Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, Ameenah R. Farhan	NDS 107,1923 (2006)	30-Apr-2006

Q(β^-)=−6925 *6*; S(n)=12057 *8*; S(p)=8549 *4*; Q(α)=−4076.3 *9* 2012Wa38
Note: Current evaluation has used the following Q record −6907 15 *12066* 11 *8545* 4 −4074.5 *19* 2003Au03.
Mass measurements: 1985El01, 1977De20, 1963Ri07.
Additional information 1.
Nuclear structure calculations (levels): 2005Da31.

^{74}Se Levels

Cross Reference (XREF) Flags

A	^{74}As β^- decay (17.77 d)	F	^{65}Cu(^{12}C,p2nγ)	K	Coulomb excitation
B	^{74}Br ε decay (25.4 min)	G	^{70}Ge(α,γ)	L	^{75}As(p,2nγ)
C	^{74}Br ε decay (46 min)	H	^{72}Ge(^{3}He,n)	M	^{76}Se(p,t)
D	^{58}Ni(^{19}F,3pγ)	I	^{72}Ge(^{16}O,^{14}C)		
E	^{64}Ni(^{12}C,2nγ),^{60}Ni(^{16}O,2pγ)	J	^{74}Se(p,p′)		

E(level)†‡	J$^\pi$@	T$_{1/2}$#	XREF	Comments
0.0[f]	0$^+$	stable	ABCDEFGHIJKLM	%(ε)(β^+)=?, %(ε)(ε)=? (see 1993Hy02 for experimental study of double β decay). <r^2>$^{1/2}$=4.070 fm *20* (2004An14). J$^\pi$: no hyperfine structure observed in microwave spectroscopy (1950Ge05, 1949St07), consistent with J=0.
634.74[f] *6*	2$^+$	7.08 ps *9*	ABCDEFG IJKLM	μ=0.86 *5* (1998Sp03) Q=−0.36 *7* (1989Ra17,1978Le22) μ: projectile excitation and transient-field technique (1998Sp03). See also 2005St24 compilation. Q: from Coul. ex. (1978Le22). See also 2005St24 compilation. β_2=0.337 (from (^{16}O,^{14}C)), 0.26 *4* (from (pol p,p′)). βR=1.38 *14* (from (p,p′)). J$^\pi$: L(pol p,p′)=L(p,t)=2. T$_{1/2}$: from B(E2)=0.388 *5* in Coul. ex. other: 7.4 ps 6 (DSA method in in-beam γ). 2001Ra27 adopted 7.08 ps *15*.
853.83 *9*	0$^+$	0.75 ns *5*	BC EFG JKLM	J$^\pi$: (219γ)(635γ)(θ) in ^{74}Br ε (46 min). L(p,p′)=L(p,t)=0. T$_{1/2}$: from B(E2) in Coul. ex. others: 0.83 ns *14* ($\gamma\gamma$(t) in ^{74}Br ε (25.4 min)), 0.52 ns *6* (centroid-shift in (p,p′)).
1269.01[h] *6*	2$^+$	4.0 ps *11*	ABCDEFG JKLM	μ=1.10 *18* (1998Sp03) XREF: M(1265). μ: projectile excitation and transient-field technique (1998Sp03). See also 2005St24 compilation. βR=0.23 *3* (from (p,p′)). J$^\pi$: L(p,p′)=L(p,t)=2. T$_{1/2}$: other: 3.3 ps *15* (Coul. ex.).
1363.17[f] *7*	4$^+$	1.86 ps *8*	CDEFG JKLM	μ=2.0 *4* (1998Sp03) μ: projectile excitation and transient-field technique (1998Sp03). See also 2005St24 compilation. β_4=0.019 *8* (from (pol p, p′)). βR=0.09 *1* (from (p,p′)). J$^\pi$: L(p,t)=L(pol p,p′)=4. T$_{1/2}$: from B(E2) in Coul. ex. other: 2.73 ps *20* (from 1979Ki17 and 1989Ad01, see ^{58}Ni(^{19}F,3pγ) dataset).
1657.47 *10*	(0$^+$)		B E G	J$^\pi$: γ to 2$^+$. No γ's to 0$^+$ and 4$^+$.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{74}Se Levels (continued)

E(level)[†‡]	Jπ[@]	$T_{1/2}$[#]	XREF	Comments
1838.65 *9*	(2$^+$)		BC EFG LM	Jπ: γ to 0$^+$.
1884.24[g] *8*	3$^+$[b]	1.5 ps *6*	BCDEF L	
2107.96[h] *8*	4$^+$[b]	1.9 ps *7*	CDEF LM	XREF: M(2101).
2146 *25*			M	
2231.45[f] *10*	6$^+$[b]	0.86 ps *17*	CDEF L	
2314.05 *9*	(2$^+$)		BC E	Jπ: γ to 0$^+$.
2349.66[j] *10*	3$^-$	23 ps *3*	CDEF IJKLM	XREF: M(2338). β_3=0.140 (from (^{16}O,^{14}C)). βR=0.77 *8* (from (p,p′)). B(E3)(Coul. ex.)=0.021 *5* (2002Ki06,evaluation). Jπ: L(p,t)=(pol p,p′)=3.
2378.59 *11*	(1,2$^+$)[&]		B	
2477.7 *6*	(2)		F	Jπ: ΔJ=0 γ to 2$^+$.
2482 *25*	(2$^+$)		M	Jπ: L(p,t)=(2).
2563.43 *9*	(2$^+$,3,4$^+$)[a]		C E m	
2661.98[g] *12*	5$^+$[b]	1.7 ps *6*	CDEF Lm	
2718 *10*	0$^+$		M	Jπ: L(p,t)=0.
2818.32 *19*	(2$^+$,3,4$^+$)[a]		C E	
2831.56[k] *12*	4$^-$	10 ps *3*	CDEF	Jπ: ΔJ=0, (E1) γ to 4$^+$; band assignment.
2842.63[j] *10*	5$^-$[b]	7.3 ps *8*	DEF L	
2843.72 *24*	3$^-$		J M	Jπ: L(p,p′)=3; L(p,t)=(3).
2903 *2*	4$^+$		J	Jπ: L(p,p′)=4.
2918 *25*	(0$^+$)		M	Jπ: L(p,t)=(0).
2918.43 *14*	(2$^+$,3,4$^+$)[a]		C E	
2986.65[h] *13*	6$^+$[c]		DEF	
3002 *4*			J	
3037.3 *4*	(2$^+$)		C	Jπ: γ to 0$^+$.
3078.01 *14*	(4)$^+$		C E J	XREF: J(3080). Jπ: γ′s to 2$^+$ and 4$^+$. L(p,p′)=4 in (p,p′) for a group at 3080 *4*.
3112.30 *23*	(2$^+$,3,4$^+$)		C E M	XREF: M(3114). Jπ: γ′s to 2$^+$; log *ft*=7.64 from 4$^{(+)}$.
3198.41[f] *14*	8$^+$[b]	0.38 ps *4*	DEF L	
3200.17 *17*	(4)		C F	Jπ: ΔJ=(0) γ to 4$^+$.
3250.11 *12*	(1,2$^+$)[&]		BC	
3250.9 *4*	(2 to 5)		E m	L=4 in (p,t) corresponds to 3251 or 3253 level. Jπ: γ to (3$^+$); absence of γ′s to 0$^+$ and 2$^+$ disfavors J^π<4.
3253.3 *3*	(2 to 6)[e]		C E J m	Jπ: if L(p,p′)=4 corresponds to this level, then J^π=(4$^+$).
3306.0 *3*	(2 to 6)[e]		C	
3379.38 *25*	(2$^+$)		C M	Jπ: L(p,t)=(2).
3382.63[k] *14*	6$^-$[b]	4.9 ps *17*	DEF	
3515.95[j] *15*	7$^-$[b]	3.5 ps *3*	DEF	
3525.04[g] *21*	7$^+$[b]	0.72 ps *24*	DEF	
3529 *4*	5$^-$		J	Jπ: L(p,p′)=5.
3538 *25*	(6$^+$)		M	Jπ: L(p,t)=(6).
3539.72 *11*	(1,2$^+$)[&]		B	
3580.30 *25*	(2$^+$)[a]		C J	Jπ: L(p,p′)=(2).
3602 *4*	5$^-$		J	Jπ: L(p,p′)=5.
3624.46 *16*	(2$^+$)		B M	XREF: M(2615). Jπ: γ to 0$^+$; L(p,t)=(2).
3674.85 *21*	(2$^+$,3,4$^+$)[a]		C E	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{74}Se Levels (continued)

E(level)[†‡]	Jπ[@]	$T_{1/2}$[#]	XREF	Comments
3733.64 *16*	(1,2$^+$)[&]		B M	XREF: M(3719).
3749 *4*	(4$^+$)		J	Jπ: L(p,p′)=4.
3771.91 *16*	(4$^+$)[a]		C J m	XREF: J(3780). Jπ: L(p,p′)=4.
3781.7 *3*			F	
3788.27 *11*	(1,2$^+$)[&]		B m	
3841.69[i] *19*	7$^-$		EF M	XREF: M(3858). Jπ: γ to 7$^-$; L(p,t)=(7); band assignment.
3845 *4*	3$^-$		J	Jπ: L(p,p′)=3.
3928.62 *24*	(2 to 6)		C J	XREF: J(3920). Jπ: log *ft*=7.16 from 4$^{(+)}$; γ to (4)$^+$.
3929.2[l] *4*	(8$^+$)[d]		F	
3930.56 *18*	(0$^+$,1)		BC	Jπ: log *ft*=5.9 from (0$^-$); γ to 2$^+$.
3972.90 *17*	(2$^+$)		B m	Jπ: γ to 0$^+$; if L(p,t)=(2) corresponds to this level.
3980 *4*	(6$^+$)		J	Jπ: L(p,p′)=(6).
4005 *4*	2$^+$		J m	Jπ: L(p,p′)=2.
4044.37 *25*	(1,2$^+$)[&]		B	
4089.9 *4*			F	
4094.44 *20*	(2$^+$)		B M	XREF: M(4109). Jπ: γ to 0$^+$; L(p,t)=(2).
4118 *4*			J	
4198.21[k] *20*	8$^-$[b]	1.4 ps *3*	DEF	
4224 *4*			J	
4256.29[f] *17*	10$^+$[b]	0.21 ps *4*	DEF	
4266.7 *4*	(1,2$^+$)[&]		B	
4279 *4*	4$^+$		J	Jπ: L(p,p′)=4.
4309.17 *18*	(3,4$^+$)		C m	XREF: I(4330). Jπ: γ to 2$^+$; log *ft*=6.6 from 4$^{(+)}$.
4342.5 *4*	(2$^+$)		B J m	XREF: J(4337). Jπ: γ to 0$^+$; L(p,p′)=(2).
4362 *4*			J	
4379.9 *3*	(1,2$^+$)[&]		B	
4403.20[j] *21*	9$^-$[b]	0.58 ps *6*	DEF	
4441.67 *21*	(3,4$^+$)		C E	Jπ: γ to 2$^+$; log *ft*=6.1 from 4$^{(+)}$.
4449.64[g] *23*	9$^+$[b]	0.57 ps *9*	DEF	
4487.2 *3*	(1,2$^+$)[&]		B	
4496.29 *17*	(3,4$^+$)		C E	Jπ: γ to 2$^+$; log *ft*=5.98 from 4$^{(+)}$.
4516.24 *18*	(3,4$^+$)		C	Jπ: γ to 2$^+$; log *ft*=6.03 from 4$^{(+)}$.
4536.49 *24*	(1,2$^+$)[&]		B	
4544.5 *3*			F	
4579.94 *25*	(3,4,5)		C m	Jπ: log *ft*=6.26 from 4$^{(+)}$.
4586.15 *20*	(3,4$^+$)		C m	Jπ: γ to 2$^+$; log *ft*=5.99 from 4$^{(+)}$.
4592.08 *16*	(4$^+$)		C J m	XREF: J(4595). Jπ: γ to 2$^+$; log *ft*=5.65 from 4$^{(+)}$; L(p,p′)=4.
4661.91 *19*	(3,4$^+$)		C M	XREF: M(4628). Jπ: γ to 2$^+$; log *ft*=5.83 from 4$^{(+)}$.
4677 *4*	3$^-$		J	Jπ: L(p,p′)=3.
4699.5 *3*	(3,4$^+$)		C	Jπ: γ to 2$^+$; log *ft*=6.16 from 4$^{(+)}$.
4757.2 *4*	(3,4$^+$)		C J m	XREF: J(4758). Jπ: γ to 2$^+$; log *ft*=6.43 from 4$^{(+)}$; if L(p,p′)=(3) corresponds to this level, then J^π=(3$^-$).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{74}Se Levels (continued)

E(level)[†‡]	Jπ[@]	$T_{1/2}$[#]	XREF	Comments
4794.45 *21*	(3,4,5)		C m	Jπ: log *ft*=5.98 from $4^{(+)}$; if L(p,p′)=(3) corresponds to this level, then $J^\pi=(3^-)$.
4848.7[i] *3*	(9^-)	0.40 ps *+13−11*	F	Jπ: γ′s to 7^- and 9^-; band assignment.
4877.49[l] *24*	(10^+)		F	Jπ: γ′s to 8^+ and 10^+; band assignment.
5060.2 *4*			F	
5146 *4*	3^-		J	Jπ: L(p,p′)=3.
5209.2[k] *4*	10^-[b]	0.9 ps *3*	DEF	
5426 *4*	3^-		J	Jπ: L(p,p′)=3.
5443.1[f] *4*	12^+[b]	0.12 ps *3*	DEF	
5491.2[j] *4*	11^-[b]	0.23 ps *2*	DEF	
5492.9[g] *4*	11^+[b]		D F	
5928.5[i] *4*	(11^-)[d]	0.26 ps *7*	F	
6014.8[l] *4*	(12^+)		F	Jπ: γ′s to 10^+ and 12^+; band assignment.
6253.6[k] *5*	12^-[b]	<0.74 ps	D F	
6685.9[g] *5*	(13^+)		D F	Jπ: γ′s to 11^+ and 12^+; band assignment.
6686.9[j] *5*	13^-[b]	0.22 ps *10*	DEF	
6735.6[f] *5*	14^+[b]	0.135 ps *14*	DEF	
7063.7[i] *8*	(13^-)[d]	<0.76 ps	F	
7206.9[l] *8*	(14^+)[c]		F	
7451.6[k] *7*	14^-[c]		D F	
7844.8 *7*	15^-[c]		F	E(level): this level is also related to the 3^- band, could Be due to band crossing.
7944.0[g] *6*	(15^+)[c]		F	
7978.7[j] *6*	15^-[c]		D F	
8116.7[f] *7*	16^+[b]	0.075 ps *15*	D F	
8537.3[l] *8*	(16^+)[c]		F	
8815.6[k] *8*	16^-[c]		F	
9294.4[g] *9*	(17^+)[d]		F	
9300.3[j] *7*	17^-[c]		F	
9680.5[f] *9*	18^+[b]	0.076 ps *21*	D F	
10128.8[l] *11*	(18^+)[c]		F	
10370.5[k] *11*	(18^-)[d]		F	
10826.4[g] *13*	(19^+)[d]		F	
10926.3[j] *12*	(19^-)[d]		F	
11360.2[f] *12*	20^+[c]		D F	
12104.5[k] *15*	(20^-)[d]		F	
13202.3[f] *15*	22^+[c]		F	

[†] Least squares fitted values from adopted γ-ray energies for levels populated in γ-ray studies. For levels populated in transfer reactions only, weighted average of available values taken.
[‡] In (^{3}He,n), FWHM=500 keV, peaks are reported at 740 with L=(0), and at 2030(or 2330) and 3050 with L=(2), and at 3850.
[#] From DSA and recoil-Doppler shift method in in-beam γ, unless stated otherwise.
[@] Parity not given when only a range of spin values given.
[&] γ to 0^+. log *ft* value in ^{74}Br ε decay (25.4 min) will restrict J^π to 1 if J^π ^{74}Br g.s.=0^-.
[a] γ′s to 2^+ and 4^+.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{74}Se Levels (continued)

[b] From $\gamma(\theta)$, $\gamma\gamma(\theta)$, $T_{1/2}$ and band assignment in in-beam γ-ray studies.
[c] From $\gamma(\theta)$, $\gamma\gamma(\theta)$ and band assignment in in-beam γ-ray studies.
[d] From band assignment in in-beam γ-ray studies.
[e] γ to 4^+. Absence of γ's to 0^+ and 2^+ disfavors J<4.
[f] Band(A): g.s. band.
[g] Band(B): 3^+ band.
[h] Band(C): 2^+ band.
[i] Band(D): 7^- band.
[j] Band(E): 3^- band.
[k] Band(F): 4^- band.
[l] Band(G): (8^+) band. Probably related to excitation of $g_{9/2}$ neutron (1998Do09).

Adopted Levels, Gammas (continued)

γ(^{74}Se)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ	α[@]	$I_{(\gamma+ce)}$	Comments
634.74	2^+	634.78 *10*	100	0.0	0^+	E2				B(E2)(W.u.)=42.0 *6*
853.83	0^+	219.06 *10*	100 *4*	634.74	2^+	E2		0.047		B(E2)(W.u.)=77 *7*
		853.8		0.0	0^+	E0			0.82 *9*	q^2_K(E0/E2)=0.203 *14*, X(E0/E2)=0.011 *5*, ρ^2(E0)=0.0231 *22* (2005Ki02, evaluation).
1269.01	2^+	634.26 *10*	100 *8*	634.74	2^+	E2+M1	−5.6 *16*			B(M1)(W.u.)=0.0004 *3*; B(E2)(W.u.)=48 *14* δ: from γγ(θ) in ^{74}Br ε (46 min). Other: −2.6 *2* from γγ(θ) in ^{74}As β^-.
		1269.02 *7*	52 *3*	0.0	0^+	E2				B(E2)(W.u.)=0.80 *23*
1363.17	4^+	728.37 *7*	100	634.74	2^+	E2				B(E2)(W.u.)=80 *4*
1657.47	(0^+)	1022.74 *9*	100	634.74	2^+					
1838.65	(2^+)	984.82 *10*	100 *5*	853.83	0^+					
		1203.93 *9*	22 *11*	634.74	2^+	[M1,E2]				δ=0.18 *9* or 1.5 *3* (1992Ba68).
1884.24	3^+	521.07 *12*	10 *3*	1363.17	4^+					
		615.18 *7*	100 *8*	1269.01	2^+	(M1+E2)	+0.3 *1*			B(M1)(W.u.)=(0.029 *13*); B(E2)(W.u.)=(10 *8*)
		1249.45 *15*	89 *12*	634.74	2^+	(M1+E2)				
2107.96	4^+	744.75 *8*	40 *4*	1363.17	4^+	(M1+E2)				B(M1)(W.u.)<0.0067; B(E2)(W.u.)<17 δ=−4.3 *3* or 2.4 *2* (1992Ba68). Mult.: ΔJ=0 transition.
		838.93 *12*	100 *8*	1269.01	2^+	E2				B(E2)(W.u.)=24 *9*
		1473.21 *12*	25 *3*	634.74	2^+	[E2]				B(E2)(W.u.)=0.35 *14*
2231.45	6^+	868.21 *9*	100	1363.17	4^+	E2				B(E2)(W.u.)=72 *15*
2314.05	(2^+)	1044.88 *13*	46 *5*	1269.01	2^+					
		1460.3 *2*	100 *8*	853.83	0^+					
		1679.4 *2*	92 *10*	634.74	2^+					
2349.66	3^-	511.0 *3*	≈14	1838.65	(2^+)					
		986.5 *2*	57 *11*	1363.17	4^+	(E1)				B(E1)(W.u.)=3.8×10^{-6} *10*
		1080.4 *2*	100 *14*	1269.01	2^+	(E1)				B(E1)(W.u.)=5.1×10^{-6} *11*
		1714.9[&] *2*	91 *9*	634.74	2^+	(E1)				B(E1)(W.u.)=1.15×10^{-6} *21*
2378.59	$(1,2^+)$	1109.6 *2*	50 *6*	1269.01	2^+					
		1524.6 *4*	28 *6*	853.83	0^+					
		1743.9 *2*	100 *28*	634.74	2^+					
		2378.3 *4*	28 *11*	0.0	0^+					
2477.7	(2)	1843.1 *6*	100	634.74	2^+	(D)				Mult.: ΔJ=0 transition.
2563.43	$(2^+,3,4^+)$	679.04 *12*	12 *2*	1884.24	3^+					
		724.9 *5*	12 *5*	1838.65	(2^+)					
		1200.37 *12*	100 *11*	1363.17	4^+					
		1294.4 *1*	39 *5*	1269.01	2^+					
		1928.8 *4*	12 *2*	634.74	2^+					
2661.98	5^+	777.68 *13*	100 *7*	1884.24	3^+	E2				B(E2)(W.u.)=43 *17*
		1299.04 *20*	47 *16*	1363.17	4^+					
2818.32	$(2^+,3,4^+)$	979.5 *2*	25 *5*	1838.65	(2^+)					

$^{74}_{34}Se_{40}$-6

Adopted Levels, Gammas (continued)

γ(^{74}Se) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	Comments
2818.32	(2$^+$,3,4$^+$)	1455.5 *3*	100 *15*	1363.17	4$^+$		
2831.56	4$^-$	481.5 *3*	<15	2349.66	3$^-$		
		1468.43 *13*	100 *13*	1363.17	4$^+$	(E1)	B(E1)(W.u.)=1.1×10^{-5} *4* Mult.: ΔJ=0 transition.
2842.63	5$^-$	493.01 *11*	93 *7*	2349.66	3$^-$	E2	B(E2)(W.u.)=50 *7*
		611.4 *2*	48 *5*	2231.45	6$^+$	(E1)	B(E1)(W.u.)=4.1×10^{-5} *7*
		734.56 *15*	100 *7*	2107.96	4$^+$	(E1)	B(E1)(W.u.)=4.9×10^{-5} *7*
		1479.44 *15*	29 *3*	1363.17	4$^+$	(E1)	B(E1)(W.u.)=1.7×10^{-6} *3*
2918.43	(2$^+$,3,4$^+$)	1080.1 *4*	19 *4*	1838.65	(2$^+$)		
		1555.4 *3*	13 *2*	1363.17	4$^+$		
		1649.4 *2*	14 *2*	1269.01	2$^+$		
		2283.5 *2*	100 *15*	634.74	2$^+$		
2986.65	6$^+$	878.68 *10*	100 *13*	2107.96	4$^+$		
		1623.5 *7*	95 *18*	1363.17	4$^+$	Q	
3037.3	(2$^+$)	2183.4 *3*	100	853.83	0$^+$		
3078.01	(4)$^+$	763.6 *2*	3.7 *8*	2314.05	(2$^+$)		
		1194.0 *3*	1.5 *3*	1884.24	3$^+$		
		1714.9[&] *2*	100 *10*	1363.17	4$^+$		
		2443.7 *4*	6.0 *15*	634.74	2$^+$		
3112.30	(2$^+$,3,4$^+$)	797.3 *5*	100	2314.05	(2$^+$)		
		1843.1 *3*	<20	1269.01	2$^+$		
		2478.4[&] *4*	<10	634.74	2$^+$		
3198.41	8$^+$	966.98 *10*	100	2231.45	6$^+$	E2	B(E2)(W.u.)=95 *10*
3200.17	(4)	368.5 *2*	50 *10*	2831.56	4$^-$		
		723[a] *1*	<50	2477.7	(2)		
		850.1 *3*	100 *50*	2349.66	3$^-$		
		1837.6 *3*	50 *15*	1363.17	4$^+$	(D)	Mult.: ΔJ=0 transition.
3250.11	(1,2$^+$)	871.4 *5*	3.5 *17*	2378.59	(1,2$^+$)		
		936.4 *2*	10 *2*	2314.05	(2$^+$)		
		1981.0 *2*	18 *1*	1269.01	2$^+$		
		2396.1 *2*	38 *2*	853.83	0$^+$		
		2615.2 *2*	100 *3*	634.74	2$^+$		
		3249.9 *5*	83 *4*	0.0	0$^+$		
3250.9	(2 to 5)	1366.6 *4*	100	1884.24	3$^+$		
3253.3	(2 to 6)	1890.1 *3*	100	1363.17	4$^+$		
3306.0	(2 to 6)	1198.0 *5*	57 *14*	2107.96	4$^+$		
		1421.7 *3*	100 *14*	1884.24	3$^+$		
3379.38	(2$^+$)	1494.5 *3*	100 *14*	1884.24	3$^+$		
		2745.7 *4*	91 *23*	634.74	2$^+$		
3382.63	6$^-$	538.9 *2*	69 *6*	2842.63	5$^-$	(M1)	B(M1)(W.u.)=0.0064 *24*
		551.12 *15*	100 *8*	2831.56	4$^-$	E2	B(E2)(W.u.)=40 *15*

$^{74}_{34}Se_{40}$-7

Adopted Levels, Gammas (continued)

γ(^{74}Se) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	Comments
3382.63	6^-	720.8 *2*	50 *10*	2661.98	5^+	(E1)	B(E1)(W.u.)=3.4×10^{-5} *14*
		1151.0 *2*	90 *13*	2231.45	6^+	(E1)	B(E1)(W.u.)=1.5×10^{-5} *6*
3515.95	7^-	529.2 *4*	<4	2986.65	6^+	[E1]	B(E1)(W.u.)=1.3×10^{-5} *13*
		673.38 *15*	100 *8*	2842.63	5^-	E2	B(E2)(W.u.)=58 *8*
		1284.5 *3*	8 *1*	2231.45	6^+	[E1]	B(E1)(W.u.)=3.8×10^{-6} *7*
3525.04	7^+	863.4 *3*	100 *12*	2661.98	5^+	(E2)	B(E2)(W.u.)=63 *24*
		1293.0 *3*	41 *14*	2231.45	6^+		
3539.72	$(1,2^+)$	1161.3 *3*	12 *4*	2378.59	$(1,2^+)$		
		1225.7 *1*	81 *8*	2314.05	(2^+)		
		1700.9 *3*	46 *8*	1838.65	(2^+)		
		1882.3 *2*	96 *12*	1657.47	(0^+)		
		2270.6 *6*	100 *19*	1269.01	2^+		
		2685.4 *6*	15 *8*	853.83	0^+		
		2904.5 *3*	100 *8*	634.74	2^+		
		3539.8 *7*	38 *8*	0.0	0^+		
3580.30	(2^+)	2217.1 *3*	100 *20*	1363.17	4^+		
		2945.5[&] *4*	<60	634.74	2^+		
3624.46	(2^+)	1310.1 *2*	9 *1*	2314.05	(2^+)		
		2356.0 *4*	14 *2*	1269.01	2^+		
		2770.8 *5*	37 *2*	853.83	0^+		
		2990.1 *30*	6 *2*	634.74	2^+		
		3624.6 *3*	100 *3*	0.0	0^+		
3674.85	$(2^+,3,4^+)$	1566.4 *3*	10 *2*	2107.96	4^+		
		2312.1 *6*	100 *14*	1363.17	4^+		
		3040.4[&] *3*	<32	634.74	2^+		
3733.64	$(1,2^+)$	2465.0 *3*	54 *7*	1269.01	2^+		
		2879.7 *2*	25 *7*	853.83	0^+		
		3098.2 *6*	25 *7*	634.74	2^+		
		3733.3 *4*	100 *7*	0.0	0^+		
3771.91	(4^+)	1933.8 *3*	50 *10*	1838.65	(2^+)		
		2408.7 *3*	100 *40*	1363.17	4^+		
		2502.3 *5*	19 *5*	1269.01	2^+		
		3137.1 *3*	70 *10*	634.74	2^+		
3781.7		399.2 *3*	100	3382.63	6^-		
3788.27	$(1,2^+)$	1409.7 *2*	16 *3*	2378.59	$(1,2^+)$		
		1474.5 *2*	27 *3*	2314.05	(2^+)		
		1949.6 *2*	37 *3*	1838.65	(2^+)		
		2130.6 *2*	71 *3*	1657.47	(0^+)		
		2518.3 *8*	14 *3*	1269.01	2^+		
		2934.2 *4*	19 *3*	853.83	0^+		
		3788.0 *3*	100 *5*	0.0	0^+		

$^{74}_{34}Se_{40}$-8

Adopted Levels, Gammas (continued)

γ(^{74}Se) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	Comments
3841.69	7^-	325.84 *15*	72 *7*	3515.95	7^-	(D)	Mult.: ΔJ=0 transition.
		1609.6 *4*	100 *19*	2231.45	6^+	D	
3928.62	(2 to 6)	850.6 *2*	100	3078.01	$(4)^+$		
3929.2	(8^+)	730.5 *8*	100 *67*	3198.41	8^+		
		942.7 *5*	37 *10*	2986.65	6^+		
		1698.4[a] *12*	≈33	2231.45	6^+		
3930.56	$(0^+,1)$	2661.6 *2*	100 *6*	1269.01	2^+		
		3295.5 *3*	53 *3*	634.74	2^+		
3972.90	(2^+)	2088.7 *15*	<14	1884.24	3^+		
		2704.0 *3*	67 *6*	1269.01	2^+		
		3119.0 *12*	39 *6*	853.83	0^+		
		3338.6 *18*	19 *6*	634.74	2^+		
		3972.7 *2*	100 *6*	0.0	0^+		
4044.37	$(1,2^+)$	2387.4 *5*	47 *13*	1657.47	(0^+)		
		3190.2 *4*	100 *13*	853.83	0^+		
		3410.0 *10*	40 *13*	634.74	2^+		
		4044.1 *4*	87 *13*	0.0	0^+		
4089.9		573.9 *3*	100	3515.95	7^-		
4094.44	(2^+)	1715.7 *2*	100 *14*	2378.59	$(1,2^+)$		
		2437.5 *4*	52 *10*	1657.47	(0^+)		
		3241.0 *15*	48 *10*	853.83	0^+		
		3460.0 *12*	90 *10*	634.74	2^+		
		4093.9 *7*	38 *10*	0.0	0^+		
4198.21	8^-	682.1 *3*	14 *3*	3515.95	7^-	D	
		815.6 *2*	100 *8*	3382.63	6^-	E2	B(E2)(W.u.)=53 *13*
4256.29	10^+	1057.89 *10*	100	3198.41	8^+	E2	B(E2)(W.u.)=110 *21*
4266.7	$(1,2^+)$	3631.9 *5*	100 *8*	634.74	2^+		
		4266.5 *5*	43 *8*	0.0	0^+		
4309.17	$(3,4^+)$	1746.1 *4*	28 *10*	2563.43	$(2^+,3,4^+)$		
		1994.8 *3*	100 *20*	2314.05	(2^+)		
		2945.5[&] *4*	<60	1363.17	4^+		
		3040.4[&] *3*	<240	1269.01	2^+		
4342.5	(2^+)	3488.6 *8*	29 *10*	853.83	0^+		
		4342.4 *4*	100 *14*	0.0	0^+		
4379.9	$(1,2^+)$	2541.5 *5*	8 *3*	1838.65	(2^+)		
		3110.2 *18*	8 *3*	1269.01	2^+		
		3526.1 *8*	15 *3*	853.83	0^+		
		3745.1 *6*	15 *3*	634.74	2^+		
		4379.6 *4*	100 *6*	0.0	0^+		
4403.20	9^-	887.23 *15*	100	3515.95	7^-	E2	B(E2)(W.u.)=96 *10*
4441.67	$(3,4^+)$	2333.2 *3*	75 *8*	2107.96	4^+		

$^{74}_{34}Se_{40}$-9

Adopted Levels, Gammas (continued)

γ(^{74}Se) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	Comments
4441.67	(3,4$^+$)	3173.1 *3*	100 *17*	1269.01	2$^+$		
		3806.7 *5*	100 *17*	634.74	2$^+$		
4449.64	9$^+$	924.53 *15*	100 *6*	3525.04	7$^+$	E2	B(E2)(W.u.)=61 *12*
		1251.4 *4*	31 *9*	3198.41	8$^+$	D	
4487.2	(1,2$^+$)	3852.4 *3*	100 *10*	634.74	2$^+$		
		4486.9 *10*	15 *10*	0.0	0$^+$		
4496.29	(3,4$^+$)	2388.1 *2*	81 *13*	2107.96	4$^+$		
		3227.5[&] *3*	<56	1269.01	2$^+$		
		3861.8 *5*	100 *19*	634.74	2$^+$		
4516.24	(3,4$^+$)	1853.8 *3*	45 *9*	2661.98	5$^+$		
		1952.8 *3*	32 *6*	2563.43	(2$^+$,3,4$^+$)		
		3153.3 *3*	100 *18*	1363.17	4$^+$		
		3247.5 *10*	<45	1269.01	2$^+$		
		3881.6 *5*	83 *9*	634.74	2$^+$		
4536.49	(1,2$^+$)	2158.0 *4*	23 *9*	2378.59	(1,2$^+$)		
		3267.5 *8*	36 *9*	1269.01	2$^+$		
		3901.5 *3*	100 *9*	634.74	2$^+$		
		4538.0 *20*	9 *5*	0.0	0$^+$		
4544.5		346.2 *2*	100 *17*	4198.21	8$^-$		
		762.9 *4*	83 *25*	3781.7			
4579.94	(3,4,5)	2472.2 *4*	100 *13*	2107.96	4$^+$		
		2695.5 *3*	100 *13*	1884.24	3$^+$		
4586.15	(3,4$^+$)	1508.0 *3*	18 *4*	3078.01	(4)$^+$		
		2478.4[&] *4*	<38	2107.96	4$^+$		
		2701.8 *3*	100 *15*	1884.24	3$^+$		
		3951.5 *7*	92 *15*	634.74	2$^+$		
4592.08	(4$^+$)	2028.2 *3*	<12	2563.43	(2$^+$,3,4$^+$)		
		2485.6 *4*	10 *3*	2107.96	4$^+$		E_γ: level-energy difference=2484.1.
		2708.5 *3*	15 *3*	1884.24	3$^+$		
		3227.5[&] *3*	<22	1363.17	4$^+$		E_γ: poor fit. Level-energy difference=3228.8.
		3323.2 *4*	15 *3*	1269.01	2$^+$		
		3957.6 *6*	100 *12*	634.74	2$^+$		
4661.91	(3,4$^+$)	2098.7 *3*	33 *7*	2563.43	(2$^+$,3,4$^+$)		
		2825.1 *10*		1838.65	(2$^+$)		
		3297.7 *3*	100 *20*	1363.17	4$^+$		E_γ: level-energy difference=3298.7.
		3393.8[&] *4*	<40	1269.01	2$^+$		
		4027.1 *7*	80 *13*	634.74	2$^+$		
4699.5	(3,4$^+$)	3336.3 *3*	100 *15*	1363.17	4$^+$		
		4064.4 *11*	16 *5*	634.74	2$^+$		
4757.2	(3,4$^+$)	3393.8[&] *4*	<100	1363.17	4$^+$		

$^{74}_{34}Se_{40}$-10

Adopted Levels, Gammas (continued)

γ(^{74}Se) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	Comments
4757.2	(3,4$^+$)	4123.5 *12*	120 *8*	634.74	2$^+$		
4794.45	(3,4,5)	1022.7 *2*	31 *4*	3771.91	(4$^+$)		
		3430.8 *3*	100 *14*	1363.17	4$^+$		
4848.7	(9$^-$)	445.5 *3*	17 *4*	4403.20	9$^-$	[M1,E2]	B(M1)(W.u.)<0.09; B(E2)(W.u.)<665
		1007.1 *3*	100 *15*	3841.69	7$^-$	[E2]	B(E2)(W.u.)=63 *+22−25*
4877.49	(10$^+$)	621.2 *2*	100 *13*	4256.29	10$^+$	(D)	Mult.: ΔJ=0 transition.
		948.4 *5*	75 *9*	3929.2	(8$^+$)		
		1679[a] *1*	≈31	3198.41	8$^+$		
5060.2		657.0 *3*	100	4403.20	9$^-$		
5209.2	10$^-$	1011.0 *3*	100	4198.21	8$^-$	(E2)	B(E2)(W.u.)=32 *11*
5443.1	12$^+$	1186.7 *4*	100	4256.29	10$^+$	E2	B(E2)(W.u.)=1.1×10^2 *3*
5491.2	11$^-$	1088.0 *3*	100	4403.20	9$^-$	E2	B(E2)(W.u.)=87 *8*
5492.9	11$^+$	1042.8 *5*	100 *14*	4449.64	9$^+$	Q	
		1236.9 *5*	24 *6*	4256.29	10$^+$	D	
5928.5	(11$^-$)	1079.7 *3*	100	4848.7	(9$^-$)	[E2]	B(E2)(W.u.)=80 *22*
6014.8	(12$^+$)	571.7 *3*	100 *14*	5443.1	12$^+$		
		1137.5 *6*	95 *48*	4877.49	(10$^+$)		
		1759 *2*	≈48	4256.29	10$^+$		
6253.6	12$^-$	1044.4 *3*	100	5209.2	10$^-$	E2	B(E2)(W.u.)>33
6685.9	(13$^+$)	1192.9 *6*	100 *17*	5492.9	11$^+$	Q	
		1243.1 *6*	23 *7*	5443.1	12$^+$		
6686.9	13$^-$	1195.7 *3*	100	5491.2	11$^-$	E2	B(E2)(W.u.)=6.E+1 *3*
6735.6	14$^+$	1292.4 *4*	100	5443.1	12$^+$	E2	B(E2)(W.u.)=63 *7*
7063.7	(13$^-$)	1135.2 *6*	100	5928.5	(11$^-$)	[E2]	B(E2)(W.u.)>21
7206.9	(14$^+$)	1193.0 *12*	100 *33*	6014.8	(12$^+$)		
		1763.3 *10*	53 *13*	5443.1	12$^+$	(Q)	
7451.6	14$^-$	1198.0 *4*	100	6253.6	12$^-$	Q	
7844.8	15$^-$	1157.8 *5*	100	6686.9	13$^-$	(Q)	
7944.0	(15$^+$)	1208.2 *6*	47 *10*	6735.6	14$^+$	D	
		1258.2 *5*	100 *8*	6685.9	(13$^+$)	Q	
7978.7	15$^-$	1291.8 *4*	100	6686.9	13$^-$	(Q)	
8116.7	16$^+$	1381.1 *4*	100	6735.6	14$^+$	E2	B(E2)(W.u.)=81 *17*
8537.3	(16$^+$)	1330.5 *6*	100 *19*	7206.9	(14$^+$)		
		1801.6 *8*	19 *7*	6735.6	14$^+$	(Q)	
8815.6	16$^-$	1364.0 *5*	100	7451.6	14$^-$	(Q)	
9294.4	(17$^+$)	1350.4 *6*	100	7944.0	(15$^+$)		
9300.3	17$^-$	1321.6 *4*	100 *16*	7978.7	15$^-$		
		1455.4 *4*	100 *16*	7844.8	15$^-$	(Q)	
9680.5	18$^+$	1563.8 *6*	100	8116.7	16$^+$	E2	B(E2)(W.u.)=43 *12*
10128.8	(18$^+$)	1591.5 *7*	100	8537.3	(16$^+$)	Q	
10370.5	(18$^-$)	1554.8 *7*	100	8815.6	16$^-$		

$^{74}_{34}Se_{40}$-11

Adopted Levels, Gammas (continued)

$\gamma(^{74}Se)$ (continued)

E_i(level)	J_i^π	E_γ [†]	I_γ [‡]	E_f	J_f^π	Mult. [#]
10826.4	(19^+)	1532 *1*	100	9294.4	(17^+)	
10926.3	(19^-)	1626 *1*	100	9300.3	17^-	
11360.2	20^+	1679.7 *7*	100	9680.5	18^+	Q
12104.5	(20^-)	1734 *1*	100	10370.5	(18^-)	
13202.3	22^+	1842 *1*	100	11360.2	20^+	(Q)

† Weighted average taken, whenever possible.
‡ Photon branching ratios. Weighted average from various studies.
# From measured $T_{1/2}$ of levels and RUL of Weisskopf estimates for transitions of E2 or M2 multipolarity.
@ 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.
& Multiply placed.
a Placement of transition in the level scheme is uncertain.

$^{74}_{34}Se_{40}$-12

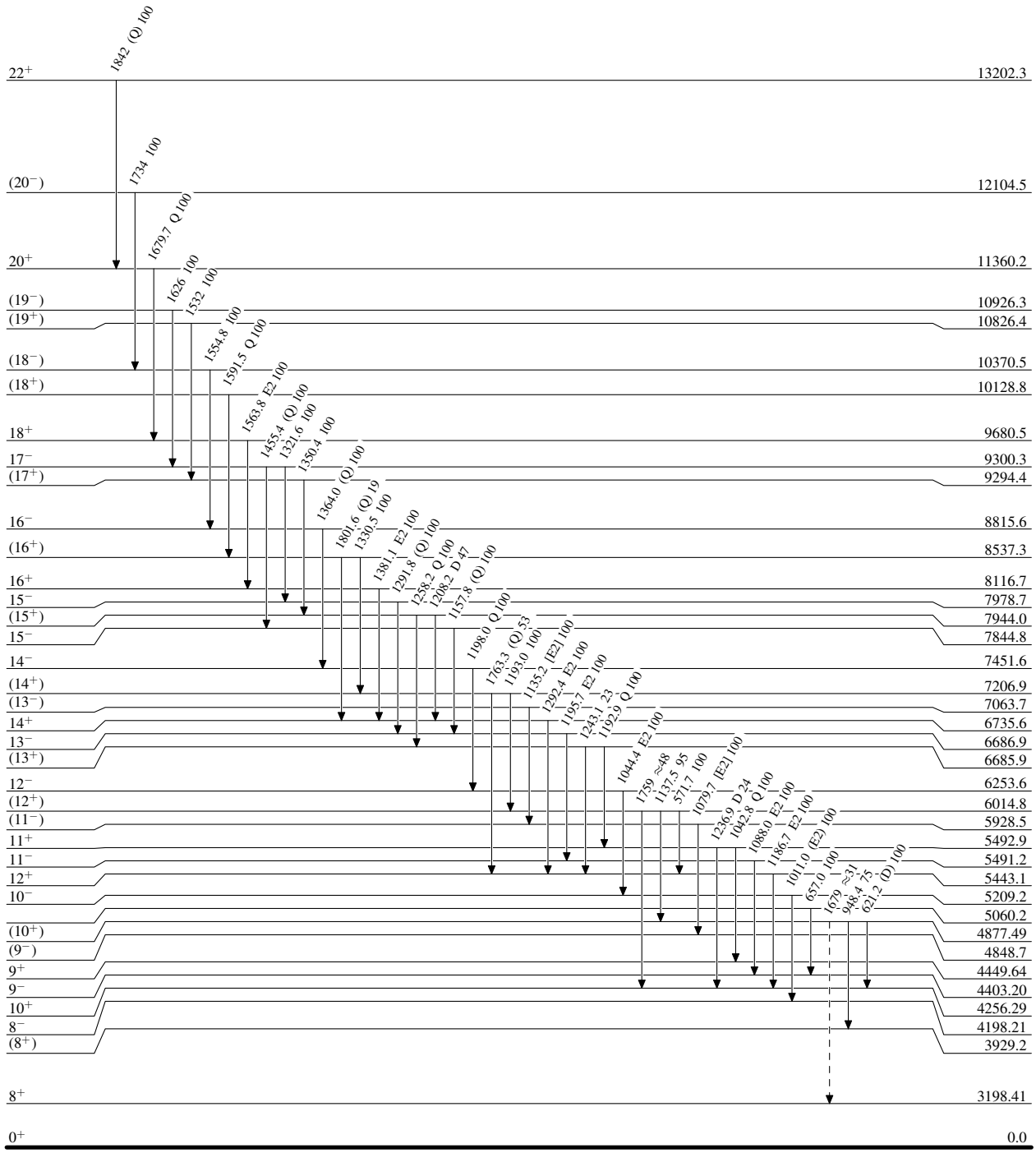
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

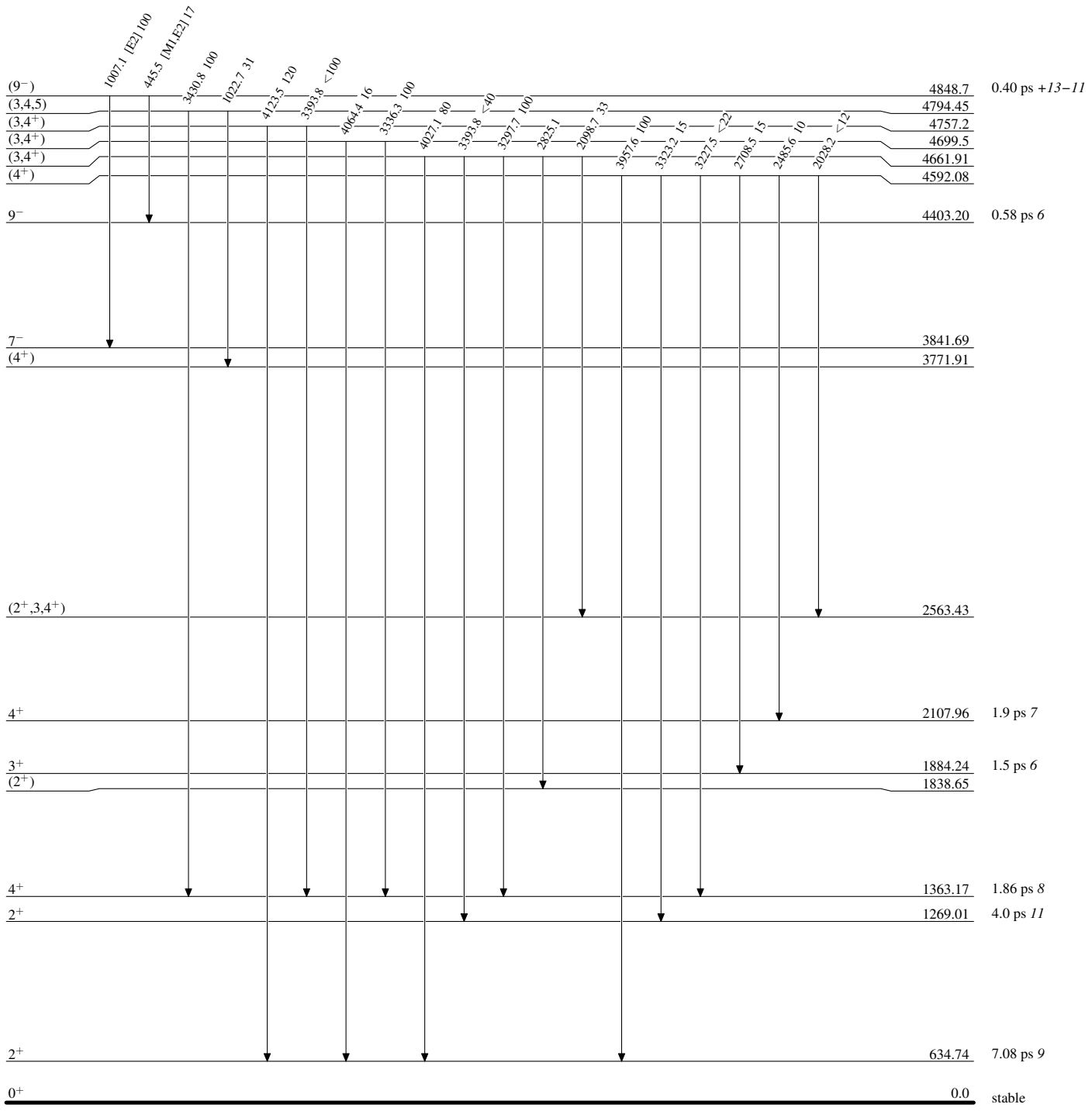


$^{74}_{34}Se_{40}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

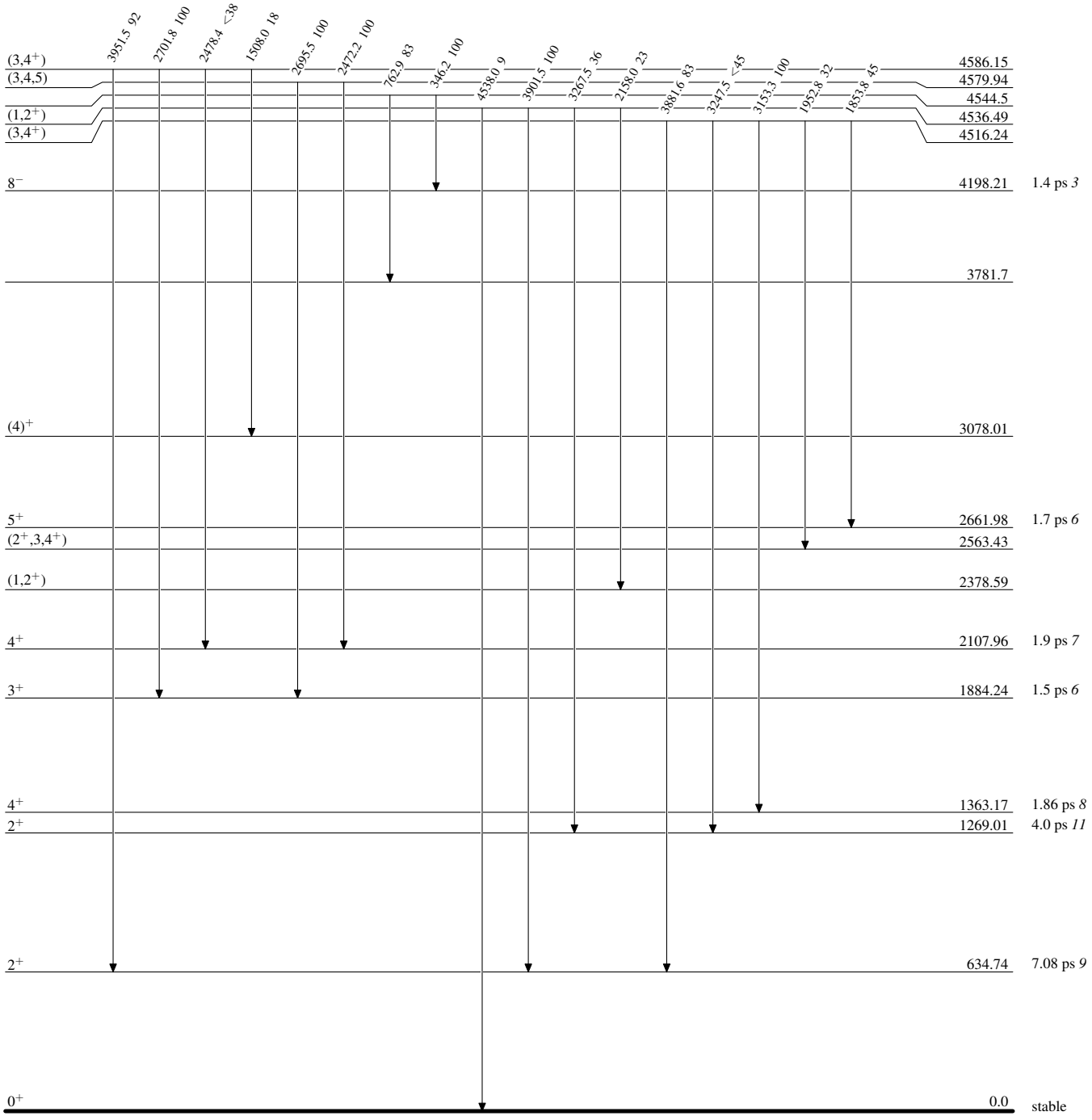


$^{74}_{34}Se_{40}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

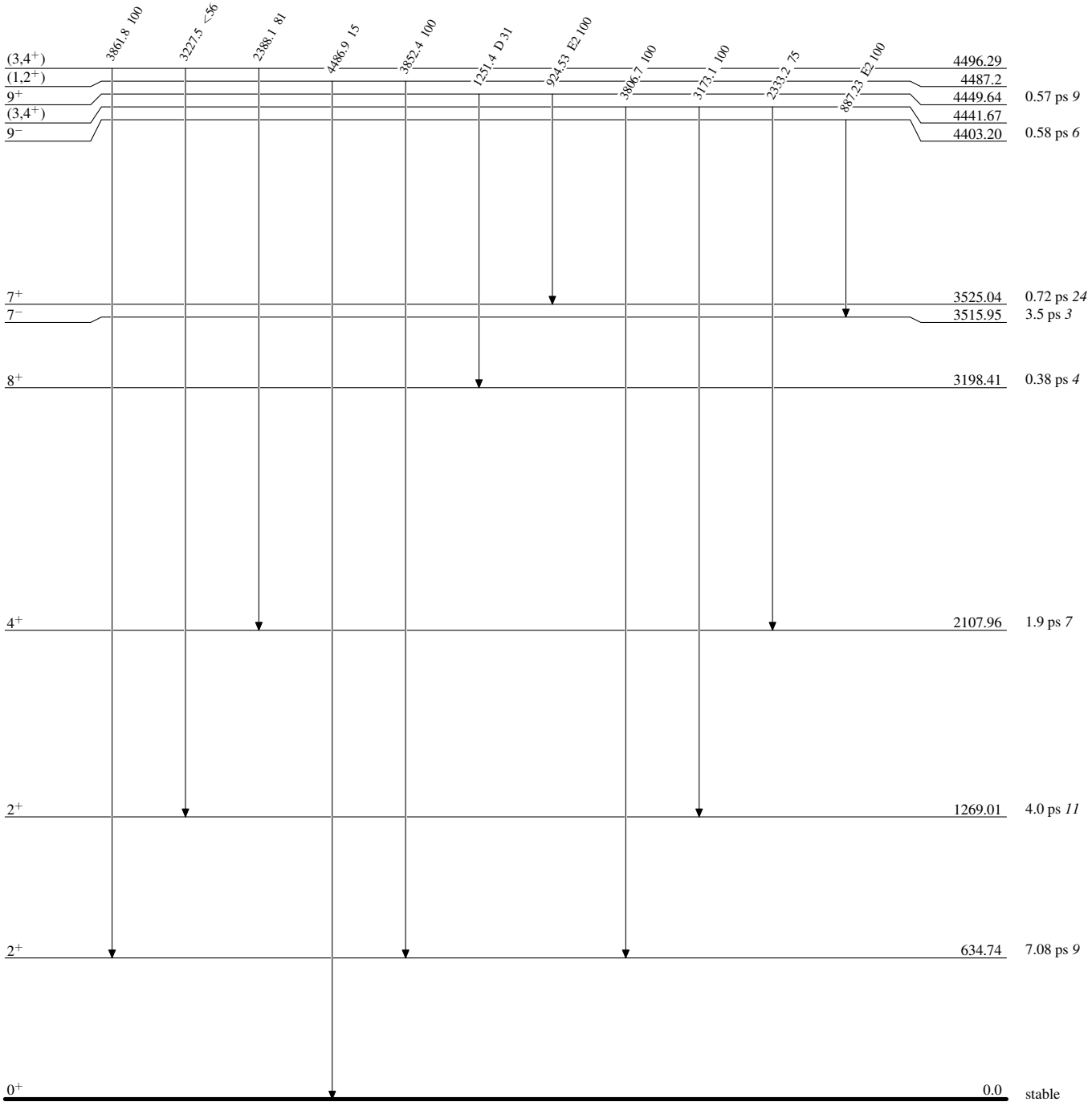


$^{74}_{34}Se_{40}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

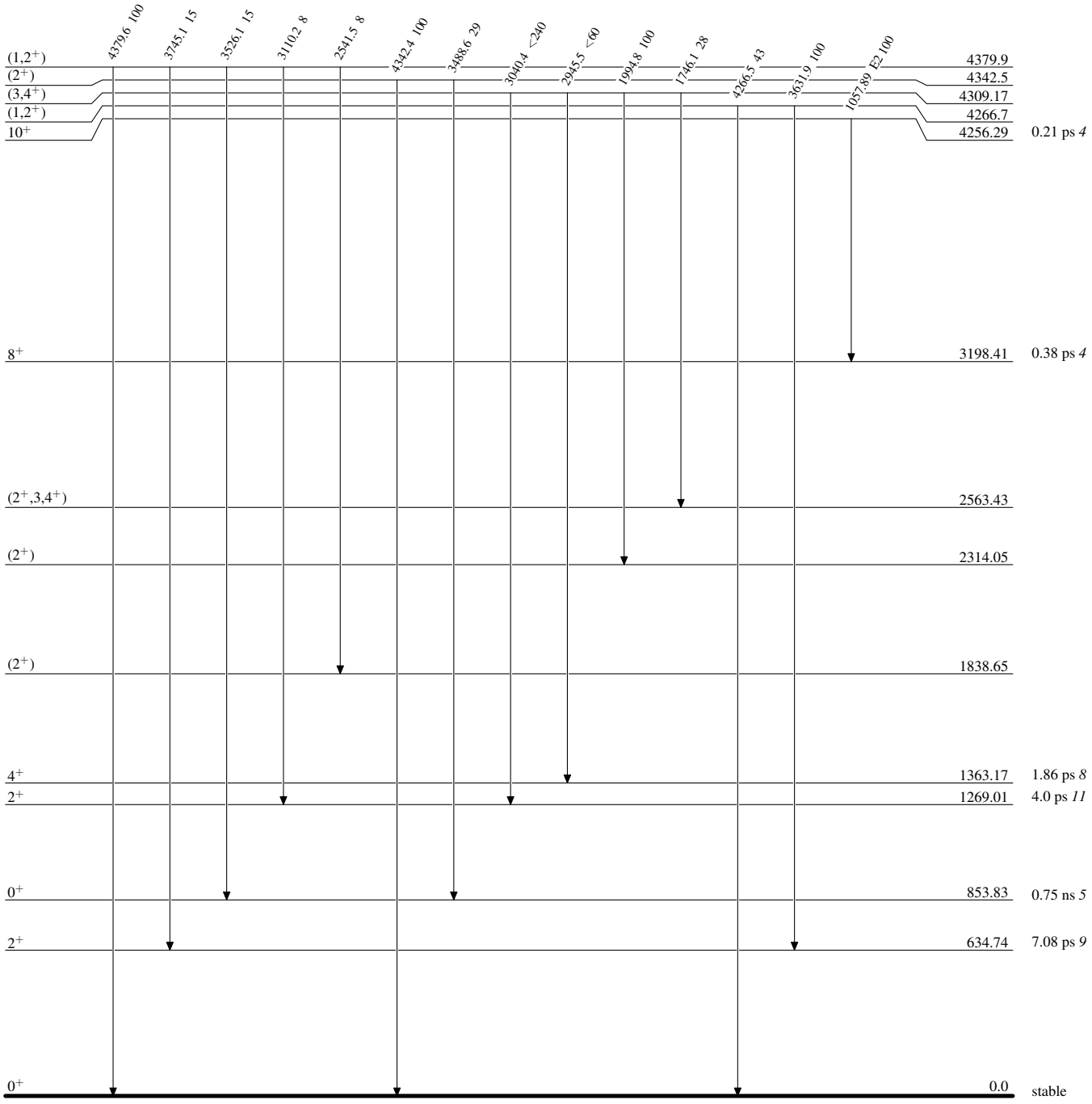


$^{74}_{34}Se_{40}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

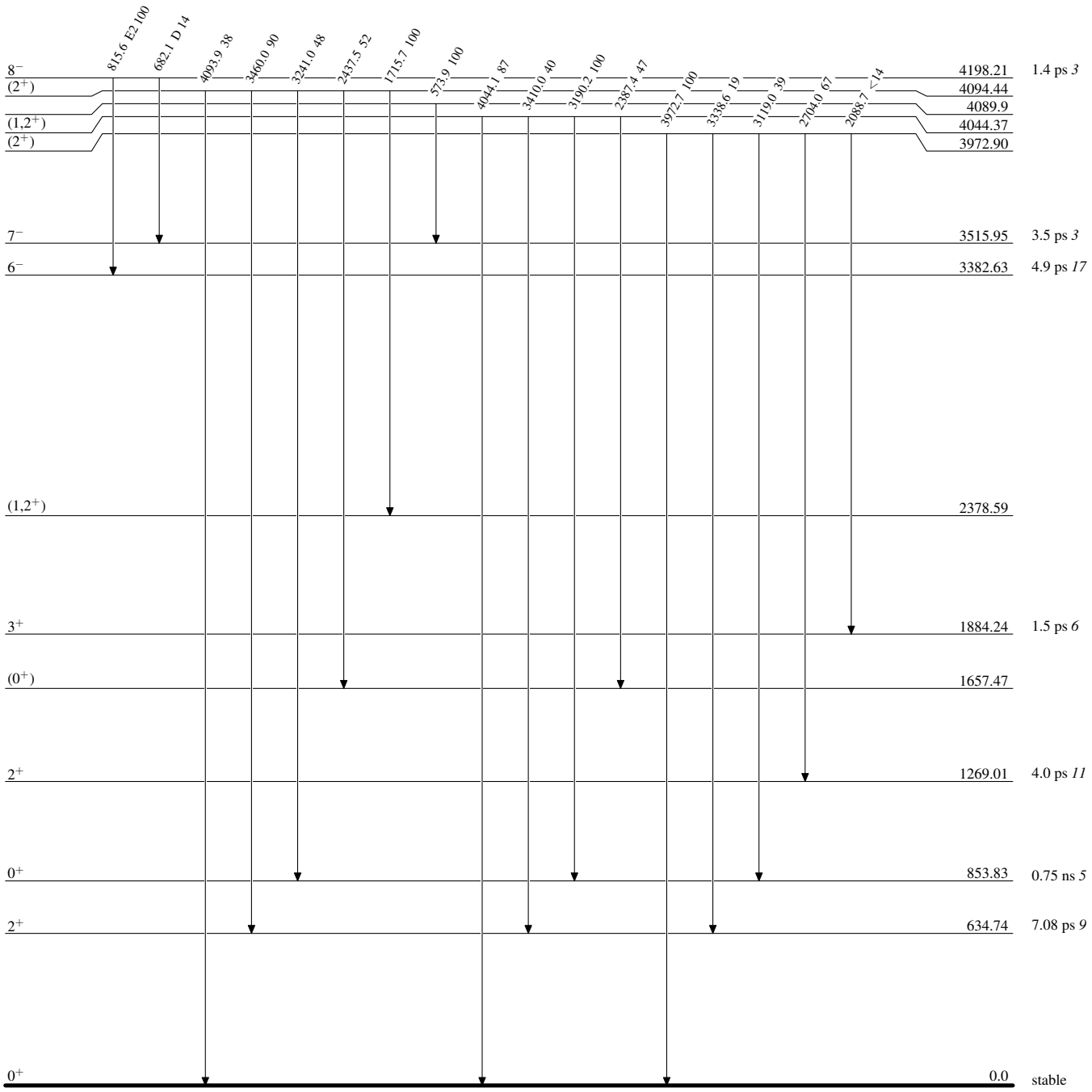


$^{74}_{34}Se_{40}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



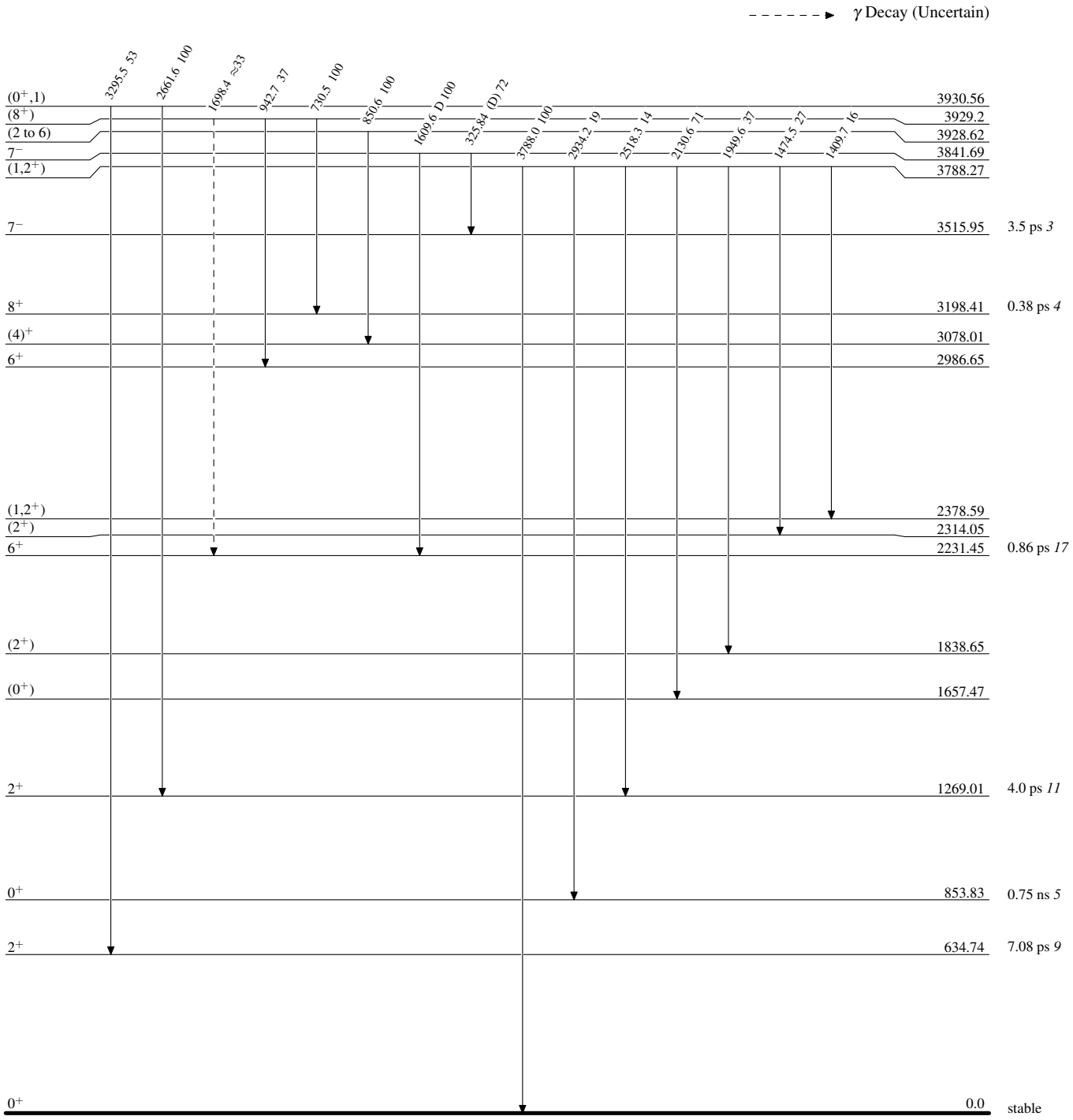
$^{74}_{34}Se_{40}$

Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

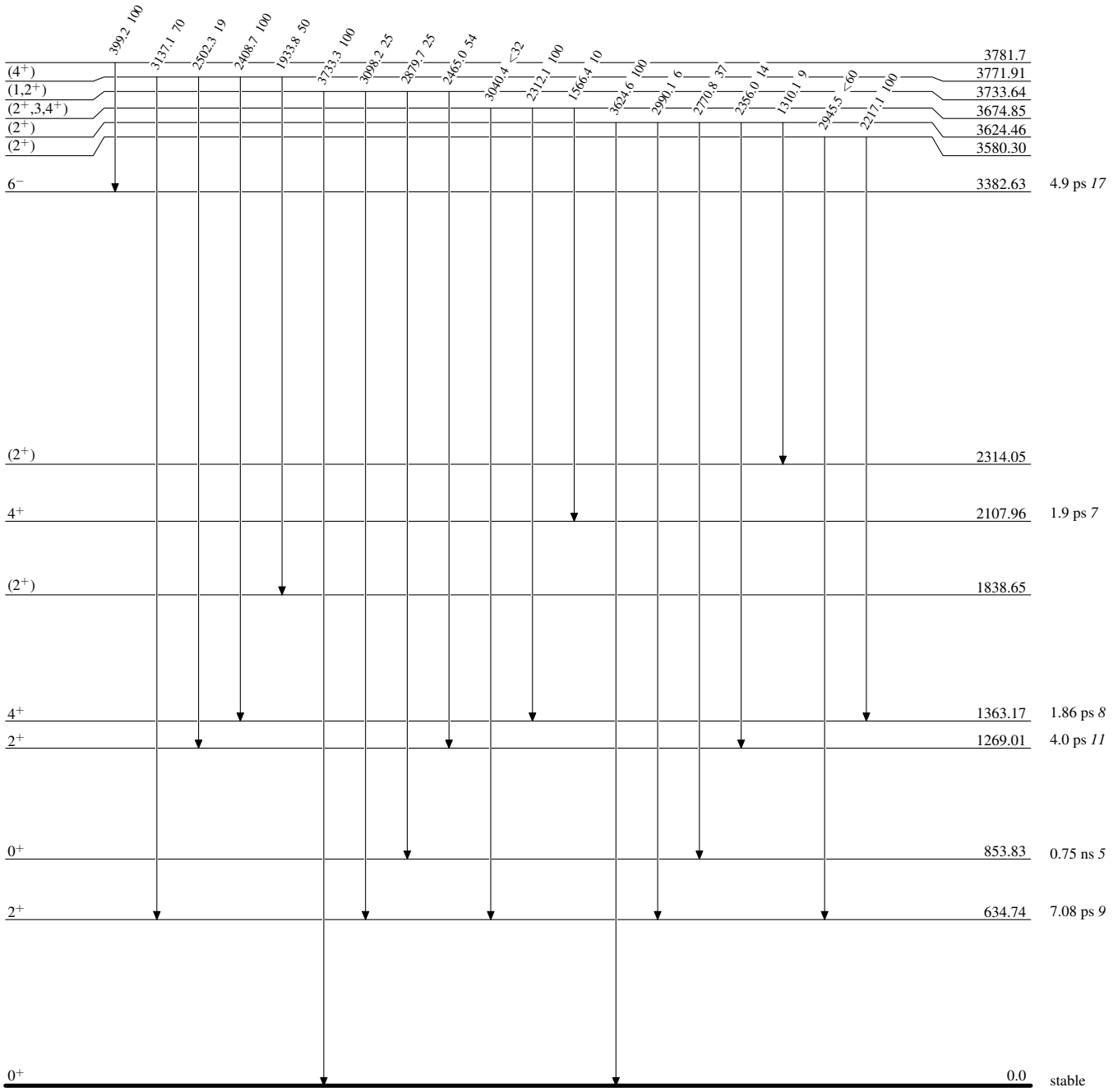


$^{74}_{34}Se_{40}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

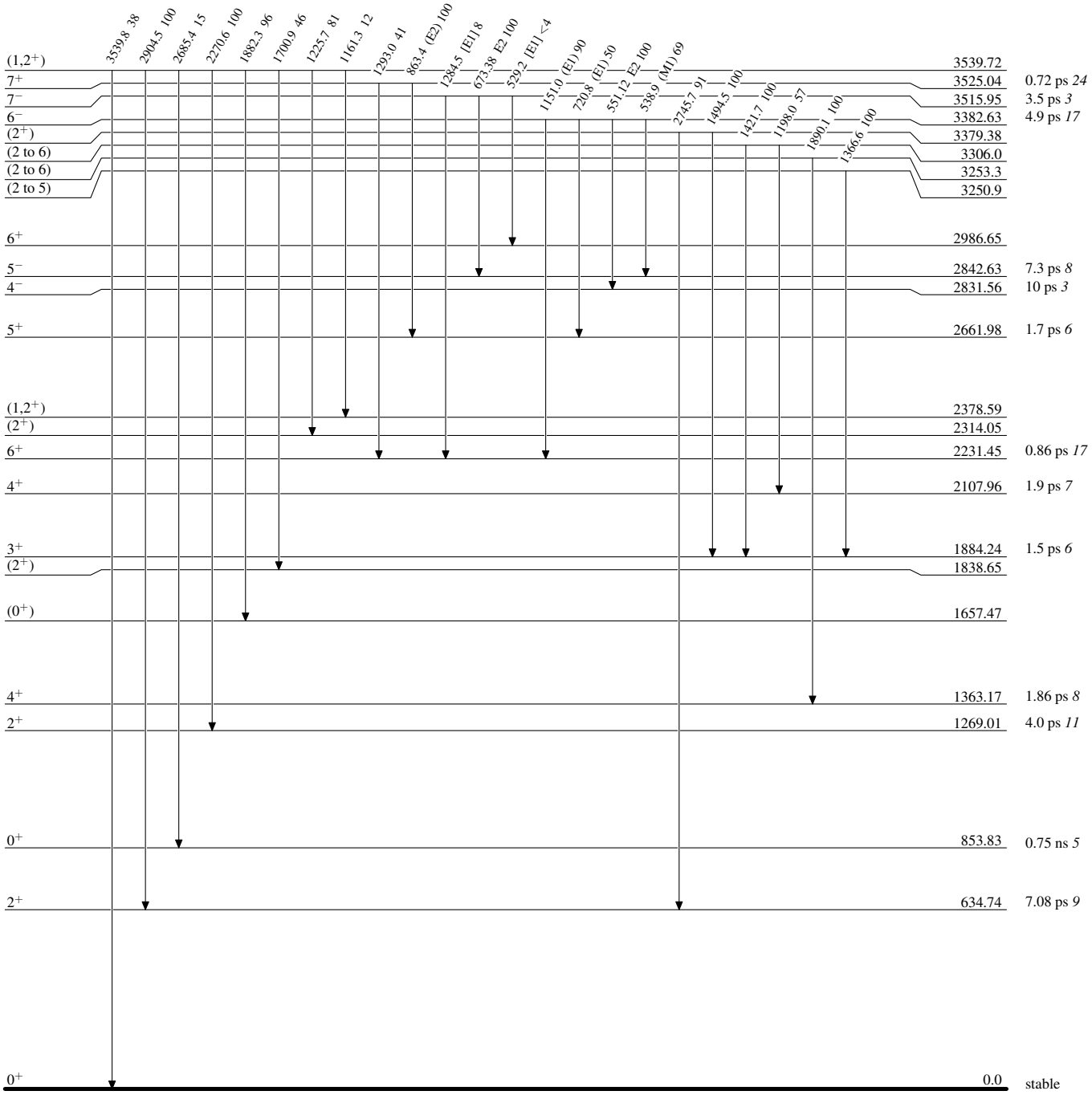


$^{74}_{34}Se_{40}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{74}_{34}Se_{40}$

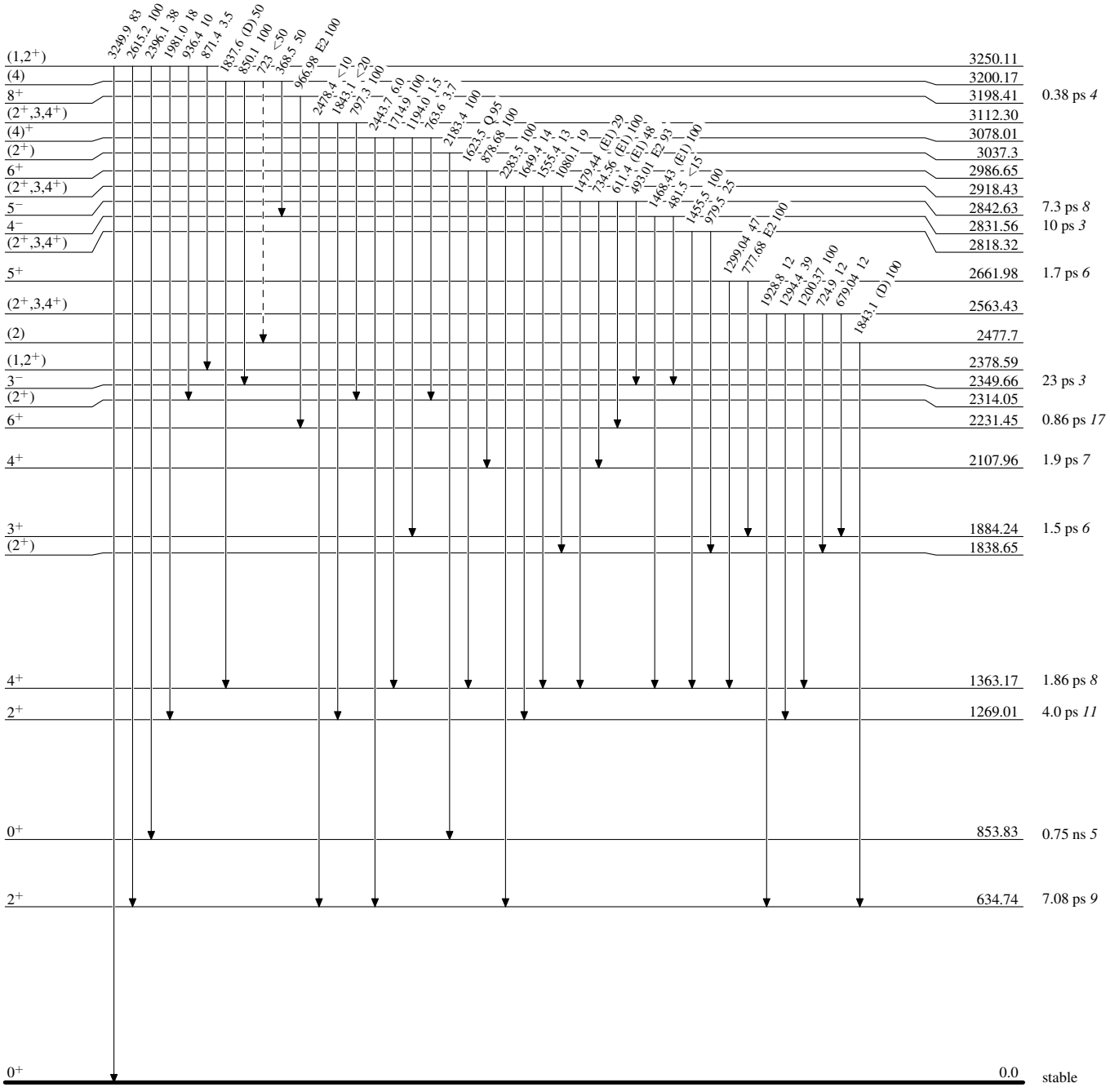
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)

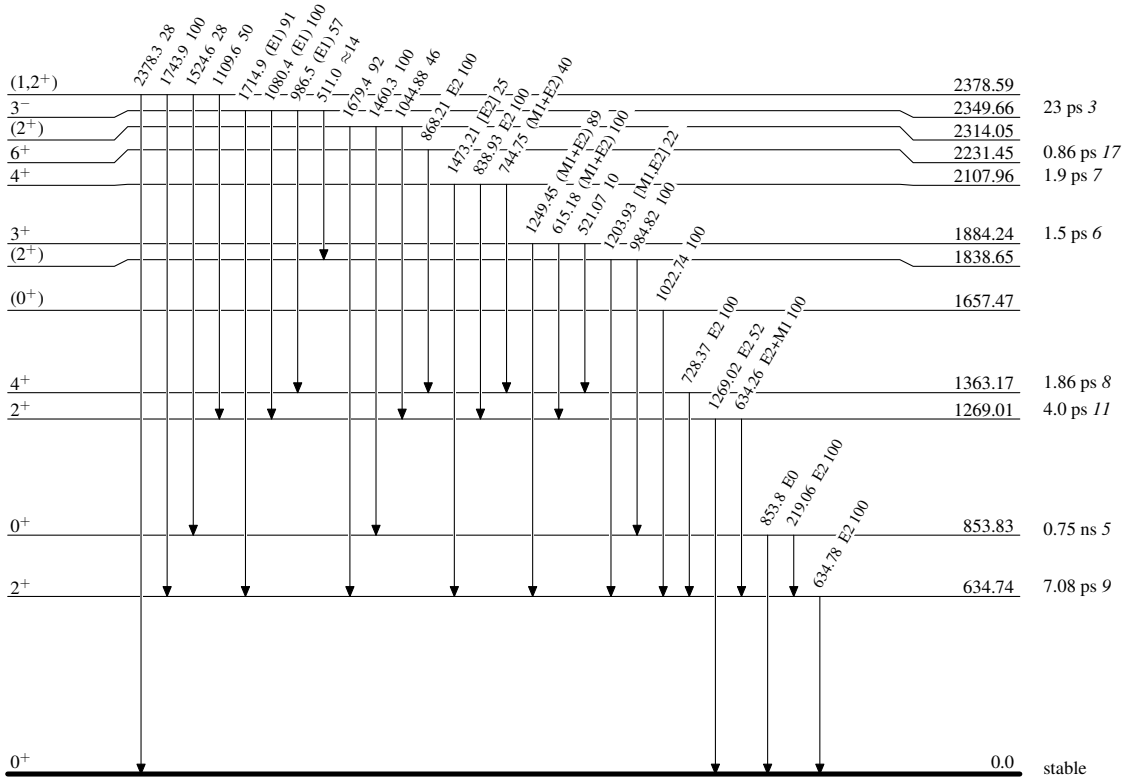


$^{74}_{34}Se_{40}$

Adopted Levels, Gammas

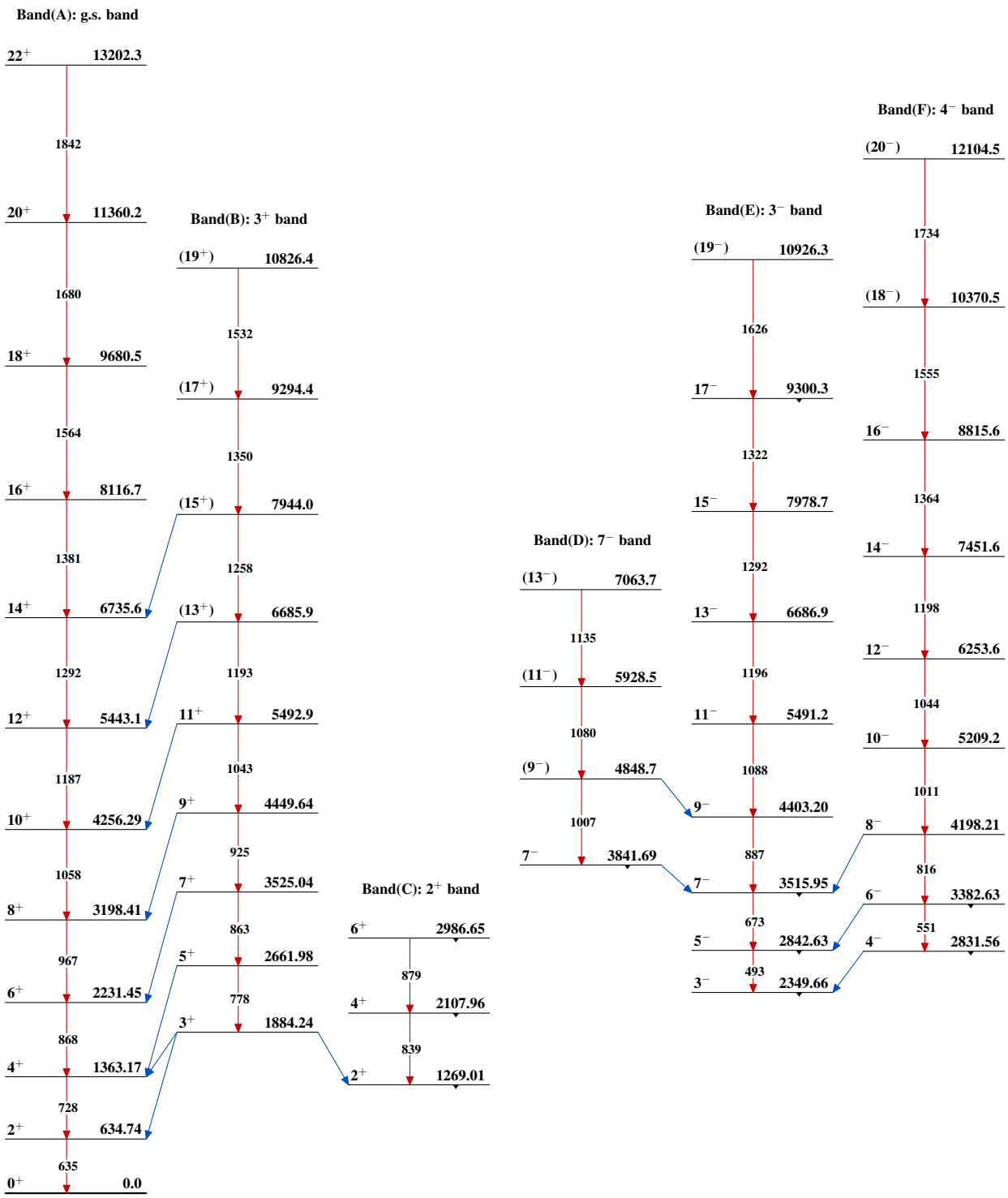
Level Scheme (continued)

Intensities: Relative photon branching from each level

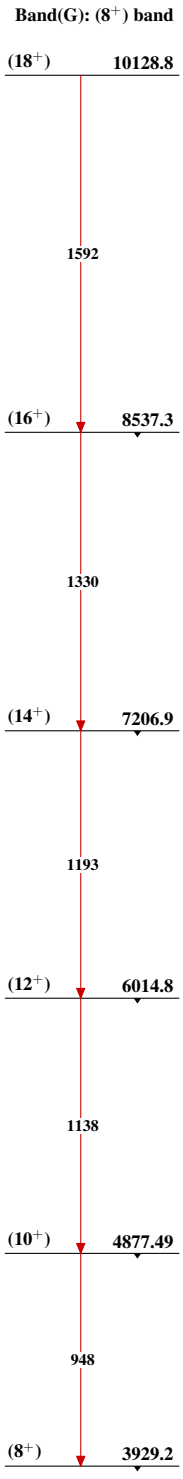


$^{74}_{34}Se_{40}$

Adopted Levels, Gammas



Adopted Levels, Gammas (continued)



$^{74}_{34}Se_{40}$