Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. D. Nesaraja	NDS 115, 1 (2014)	31-Jul-2013

Q(β^-)=−10320 *40*; S(n)=10316.6 *16*; S(p)=4829.2 *24*; Q(α)=−2381.4 *26* 2012Wa38
2012Gr02: Summary and compilation of the discovery of the Se isotopes.
2001Ch07: TOF measurement of direct decay from isomeric state following projectile fragmentation of ^{92}Mo.

^{69}Se Levels

Cross Reference (XREF) Flags

A ^{40}Ca(^{32}S,2pnγ)

E(level)[#]	J$^\pi$[†]	$T_{1/2}$	XREF	Comments
0.0	1/2$^-$	27.4 s *2*	A	%ε+%β^+=100; %εp=0.052 *8* %εp: Weighted average of 0.062 *12* (1977Ma24) and 0.045 *10* (1988De28). J$^\pi$: From the β-delayed proton emission work of 1977Ma24, J(^{69}Se g.s.) =1/2,3/2, or 5/2. Higher J values are ruled out. Given J(39 level) =5/2, α(exp)(39γ)=28.0 *25* gives δ(E2/M1)>5. Along with $T_{1/2}$(39 level)=2.0 μs *2*, J(g.s.)=3/2 or 5/2, and for Eγ=38.8, one gets BM1W<2.4x10^{-7}. This is unreasonably small and rules out the J=3/2 or 5/2 alternatives. This argument establishes J=1/2. There is no experimental evidence for π, but systematics and the available shell model states π must be negative. $T_{1/2}$: from time-sequential proton spectra in ^{69}Se ε decay (1977Ma24). Also reported by similar group in 1976Ha22 and 1976Ha29 Other: 27 s 3 from ^{69}Se ε decay (1974No08).
38.85 *22*	5/2$^-$	2.0 μs *2*	A	J$^\pi$: M2 γ from 9/2$^+$. E2 γ to g.s. $T_{1/2}$: From ^{40}Ca(^{32}S,2pnγ).
129.12[c] *20*	3/2$^-$		A	J$^\pi$: D γ's to 5/2$^-$ and gs. $\gamma(\theta)$ rules out 1/2 and 5/2.
289.91[d] *24*	3/2$^-$		A	
574.0[&] *4*	9/2$^+$	960 ns *23*	A	J$^\pi$: J=9/2 from excit. in (^{32}S,2pnγ). π=+ from M2-E2 cascade to π=− gs. $T_{1/2}$: From ^{40}Ca(^{32}S,2pnγ).
712.58 *25*	5/2$^-$		A	
915.0 *3*	7/2$^-$		A	
1100.7 *4*	9/2$^-$		A	
1122.94[c] *23*	7/2$^-$		A	
1134.13[d] *25*	5/2$^-$		A	
1194.0 *3*	9/2$^-$		A	
1250.1[@] *3*	11/2$^+$		A	
1361.0[b] *4*	9/2$^+$		A	
1653.4[&] *4*	13/2$^+$		A	$T_{1/2}$: 0.26 ps to 1.5 ps from differential decay curve analysis in (1998Sk04).
2023.2[b] *4*	13/2$^+$		A	
2079.08[d] *24*	9/2$^-$		A	
2158.8 *3*	(9/2$^-$)		A	
2399.0[c] *3*	11/2$^-$[‡]		A	
2434.1 *3*	11/2$^-$[‡]		A	
2492.4[@] *4*	15/2$^+$		A	
2580.3 *4*	13/2$^+$		A	
2618.2 *4*	13/2$^-$[‡]		A	
2899.4[&] *4*	17/2$^+$		A	
2935.2 *5*	13/2$^-$[‡]		A	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{69}Se Levels (continued)

E(level)[#]	Jπ[†]	XREF	E(level)[#]	Jπ[†]	XREF	E(level)[#]	Jπ[†]	XREF
2980.0[d] *3*	13/2−[‡]	A	4436.4 *5*	23/2−[‡]	A	8034.5[&] *8*	(33/2+)	A
3206.2[c] *3*	15/2−[‡]	A	5257.3 *6*	(25/2+)	A	8044.8[e] *6*	(33/2−)[‡]	A
3226.4[b] *4*	17/2+	A	5387.2[d] *5*	(25/2−)[‡]	A	8059.2[c] *6*	(31/2−)[‡]	A
3497.9 *4*	17/2+	A	5437.5[&] *6*	25/2+	A	8493.5[a] *7*	(33/2+)	A
3576.4 *4*	17/2+	A	5830.2[a] *6*	25/2+	A	9008.4[d] *8*	(37/2−)[‡]	A
3618.1[d] *3*	(17/2−)[‡]	A	6149.0[c] *5*	(27/2−)[‡]	A	9713.7[&] *9*	(37/2+)	A
3674.3[c] *4*	19/2−[‡]	A	6467.3[d] *6*	(29/2−)[‡]	A	9956.7[e] *7*	(37/2−)[‡]	A
3723.3 *4*	17/2−[‡]	A	6476.7 *7*	(29/2+)	A	10414.8[d] *9*	(41/2−)[‡]	A
4005.5[@] *5*	(19/2+)	A	6567.7[&] *6*	29/2+	A	11382.1[&] *12*	(41/2+)	A
4255.1[&] *5*	21/2+	A	6888.5[e] *5*	(29/2−)[‡]	A	13362.7[&] *15*	(45/2+)	A
4272.3[d] *4*	21/2−[‡]	A	7103.7[a] *6*	(29/2+)	A			
4389.1[c] *5*	23/2−[‡]	A	7684.7[d] *7*	(33/2−)[‡]	A			

[†] From DCO data and band assignment, unless stated otherwise.
[‡] Parity from figure 1 of 2004St09; positive parity given in authors′ table I seem to be a misprint.
[#] From least-squares fit to Eγ′s.
[@] Band(A): 11/2+ band.
[&] Band(B): 9/2+ band.
[a] Band(C): 25/2+ band.
[b] Band(D): 9/2+ band.
[c] Band(E): 3/2− band.
[d] Band(F): 3/2− band.
[e] Band(G): (29/2−) band.

Adopted Levels, Gammas (continued)

γ(^{69}Se)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult.	α b	Comments
38.85	5/2⁻	39.4		0.0	1/2⁻	E2	25.1	α(K)=19.2 *3*; α(L)=5.14 *8*; α(M)=0.793 *12* α(N)=0.0521 *8* B(E2)(W.u.)=6.8 *11* Mult.: From α exp.
129.12	3/2⁻	90.3 *1*	29.8 *25*	38.85	5/2⁻			
		129.1 *2*	100 *5*	0.0	1/2⁻	(M1+E2)&	0.19 *14*	α(K)=0.16 *12*; α(L)=0.020 *16*; α(M)=0.0032 *24* α(N)=0.00025 *19*
289.91	3/2⁻	161.3 *4*	95 *7*	129.12	3/2⁻	(M1)#	0.0282	α(K)=0.0251 *4*; α(L)=0.00271 *5*; α(M)=0.000423 *7* α(N)=3.59×10⁻⁵ *6*
		250.7 *2*	100 *32*	38.85	5/2⁻	(M1+E2)&	0.019 *10*	α(K)=0.016 *9*; α(L)=0.0018 *10*; α(M)=0.00029 *15* α(N)=2.4×10⁻⁵ *13*
574.0	9/2⁺	534.8 *8*		38.85	5/2⁻	M2	0.00465	α(K)=0.00412 *6*; α(L)=0.000448 *7*; α(M)=7.00×10⁻⁵ *10* α(N)=5.95×10⁻⁶ *9* B(M2)(W.u.)=0.0438 *12* Mult.: from the K-conversion coefficient (1988Wi02). α_k=0.0042 *7*. E2 quoted in table I of 2004St09 is a misprint.
712.58	5/2⁻	422.6 *1*	24.2 *30*	289.91	3/2⁻	(M1+E2)&	0.0036 *11*	α(K)=0.0032 *10*; α(L)=0.00035 *11*; α(M)=5.4×10⁻⁵ *17* α(N)=4.5×10⁻⁶ *14*
		673.7 *3*	100 *12*	38.85	5/2⁻			
915.0	7/2⁻	786.4 *5*	50.3 *31*	129.12	3/2⁻	(E2)@	7.62×10⁻⁴	α(K)=0.000678 *10*; α(L)=7.16×10⁻⁵ *10*; α(M)=1.113×10⁻⁵ *16* α(N)=9.45×10⁻⁷ *14* I_γ: Other: Iγ/Iγ(876γ)=3.0 *5* (2001Je10).
		876.2 *4*	100 *22*	38.85	5/2⁻	(M1+E2)&	0.00054 *4*	α(K)=0.00048 *4*; α(L)=5.0×10⁻⁵ *4*; α(M)=7.8×10⁻⁶ *6* α(N)=6.7×10⁻⁷ *5*
1100.7	9/2⁻	1061.7 *4*	100 *36*	38.85	5/2⁻	(E2)@	3.66×10⁻⁴	α(K)=0.000326 *5*; α(L)=3.41×10⁻⁵ *5*; α(M)=5.30×10⁻⁶ *8* α(N)=4.52×10⁻⁷ *7*
1122.94	7/2⁻	833.2 *3*	3.6 *15*	289.91	3/2⁻			
		993.9 *2*	100 *6*	129.12	3/2⁻	(E2)@	4.27×10⁻⁴	α(K)=0.000380 *6*; α(L)=3.98×10⁻⁵ *6*; α(M)=6.19×10⁻⁶ *9* α(N)=5.27×10⁻⁷ *8*
		1084.1 *3*	92 *15*	38.85	5/2⁻	(M1+E2)&	3.36×10⁻⁴ *14*	α(K)=0.000299 *13*; α(L)=3.11×10⁻⁵ *14*; α(M)=4.85×10⁻⁶ *22* α(N)=4.14×10⁻⁷ *18*
1134.13	5/2⁻	844.0 *4*	100 *30*	289.91	3/2⁻	(M1+E2)&	0.00059 *5*	α(K)=0.00053 *5*; α(L)=5.5×10⁻⁵ *5*; α(M)=8.6×10⁻⁶ *8* α(N)=7.3×10⁻⁷ *6*
		1004.8 *2*	33 *9*	129.12	3/2⁻			
		1095.3 *5*	94 *12*	38.85	5/2⁻			
1194.0	9/2⁻	1155.4 *2*	100 *7*	38.85	5/2⁻	(E2)@	3.06×10⁻⁴	α(K)=0.000270 *4*; α(L)=2.81×10⁻⁵ *4*; α(M)=4.37×10⁻⁶ *7* α(N)=3.73×10⁻⁷ *6*; α(IPF)=3.43×10⁻⁶ *5*
1250.1	11/2⁺	675.9 *3*	100 *4*	574.0	9/2⁺	(M1+E2)&	0.00101 *14*	α(K)=0.00090 *12*; α(L)=9.5×10⁻⁵ *14*; α(M)=1.48×10⁻⁵ *21* α(N)=1.26×10⁻⁶ *17*

$^{69}_{34}Se_{35}$-3

Adopted Levels, Gammas (continued)

γ(^{69}Se) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.	α[b]	Comments
1361.0	9/2$^+$	110.7 *2*	22 *20*	1250.1	11/2$^+$	(M1+E2)[&]	0.32 *25*	α(K)=0.28 *22*; α(L)=0.04 *3*; α(M)=0.006 *5* α(N)=0.0004 *4*
		787.2 *3*	100 *27*	574.0	9/2$^+$			
1653.4	13/2$^+$	403.1 *6*	18.4 *1*	1250.1	11/2$^+$	(M1+E2)[&]	0.0042 *13*	α(K)=0.0037 *12*; α(L)=0.00040 *13*; α(M)=6.2×10^{-5} *21* α(N)=5.2×10^{-6} *17* I_γ: Other: Iγ/Iγ(1079γ)=0.240 *23* (2001Je10);0.273 *24*; 0.30 4 (1989Ar13.
		1079.1 *4*	100 *4*	574.0	9/2$^+$	Q(+O)[a]		
2023.2	13/2$^+$	662.3 *3*	1.5 *5*	1361.0	9/2$^+$			
		773.3 *2*	100	1250.1	11/2$^+$	(M1+E2)[&]	0.00073 *7*	α(K)=0.00065 *7*; α(L)=6.8×10^{-5} *7*; α(M)=1.06×10^{-5} *11* α(N)=9.0×10^{-7} *9*
2079.08	9/2$^-$	944.7 *2*	100 *9*	1134.13	5/2$^-$	(E2)[@]	4.82×10^{-4}	α(K)=0.000429 *6*; α(L)=4.50×10^{-5} *7*; α(M)=7.00×10^{-6} *10* α(N)=5.96×10^{-7} *9*
		956.3 *1*	26 *4*	1122.94	7/2$^-$			
		1163.8 *2*	21 *4*	915.0	7/2$^-$			
		1366.1 *4*	68 *17*	712.58	5/2$^-$			
2158.8	(9/2$^-$)	1244.3 *4*	100 *20*	915.0	7/2$^-$			
		1446.2 *1*	70 *40*	712.58	5/2$^-$			
2399.0	11/2$^-$	1205.2 *2*	29.0 *24*	1194.0	9/2$^-$	(M1+E2)[&]	2.76×10^{-4} *10*	α(K)=0.000239 *8*; α(L)=2.48×10^{-5} *9*; α(M)=3.86×10^{-6} *14* α(N)=3.30×10^{-7} *11*; α(IPF)=8.0×10^{-6} *12*
		1275.2 *3*	100 *10*	1122.94	7/2$^-$	(E2)[@]	2.66×10^{-4}	α(K)=0.000217 *3*; α(L)=2.26×10^{-5} *4*; α(M)=3.52×10^{-6} *5* α(N)=3.00×10^{-7} *5*; α(IPF)=2.24×10^{-5} *4*
		1484.0 *4*	42 *4*	915.0	7/2$^-$	(E2)[@]	2.58×10^{-4}	α(K)=0.0001588 *23*; α(L)=1.645×10^{-5} *23*; α(M)=2.56×10^{-6} *4* α(N)=2.19×10^{-7} *3*; α(IPF)=7.96×10^{-5} *12* I_γ: Other: Iγ/Iγ(1275γ)=0.18 *3* (2001Je10).
2434.1	11/2$^-$	1240.3 *4*	100 *24*	1194.0	9/2$^-$	(M1+E2)[&]	2.66×10^{-4} *10*	α(K)=0.000225 *7*; α(L)=2.33×10^{-5} *8*; α(M)=3.63×10^{-6} *12* α(N)=3.11×10^{-7} *10*; α(IPF)=1.33×10^{-5} *20*
		1311.1 *2*	42 *9*	1122.94	7/2$^-$	(E2)[@]	2.60×10^{-4}	α(K)=0.000205 *3*; α(L)=2.13×10^{-5} *3*; α(M)=3.31×10^{-6} *5* α(N)=2.83×10^{-7} *4*; α(IPF)=3.05×10^{-5} *5*
		1333.3 *4*	16 *7*	1100.7	9/2$^-$	(M1+E2)[&]	2.49×10^{-4} *10*	α(K)=0.000194 *5*; α(L)=2.01×10^{-5} *6*; α(M)=3.13×10^{-6} *9* α(N)=2.68×10^{-7} *7*; α(IPF)=3.2×10^{-5} *5*
		1519.3 *2*	42 *4*	915.0	7/2$^-$	(E2)[@]	2.63×10^{-4}	α(K)=0.0001514 *22*; α(L)=1.569×10^{-5} *22*; α(M)=2.44×10^{-6} *4* α(N)=2.09×10^{-7} *3*; α(IPF)=9.28×10^{-5} *13*
2492.4	15/2$^+$	469.2 *4*	5.6 *8*	2023.2	13/2$^+$			
		838.6 *2*	13 *4*	1653.4	13/2$^+$	(M1+E2)[&]	0.00060 *5*	α(K)=0.00053 *5*; α(L)=5.6×10^{-5} *5*; α(M)=8.7×10^{-6} *8* α(N)=7.4×10^{-7} *6*
		1242.2 *3*	100 *7*	1250.1	11/2$^+$	(E2)[@]	2.74×10^{-4}	α(K)=0.000230 *4*; α(L)=2.39×10^{-5} *4*; α(M)=3.72×10^{-6} *6* α(N)=3.18×10^{-7} *5*; α(IPF)=1.557×10^{-5} *23*
2580.3	13/2$^+$	557.3 *4*	66 *6*	2023.2	13/2$^+$	(M1+E2)[&]	0.0017 *4*	α(K)=0.0015 *3*; α(L)=0.00016 *4*; α(M)=2.5×10^{-5} *5* α(N)=2.1×10^{-6} *4*

$^{69}_{34}Se_{35}$-4

Adopted Levels, Gammas (continued)

γ(^{69}Se) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.	α[b]	Comments
2580.3	13/2$^+$	926.8 *4*	100 *4*	1653.4	13/2$^+$	(M1+E2)[&]	0.00048 *3*	α(K)=0.00042 *3*; α(L)=4.4×10^{-5} *3*; α(M)=6.9×10^{-6} *5* α(N)=5.9×10^{-7} *4*
		1219.2 *3*	70 *15*	1361.0	9/2$^+$			
2618.2	13/2$^-$	1424.3 *4*	100 *8*	1194.0	9/2$^-$	(E2)[@]	2.53×10^{-4}	α(K)=0.0001726 *25*; α(L)=1.79×10^{-5} *3*; α(M)=2.78×10^{-6} *4* α(N)=2.38×10^{-7} *4*; α(IPF)=5.98×10^{-5} *9*
2899.4	17/2$^+$	406.7 *5*	1.5 *2*	2492.4	15/2$^+$	(M1+E2)[&]	0.0041 *13*	α(K)=0.0036 *11*; α(L)=0.00039 *13*; α(M)=6.0×10^{-5} *20* α(N)=5.1×10^{-6} *16*
		876.2 *2*	2.5 *3*	2023.2	13/2$^+$			
		1246.3 *4*	100 *4*	1653.4	13/2$^+$	(E2)[@]	2.73×10^{-4}	α(K)=0.000228 *4*; α(L)=2.38×10^{-5} *4*; α(M)=3.70×10^{-6} *6* α(N)=3.16×10^{-7} *5*; α(IPF)=1.637×10^{-5} *25*
2935.2	13/2$^-$	856.1 *4*	100 *43*	2079.08	9/2$^-$	(E2)[@]	6.13×10^{-4}	α(K)=0.000546 *8*; α(L)=5.75×10^{-5} *8*; α(M)=8.94×10^{-6} *13* α(N)=7.60×10^{-7} *11*
2980.0	13/2$^-$	546.2 *5*	<1.4	2434.1	11/2$^-$			
		581.1 *3*	16 *4*	2399.0	11/2$^-$			
		821.1 *3*	32 *3*	2158.8	(9/2$^-$)			
		901.2 *5*	100 *9*	2079.08	9/2$^-$	(E2)[@]	5.40×10^{-4}	α(K)=0.000481 *7*; α(L)=5.05×10^{-5} *8*; α(M)=7.86×10^{-6} *11* α(N)=6.69×10^{-7} *10*
		1729.8 *2*	97 *9*	1250.1	11/2$^+$			
3206.2	15/2$^-$	772.3 *4*	40 *3*	2434.1	11/2$^-$	(E2)[@]	7.99×10^{-4}	α(K)=0.000711 *10*; α(L)=7.51×10^{-5} *11*; α(M)=1.168×10^{-5} *17* α(N)=9.91×10^{-7} *14*
		807.0 *3*	87 *8*	2399.0	11/2$^-$	(E2)[@]	7.13×10^{-4}	α(K)=0.000634 *9*; α(L)=6.69×10^{-5} *10*; α(M)=1.041×10^{-5} *15* α(N)=8.84×10^{-7} *13* I$_\gamma$: Other: Iγ/Iγ(772γ)=0.71 *16* (1989Ar13).
		1183.2 *5*	35 *2*	2023.2	13/2$^+$	(E1)[‡]	1.70×10^{-4}	α(K)=0.0001185 *17*; α(L)=1.221×10^{-5} *18*; α(M)=1.90×10^{-6} *3* α(N)=1.623×10^{-7} *23*; α(IPF)=3.70×10^{-5} *6*
		1553.1 *3*	100 *10*	1653.4	13/2$^+$	(E1)[‡]	3.76×10^{-4}	α(K)=7.44×10^{-5} *11*; α(L)=7.64×10^{-6} *11*; α(M)=1.187×10^{-6} *17* α(N)=1.017×10^{-7} *15*; α(IPF)=0.000293 *5* I$_\gamma$: Other: Iγ/Iγ(772γ)=0.28 *11* (1989Ar13).
3226.4	17/2$^+$	734.2 *21*	60.3 *6*	2492.4	15/2$^+$	(M1+E2)[&]	0.00082 *9*	α(K)=0.00073 *8*; α(L)=7.7×10^{-5} *9*; α(M)=1.20×10^{-5} *14* α(N)=1.02×10^{-6} *12*
		1203.3 *2*	100 *6*	2023.2	13/2$^+$	(E2)[@]	2.85×10^{-4}	α(K)=0.000246 *4*; α(L)=2.57×10^{-5} *4*; α(M)=3.99×10^{-6} *6* α(N)=3.41×10^{-7} *5*; α(IPF)=8.89×10^{-6} *13*
		1573.5 *4*	38 *3*	1653.4	13/2$^+$			
3497.9	17/2$^+$	598.3 *5*	10 *5*	2899.4	17/2$^+$			
		917.3 *4*	35 *8*	2580.3	13/2$^+$			
		1005.4 *2*	4 *3*	2492.4	15/2$^+$			
		1474.5 *4*	100 *15*	2023.2	13/2$^+$	(E2)[@]	2.57×10^{-4}	α(K)=0.0001608 *23*; α(L)=1.667×10^{-5} *24*; α(M)=2.59×10^{-6} *4* α(N)=2.22×10^{-7} *4*; α(IPF)=7.62×10^{-5} *11*
3576.4	17/2$^+$	677.2 *10*	91 *3*	2899.4	17/2$^+$	(M1+E2)[&]	0.00101 *14*	α(K)=0.00090 *12*; α(L)=9.4×10^{-5} *13*; α(M)=1.47×10^{-5} *21* α(N)=1.25×10^{-6} *17*

$^{69}_{34}Se_{35}$-5

Adopted Levels, Gammas (continued)

γ(^{69}Se) (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult.	δ †	α [b]	Comments
3576.4	17/2$^+$	996.3 *4*	100 *26*	2580.3	13/2$^+$				
		1083.8 *1*	89 *20*	2492.4	15/2$^+$	(M1+E2) [&]		3.36×10^{-4} *14*	α(K)=0.000299 *13*; α(L)=3.12×10^{-5} *15*; α(M)=4.85×10^{-6} *22* α(N)=4.14×10^{-7} *18*
		1553.0 *3*	60 *6*	2023.2	13/2$^+$	(E2) [@]		2.69×10^{-4}	α(K)=0.0001450 *21*; α(L)=1.501×10^{-5} *21*; α(M)=2.33×10^{-6} *4* α(N)=2.00×10^{-7} *3*; α(IPF)=0.0001062 *15*
		1923.2 *4*	91 *11*	1653.4	13/2$^+$	(E2) [@]		3.80×10^{-4}	α(K)=9.62×10^{-5} *14*; α(L)=9.92×10^{-6} *14*; α(M)=1.543×10^{-6} *22* α(N)=1.322×10^{-7} *19*; α(IPF)=0.000273 *4*
3618.1	(17/2$^-$)	412.0 *2*	100 *10*	3206.2	15/2$^-$	(M1+E2) [&]		0.0039 *12*	α(K)=0.0035 *11*; α(L)=0.00037 *12*; α(M)=5.8×10^{-5} *19* α(N)=4.9×10^{-6} *15*
		638.0 *2*	45 *5*	2980.0	13/2$^-$	(E2) [@]		1.34×10^{-3}	α(K)=0.001194 *17*; α(L)=0.0001271 *18*; α(M)=1.98×10^{-5} *3* α(N)=1.670×10^{-6} *24*
		1000.1 *4*	51 *7*	2618.2	13/2$^-$	(E2) [@]		4.20×10^{-4}	α(K)=0.000375 *6*; α(L)=3.92×10^{-5} *6*; α(M)=6.10×10^{-6} *9* α(N)=5.20×10^{-7} *8*
3674.3	19/2$^-$	56.2 *3*	≈100	3618.1	(17/2$^-$)				
		97.3 *3*	13.3 *11*	3576.4	17/2$^+$	(E1)		0.0860 *15*	α(K)=0.0765 *13*; α(L)=0.00810 *14*; α(M)=0.001251 *21* α(N)=0.0001036 *18*
		176.2 *2*	7.8 *6*	3497.9	17/2$^+$	(E1)		0.01471	α(K)=0.01310 *19*; α(L)=0.001375 *20*; α(M)=0.000213 *3* α(N)=1.79×10^{-5} *3*
		448.2 *2*	78 *7*	3226.4	17/2$^+$	D(+Q) [a]	+0.32 *5*		
		468.0 *5*	63 *5*	3206.2	15/2$^-$	Q(+O) [a]	−0.16 *6*		
3723.3	17/2$^-$	517.1 *5*	100 *14*	3206.2	15/2$^-$	(M1+E2) [&]		0.0020 *5*	α(K)=0.0018 *4*; α(L)=0.00019 *5*; α(M)=3.0×10^{-5} *7* α(N)=2.6×10^{-6} *6*
		743.3 *2*	43 *8*	2980.0	13/2$^-$				
4005.5	(19/2$^+$)	1106.3 *4*	<62.5	2899.4	17/2$^+$				
		1512.6 *5*	100 *31*	2492.4	15/2$^+$				
4255.1	21/2$^+$	1355.7 *3*	100 *5*	2899.4	17/2$^+$	(E2) [@]		2.56×10^{-4}	α(K)=0.000191 *3*; α(L)=1.98×10^{-5} *3*; α(M)=3.09×10^{-6} *5* α(N)=2.64×10^{-7} *4*; α(IPF)=4.12×10^{-5} *6*
4272.3	21/2$^-$	549.4 *4*	5.8 *10*	3723.3	17/2$^-$				
		598.2 *5*	100 *7*	3674.3	19/2$^-$	(M1+E2) [&]	+0.05 *3*	1.16×10^{-3}	α(K)=0.001030 *15*; α(L)=0.0001077 *16*; α(M)=1.678×10^{-5} *24* α(N)=1.435×10^{-6} *21*
4389.1	23/2$^-$	116.4 *3*	10.5 *12*	4272.3	21/2$^-$	(M1+E2) [&]		0.27 *21*	α(K)=0.24 *18*; α(L)=0.030 *24*; α(M)=0.005 *4* α(N)=0.0004 *3*

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Adopted Levels, Gammas (continued)

γ(^{69}Se) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.	δ[†]	α[b]	Comments
4389.1	23/2$^-$	714.2 *5*	100 *10*	3674.3	19/2$^-$	Q(+O)[a]	−0.07 *+6−7*		
4436.4	23/2$^-$	762.1 *3*	100 *9*	3674.3	19/2$^-$	Q[a]			
5257.3	(25/2$^+$)	1002.2 *4*	100 *3*	4255.1	21/2$^+$				
5387.2	(25/2$^-$)	996.8 *4*	9.3 *12*	4389.1	23/2$^-$				
		1115.1 *2*	100 *6*	4272.3	21/2$^-$				
5437.5	25/2$^+$	1182.3 *3*	100 *6*	4255.1	21/2$^+$	Q(+O)[a]	0.00 *1*		
5830.2	25/2$^+$	1575.1 *4*	100 *8*	4255.1	21/2$^+$	(E2)[@]		2.73×10^{-4}	α(K)=0.0001410 *20*; α(L)=1.459×10^{-5} *21*; α(M)=2.27×10^{-6} *4* α(N)=1.94×10^{-7} *3*; α(IPF)=0.0001154 *17*
6149.0	(27/2$^-$)	761.4 *4*	30 *7*	5387.2	(25/2$^-$)				
		1760.0 *2*	100 *38*	4389.1	23/2$^-$				
6467.3	(29/2$^-$)	1080.1 *3*	100 *44*	5387.2	(25/2$^-$)				
6476.7	(29/2$^+$)	1219.3 *2*	100 *15*	5257.3	(25/2$^+$)				
6567.7	29/2$^+$	1130.2 *3*	100 *6*	5437.5	25/2$^+$	Q(+O)[a]	+0.17 *40*		
6888.5	(29/2$^-$)	1501.23 *4*	100 *32*	5387.2	(25/2$^-$)	(Q)[a]			
7103.7	(29/2$^+$)	1273.5 *3*	100 *6*	5830.2	25/2$^+$				
		1666.2 *3*	27.4 *17*	5437.5	25/2$^+$				
7684.7	(33/2$^-$)	1217.4 *4*	100 *32*	6467.3	(29/2$^-$)				
8034.5	(33/2$^+$)	1466.8 *5*	100 *7*	6567.7	29/2$^+$	Q			
8044.8	(33/2$^-$)	1156.3 *4*	100 *6*	6888.5	(29/2$^-$)				
8059.2	(31/2$^-$)	1910.2 *4*	100 *17*	6149.0	(27/2$^-$)				
8493.5	(33/2$^+$)	1389.8 *4*	100 *31*	7103.7	(29/2$^+$)				
9008.4	(37/2$^-$)	1323.7 *3*	100 *13*	7684.7	(33/2$^-$)				
9713.7	(37/2$^+$)	1679.2 *4*	100 *12*	8034.5	(33/2$^+$)				
9956.7	(37/2$^-$)	1911.9 *3*	100 *21*	8044.8	(33/2$^-$)				
10414.8	(41/2$^-$)	1406.3 *5*	100 *7*	9008.4	(37/2$^-$)				
11382.1	(41/2$^+$)	1668.4 *7*	100 *4*	9713.7	(37/2$^+$)				
13362.7	(45/2$^+$)	1980.5 *9*	100 *35*	11382.1	(41/2$^+$)				

[†] From ^{40}Ca(^{32}S,2pnγ). Iγ from 105 MeV.
[‡] D from γ(θ)(DCO) in ^{40}Ca(^{32}S,2pnγ) (2004St09); Δπ=yes from level scheme.
[#] D from γ(θ)(DCO) in ^{40}Ca(^{32}S,2pnγ) (2004St09); Δπ=no from level scheme.
[@] Q from γ(θ)(DCO) in ^{40}Ca(^{32}S,2pnγ) (2004St09); Δπ=no from level scheme.
[&] Q from γ(θ)(DCO) in ^{40}Ca(^{32}S,2pnγ) (2004St09); Δπ=no from level scheme.
[a] From DCO ratio in ^{40}Ca(^{32}S,2pnγ).
[b] Additional information 1.

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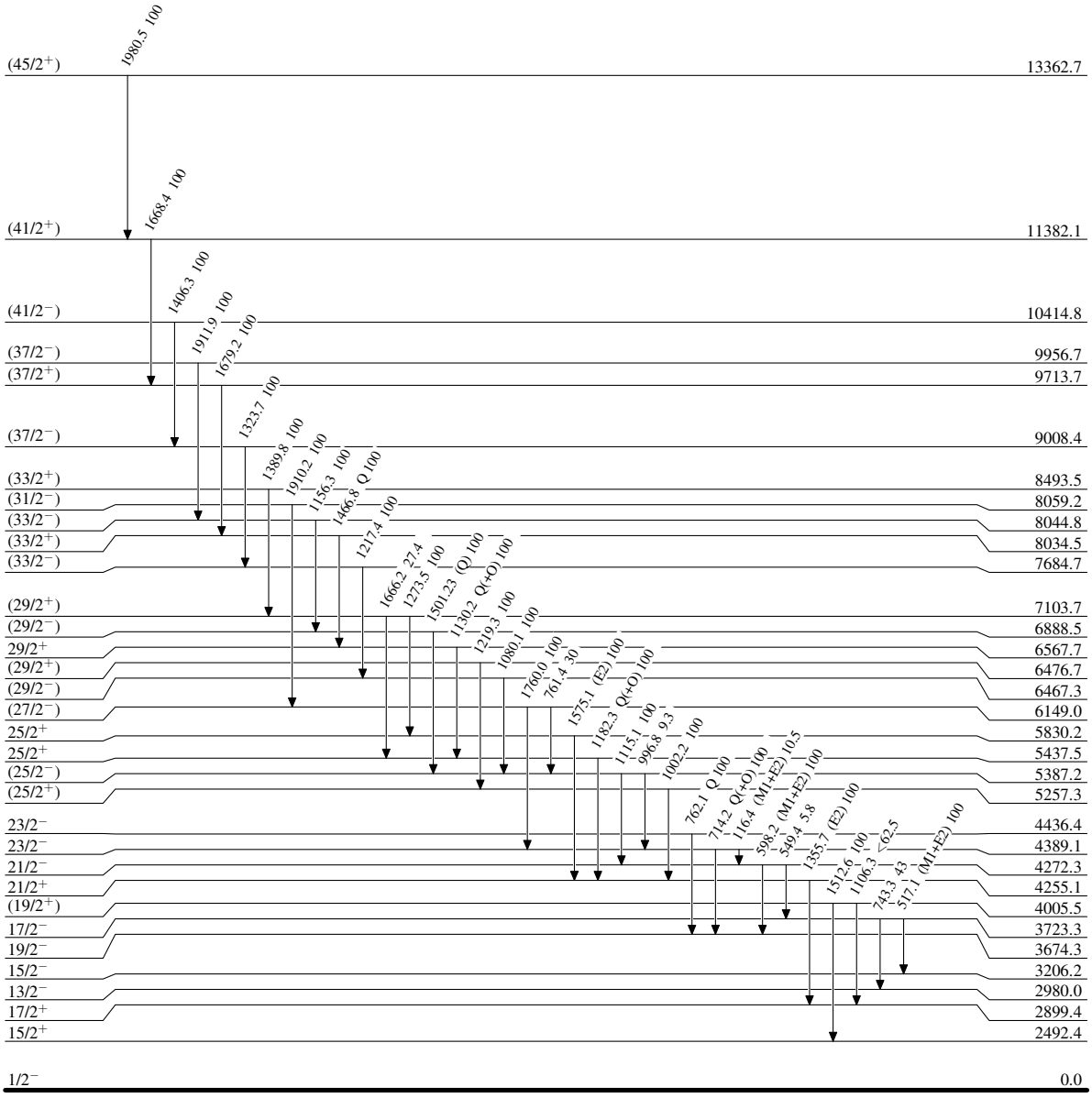
Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



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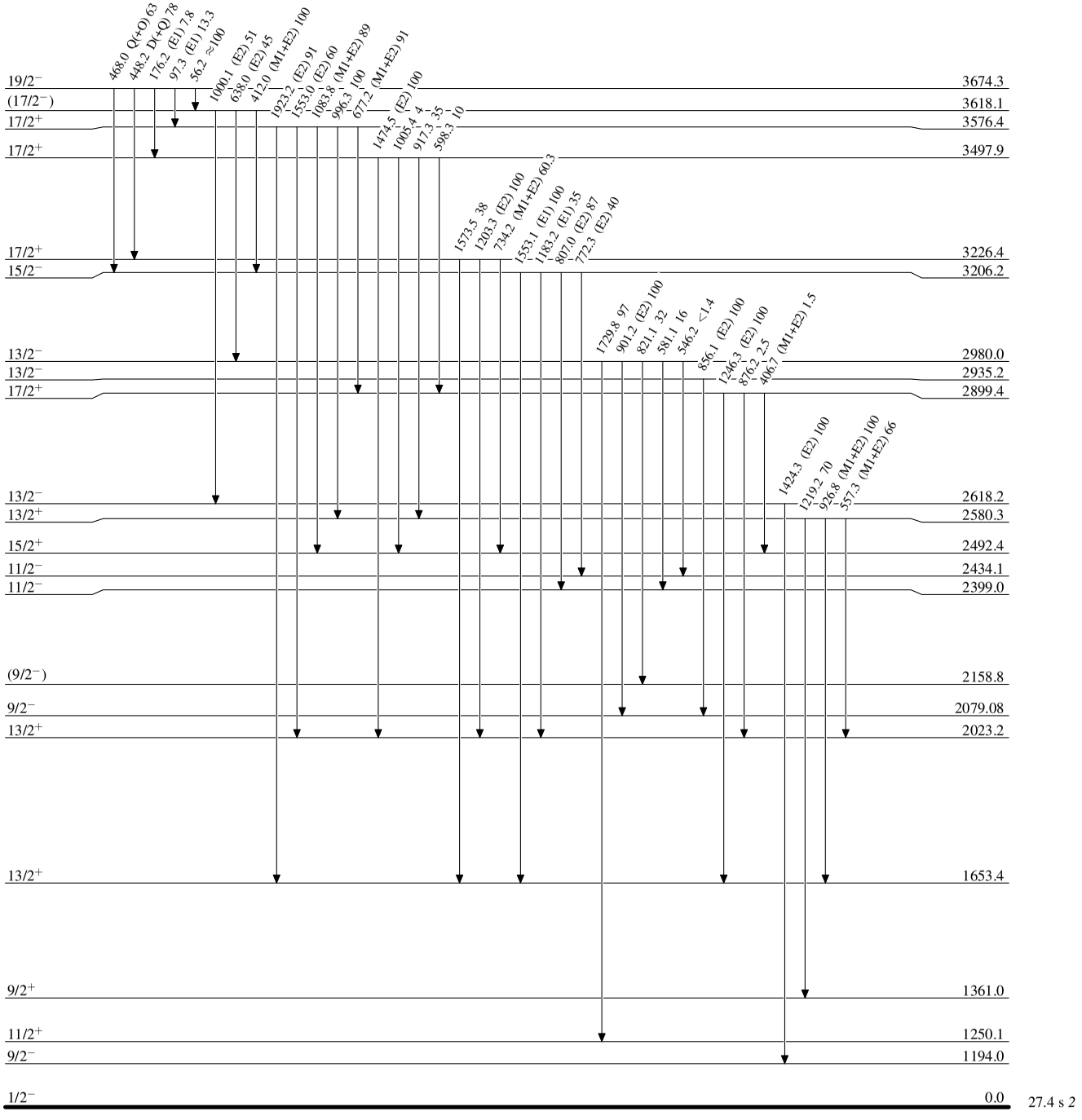
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



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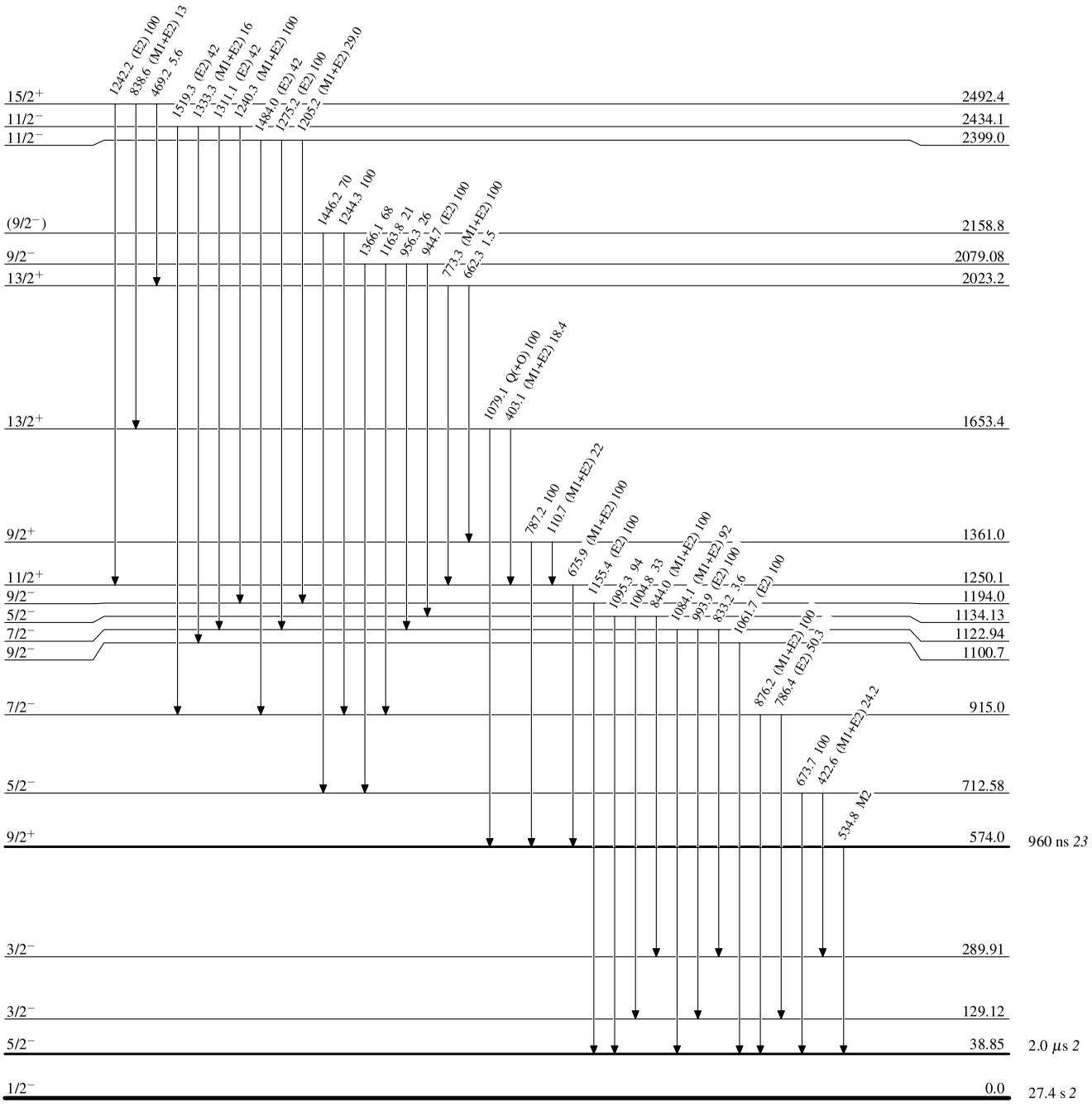
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



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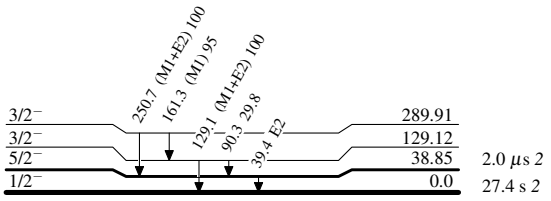
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



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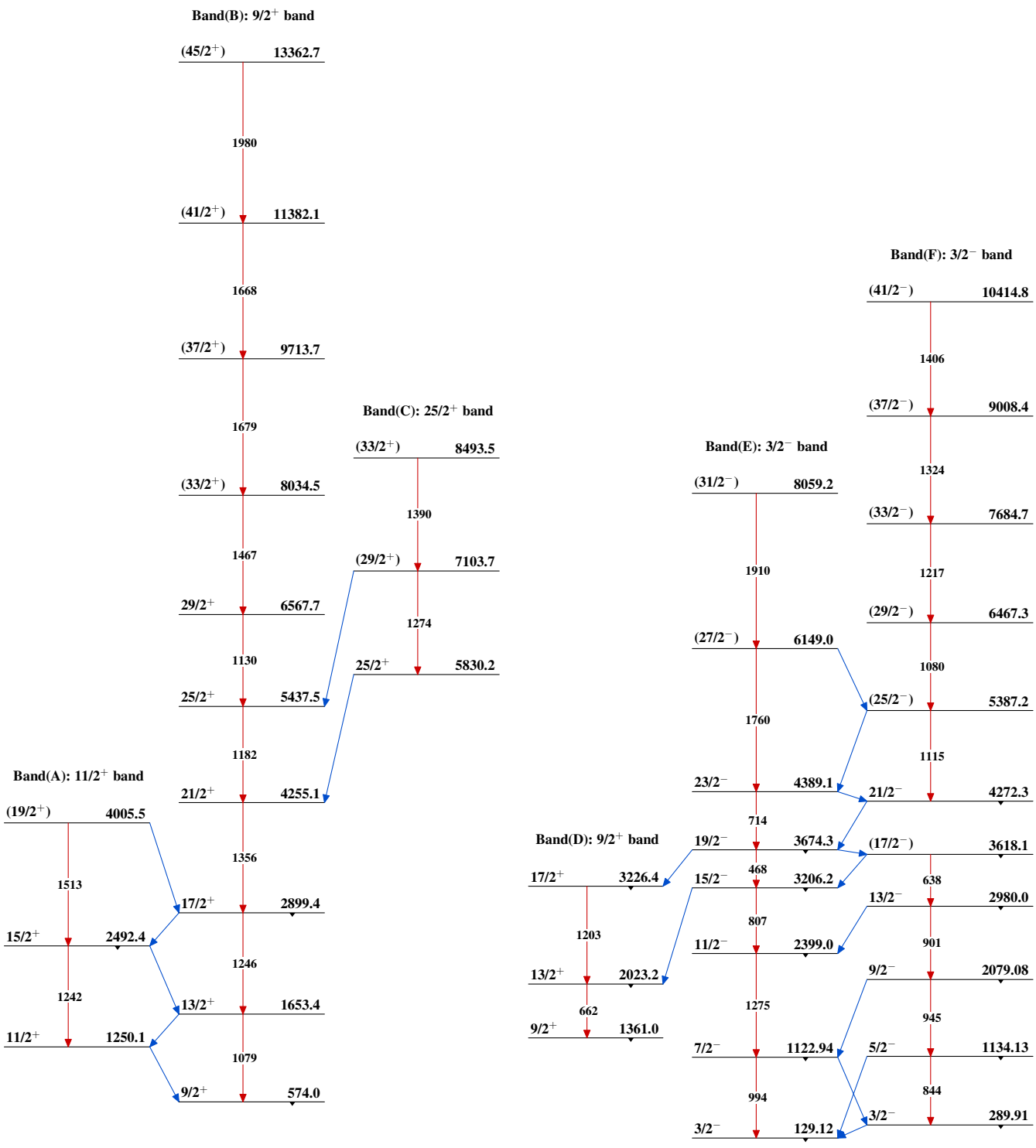
Adopted Levels, Gammas



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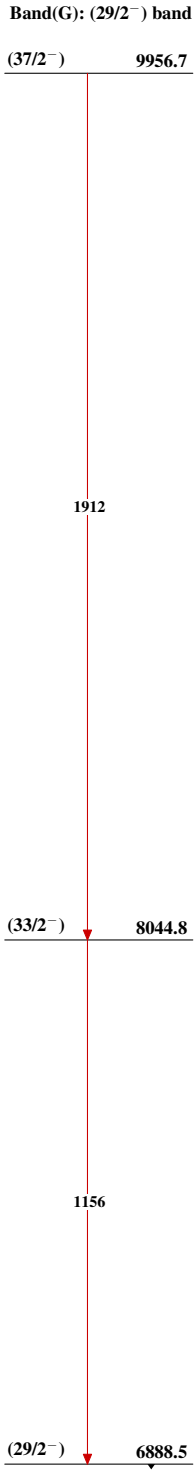
Adopted Levels, Gammas (continued)



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