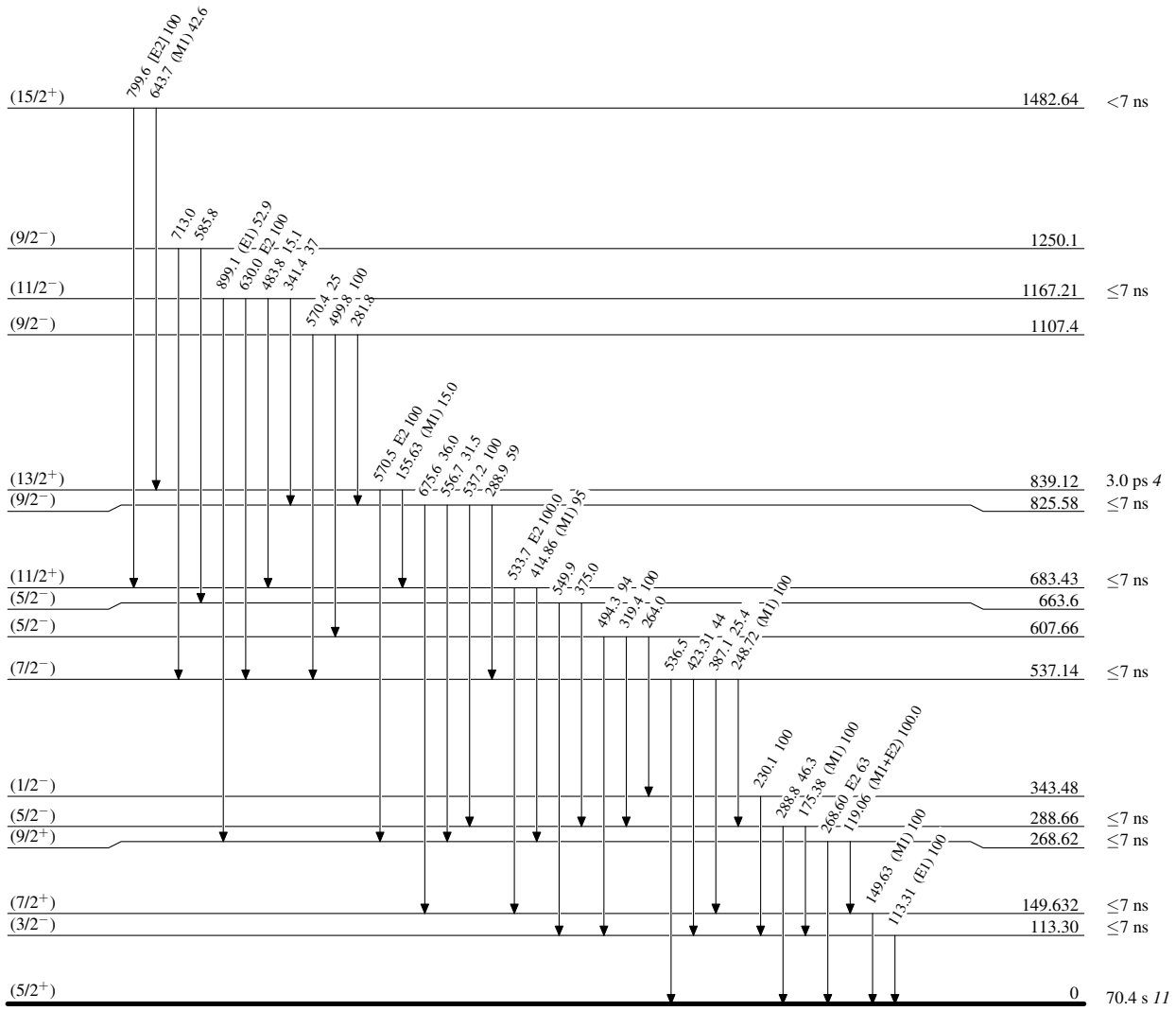


$^{81}_{39}Y_{42}$

Adopted Levels, Gammas

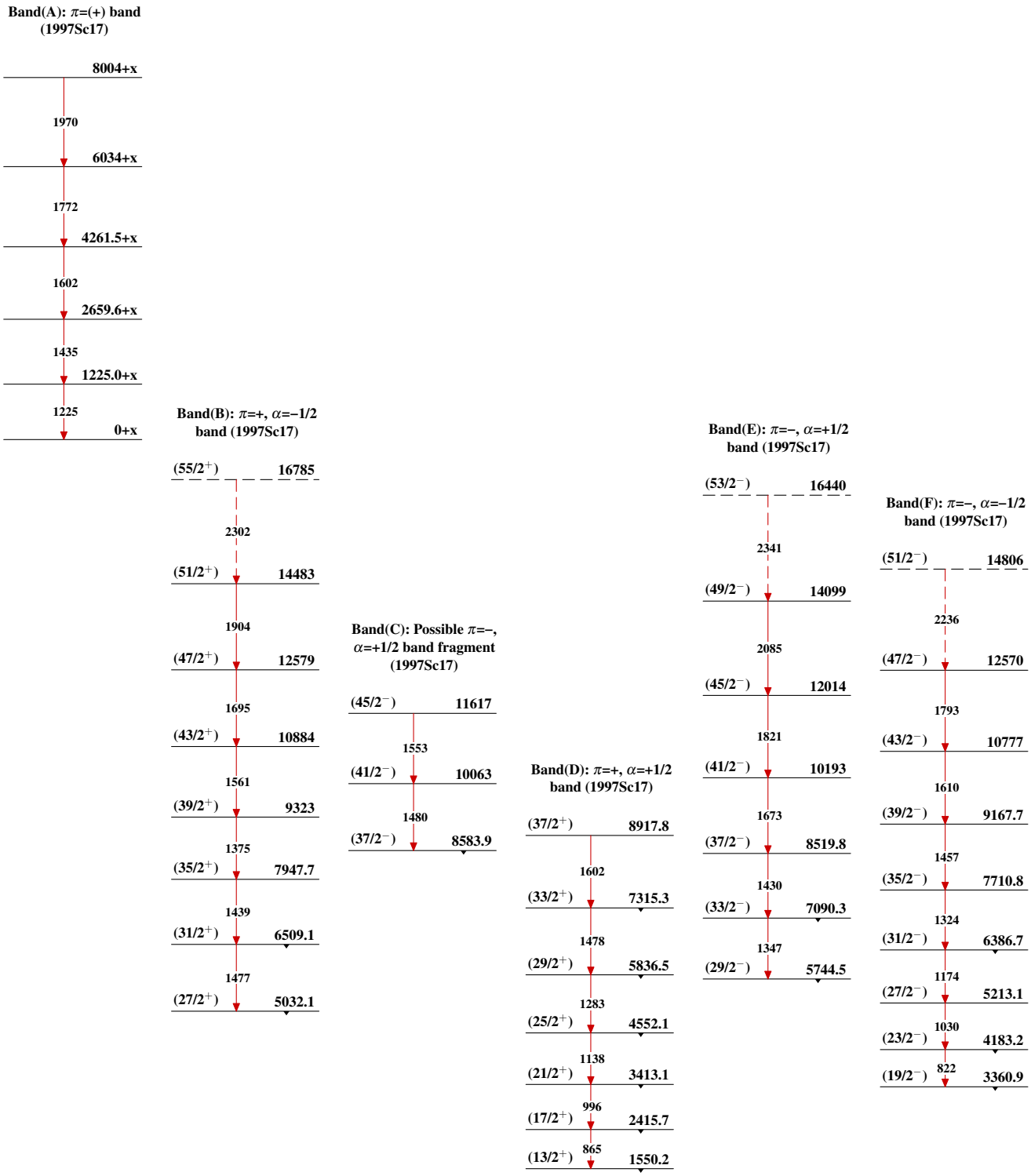
Level Scheme (continued)

Intensities: Relative photon branching from each level



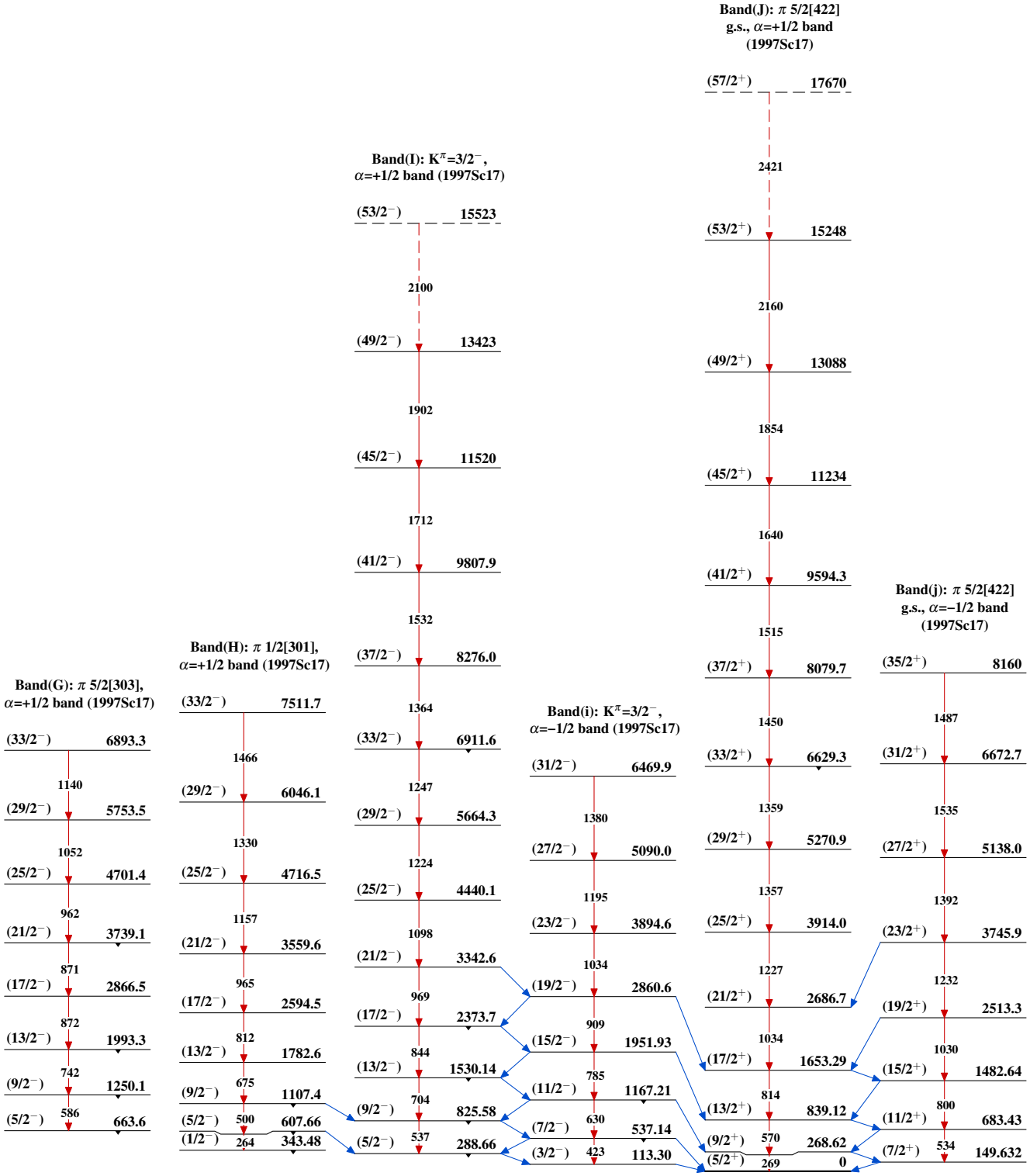
$^{81}_{39}Y_{42}$

Adopted Levels, Gammas



$^{81}_{39}Y_{42}$

Adopted Levels, Gammas (continued)



$^{81}_{39}Y_{42}$