

Adopted Levels, Gammas

Type	Author	History	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: [1985EI01](#), [1977De20](#), [1963Ri07](#).

[Additional information 1](#).

Nuclear structure calculations (levels): [2005Da31](#).

⁷⁴Se Levels

Cross Reference (XREF) Flags

A	⁷⁴ As β^- decay (17.77 d)	F	⁶⁵ Cu(¹² C,p2n γ)	K	Coulomb excitation
B	⁷⁴ Br ε decay (25.4 min)	G	⁷⁰ Ge(α,γ)	L	⁷⁵ As(p,2n γ)
C	⁷⁴ Br ε decay (46 min)	H	⁷² Ge(³ He,n)	M	⁷⁶ Se(p,t)
D	⁵⁸ Ni(¹⁹ F,3p γ)	I	⁷² Ge(¹⁶ O, ¹⁴ C)		
E	⁶⁴ Ni(¹² C,2n γ), ⁶⁰ Ni(¹⁶ O,2p γ)	J	⁷⁴ Se(p,p')		

E(level) ^{†‡}	J π [@]	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	ABCDEFGH 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')). β_R =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 $^\pi$: (219 γ)(635 γ)(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	ABCDEFGH JKLM	μ =1.10 18 (1998Sp03) XREF: M(1265). μ : projectile excitation and transient-field technique (1998Sp03). See also 2005St24 compilation. β_R =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')). β_R =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,3p γ) dataset).
1657.47 10	(0 ⁺)		B E G	J $^\pi$: γ to 2 ⁺ . No γ 's to 0 ⁺ and 4 ⁺ .

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Adopted Levels, Gammas (continued) ^{74}Se Levels (continued)

E(level) ^{†‡}	J ^π @	T _{1/2} [#]	XREF		Comments
1838.65 9	(2 ⁺)		BC EFG	LM	J ^π : 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		J ^π : 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)). β _R =0.77 8 (from (p,p')). B(E3)(Coul. ex.)=0.021 5 (2002Ki06,evaluation). J ^π : L(p,t)=(pol p,p')=3.
2378.59 11	(1,2 ⁺)&		B		
2477.7 6	(2)		F		J ^π : ΔJ=0 γ to 2 ⁺ .
2482 25	(2 ⁺)			M	J ^π : 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	J ^π : L(p,t)=0.
2818.32 19	(2 ⁺ ,3,4 ⁺) ^a		C E		
2831.56 ^k 12	4 ⁻	10 ps 3	CDEF		J ^π : 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	J ^π : L(p,p')=3; L(p,t)=(3).
2903 2	4 ⁺			J	J ^π : L(p,p')=4.
2918 25	(0 ⁺)			M	J ^π : 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		J ^π : γ to 0 ⁺ .
3078.01 14	(4 ⁺)		C E	J	XREF: J(3080). J ^π : 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). J ^π : 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		J ^π : 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. J ^π : 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	J ^π : 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	J ^π : 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	J ^π : L(p,p')=5.
3538 25	(6 ⁺)			M	J ^π : L(p,t)=(6).
3539.72 11	(1,2 ⁺)&		B		
3580.30 25	(2 ⁺) ^a		C	J	J ^π : L(p,p')=(2).
3602 4	5 ⁻			J	J ^π : L(p,p')=5.
3624.46 16	(2 ⁺)		B	M	XREF: M(2615). J ^π : γ to 0 ⁺ ; L(p,t)=(2).
3674.85 21	(2 ⁺ ,3,4 ⁺) ^a		C E		

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Adopted Levels, Gammas (continued) ^{74}Se Levels (continued)

E(level) ^{†‡}	J ^π @	T _{1/2} [#]	XREF		Comments
3733.64 16	(1,2 ⁺)&		B	M	XREF: M(3719).
3749 4	(4 ⁺)			J	J ^π : L(p,p')=4.
3771.91 16	(4 ⁺) ^a		C	J m	XREF: J(3780).
					J ^π : 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).
					J ^π : γ to 7 ⁻ ; L(p,t)=(7); band assignment.
3845 4	3 ⁻			J	J ^π : L(p,p')=3.
3928.62 24	(2 to 6)		C	J	XREF: J(3920).
					J ^π : log ft=7.16 from 4 ⁽⁺⁾ ; γ to (4) ⁺ .
3929.2 ^l 4	(8 ⁺) ^d		F		
3930.56 18	(0 ⁺ ,1)		BC		J ^π : log ft=5.9 from (0 ⁻); γ to 2 ⁺ .
3972.90 17	(2 ⁺)		B	m	J ^π : γ to 0 ⁺ ; if L(p,t)=(2) corresponds to this level.
3980 4	(6 ⁺)			J	J ^π : L(p,p')=(6).
4005 4	2 ⁺			J m	J ^π : L(p,p')=2.
4044.37 25	(1,2 ⁺)&		B		
4089.9 4			F		
4094.44 20	(2 ⁺)		B	M	XREF: M(4109).
					J ^π : 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	J ^π : L(p,p')=4.
4309.17 18	(3,4 ⁺)		C	m	XREF: I(4330).
					J ^π : γ to 2 ⁺ ; log ft=6.6 from 4 ⁽⁺⁾ .
4342.5 4	(2 ⁺)		B	J m	XREF: J(4337).
					J ^π : 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		J ^π : 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		J ^π : γ to 2 ⁺ ; log ft=5.98 from 4 ⁽⁺⁾ .
4516.24 18	(3,4 ⁺)		C		J ^π : 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	J ^π : log ft=6.26 from 4 ⁽⁺⁾ .
4586.15 20	(3,4 ⁺)		C	m	J ^π : γ to 2 ⁺ ; log ft=5.99 from 4 ⁽⁺⁾ .
4592.08 16	(4 ⁺)		C	J m	XREF: J(4595).
					J ^π : γ to 2 ⁺ ; log ft=5.65 from 4 ⁽⁺⁾ ; L(p,p')=4.
4661.91 19	(3,4 ⁺)		C	M	XREF: M(4628).
					J ^π : γ to 2 ⁺ ; log ft=5.83 from 4 ⁽⁺⁾ .
4677 4	3 ⁻			J	J ^π : L(p,p')=3.
4699.5 3	(3,4 ⁺)		C		J ^π : γ to 2 ⁺ ; log ft=6.16 from 4 ⁽⁺⁾ .
4757.2 4	(3,4 ⁺)		C	J m	XREF: J(4758).
					J ^π : γ to 2 ⁺ ; log ft=6.43 from 4 ⁽⁺⁾ ; if L(p,p')=(3) corresponds to this level, then J ^π =(3 ⁻).

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Adopted Levels, Gammas (continued) ^{74}Se Levels (continued)

E(level) ^{†‡}	J ^π @	T _{1/2} [#]	XREF	Comments
4794.45 21	(3,4,5)		C m	J ^π : log ft=5.98 from 4 ⁽⁺⁾ ; if L(p,p')=(3) corresponds to this level, then J ^π =(3 ⁻).
4848.7 ⁱ 3	(9 ⁻)	0.40 ps +13-11	F	J ^π : γ's to 7 ⁻ and 9 ⁻ ; band assignment.
4877.49 ^l 24	(10 ⁺)		F	J ^π : γ's to 8 ⁺ and 10 ⁺ ; band assignment.
5060.2 4			F	
5146 4	3 ⁻		J	J ^π : L(p,p')=3.
5209.2 ^k 4	10 ^{-b}	0.9 ps 3	DEF	
5426 4	3 ⁻		J	J ^π : 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	J ^π : 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	J ^π : 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 (³He,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 ⁷⁴Br ε decay (25.4 min) will restrict J^π to 1 if J^π ⁷⁴Br g.s.=0⁻.

^a γ's to 2⁺ and 4⁺.

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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)

$\gamma(^{74}\text{Se})$										
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult. #	δ	$\alpha^@$	$I_{(\gamma+ce)}$	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	$q_K^2(E0/E2)=0.203$ 14, $X(E0/E2)=0.011$ 5, $\rho^2(E0)=0.0231$ 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 $\gamma\gamma(\theta)$ in ^{74}Br ε (46 min). Other: -2.6 2 from $\gamma\gamma(\theta)$ 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]				$\delta=0.18$ 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
										$\delta=-4.3$ 3 or 2.4 2 (1992Ba68).
										Mult.: $\Delta J=0$ 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 $\times 10^{-6}$ 10
		1080.4 2	100 14	1269.01	2 ⁺	(E1)				B(E1)(W.u.)=5.1 $\times 10^{-6}$ 11
		1714.9& 2	91 9	634.74	2 ⁺	(E1)				B(E1)(W.u.)=1.15 $\times 10^{-6}$ 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.: $\Delta J=0$ 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 ⁺)					

Adopted Levels, Gammas (continued)

$\gamma(^{74}\text{Se})$ (continued)							
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	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

Adopted Levels, Gammas (continued)

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

$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	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 ⁺		

Adopted Levels, Gammas (continued)

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

$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult. [#]	Comments
3841.69	7 ⁻	325.84 15	72 7	3515.95	7 ⁻	(D)	Mult.: $\Delta J=0$ 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 ^b 4	<60	1363.17	4 ⁺		
		3040.4 ^b 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 ⁺		

Adopted Levels, Gammas (continued)

$\gamma(^{74}\text{Se})$ (continued)							Comments
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult.#	
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 ⁺		

Adopted Levels, Gammas (continued)

$\gamma(^{74}\text{Se})$ (continued)						
$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult. #
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]
		1007.1 3	100 15	3841.69	7 ⁻	[E2]
4877.49	(10 ⁺)	621.2 2	100 13	4256.29	10 ⁺	(D)
		948.4 5	75 9	3929.2	(8 ⁺)	
		1679 ⁴ 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)
5443.1	12 ⁺	1186.7 4	100	4256.29	10 ⁺	E2
5491.2	11 ⁻	1088.0 3	100	4403.20	9 ⁻	E2
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]
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
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
6735.6	14 ⁺	1292.4 4	100	5443.1	12 ⁺	E2
7063.7	(13 ⁻)	1135.2 6	100	5928.5	(11 ⁻)	[E2]
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
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
10128.8	(18 ⁺)	1591.5 7	100	8537.3	(16 ⁺)	Q
10370.5	(18 ⁻)	1554.8 7	100	8815.6	16 ⁻	

[M1,E2] B(M1)(W.u.)<0.09; B(E2)(W.u.)<665
[E2] B(E2)(W.u.)=63 +22-25
(D) Mult.: ΔJ=0 transition.

B(E2)(W.u.)=32 11
B(E2)(W.u.)=1.1×10² 3
B(E2)(W.u.)=87 8

B(E2)(W.u.)=80 22

B(E2)(W.u.)>33

B(E2)(W.u.)=6.E+1 3
B(E2)(W.u.)=63 7
B(E2)(W.u.)>21

B(E2)(W.u.)=81 17

B(E2)(W.u.)=43 12

Adopted Levels, Gammas (continued)

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

$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ^\ddagger	E_f	J_f^π	Mult. [#]
10826.4	(19 ⁺)	1532 <i>I</i>	100	9294.4	(17 ⁺)	
10926.3	(19 ⁻)	1626 <i>I</i>	100	9300.3	17 ⁻	
11360.2	20 ⁺	1679.7 <i>I</i>	100	9680.5	18 ⁺	Q
12104.5	(20 ⁻)	1734 <i>I</i>	100	10370.5	(18 ⁻)	
13202.3	22 ⁺	1842 <i>I</i>	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 multiplicities, and mixing ratios, unless otherwise specified.

[&] Multiply placed.

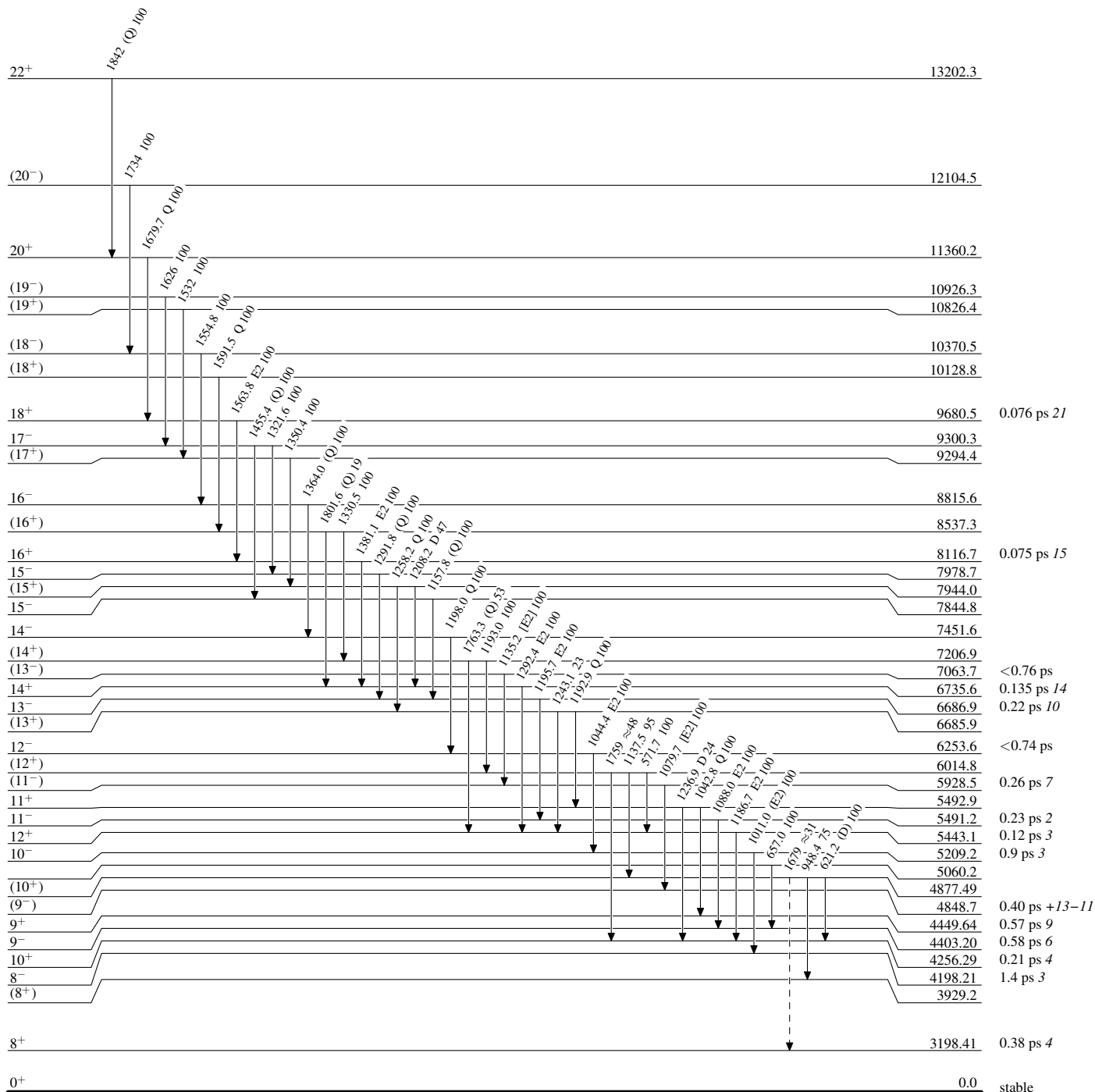
^a Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Legend

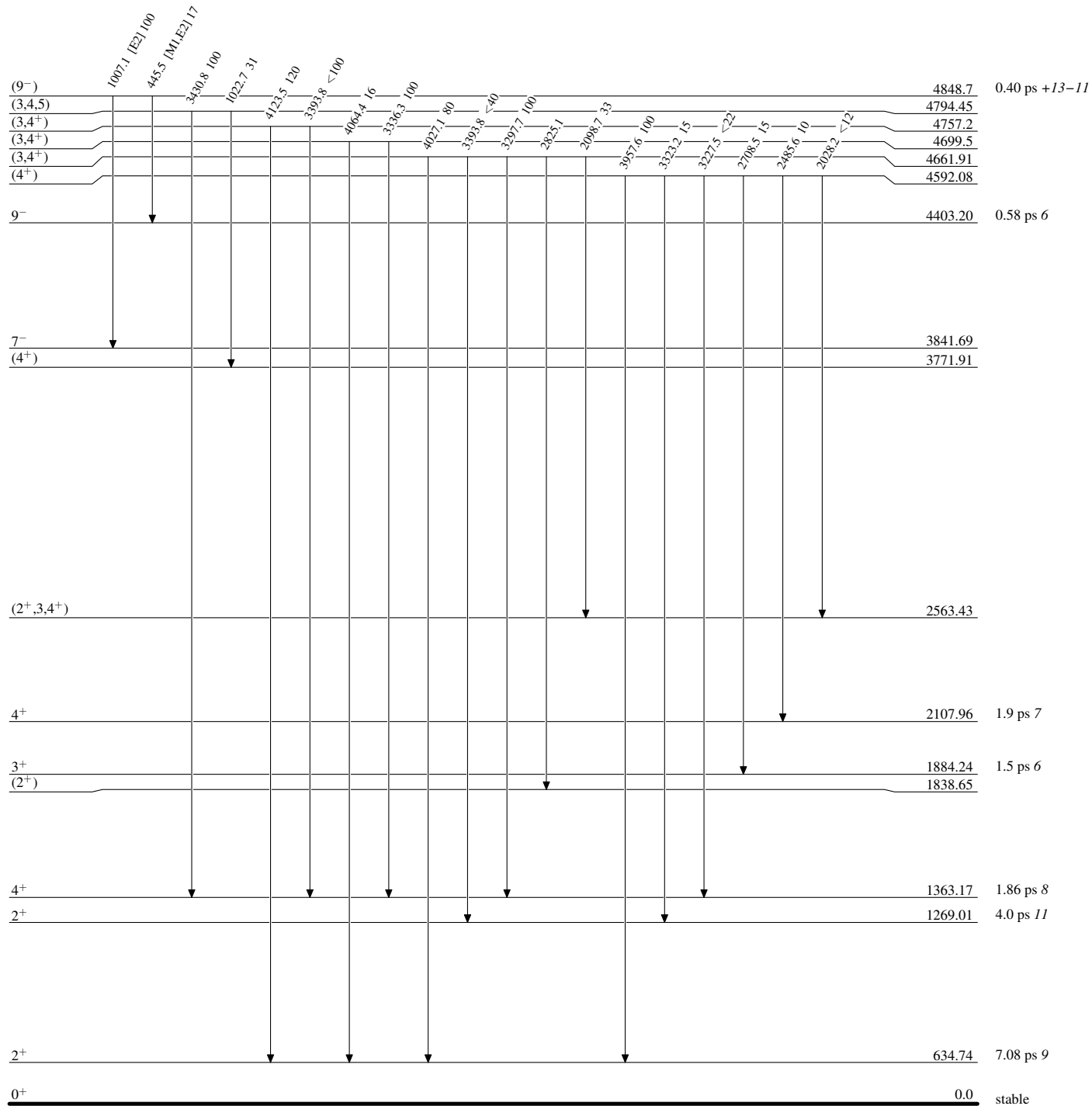
Level Scheme

Intensities: Relative photon branching from each level

-----► γ Decay (Uncertain)


Adopted Levels, Gammas**Level Scheme (continued)**

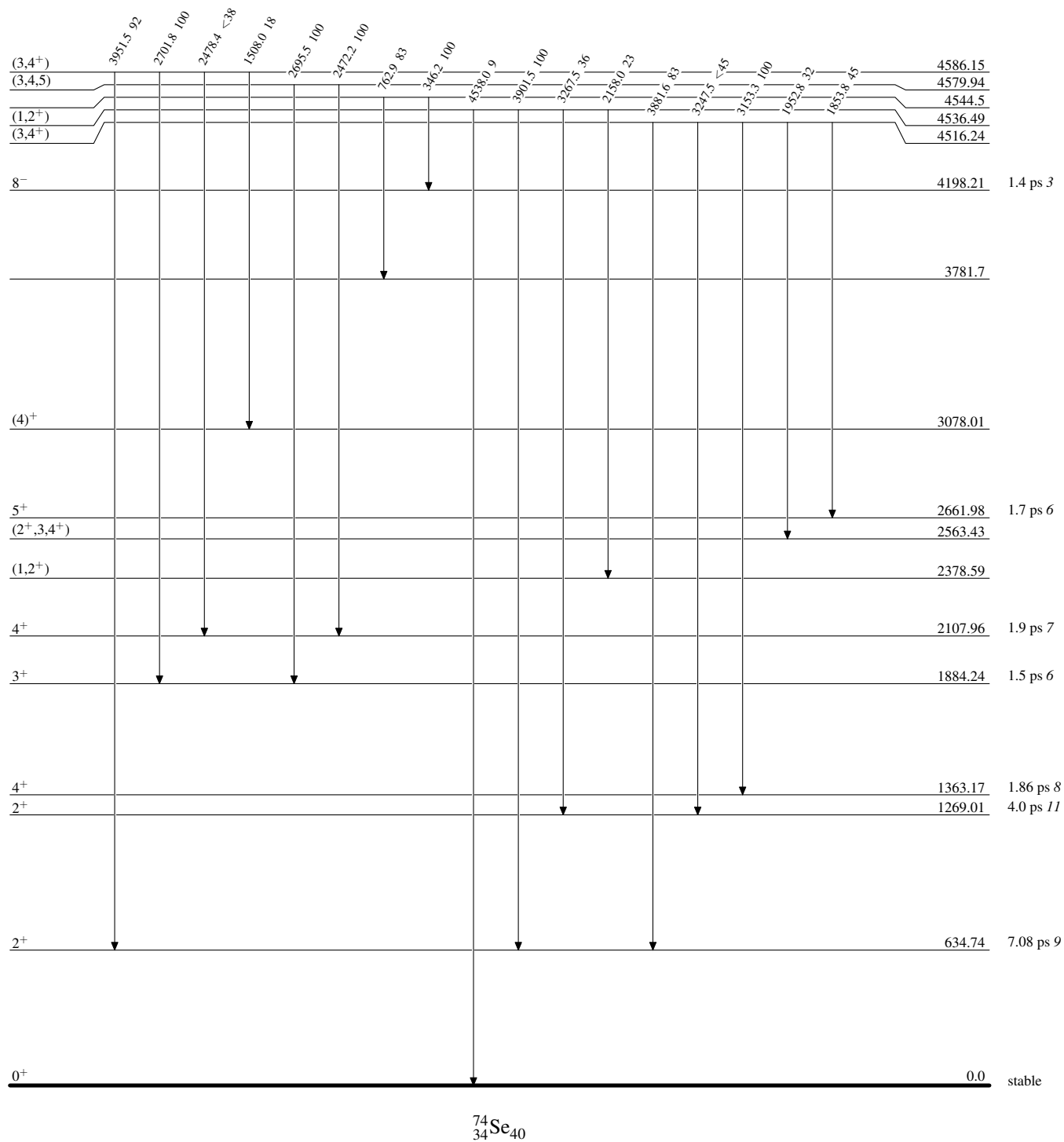
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

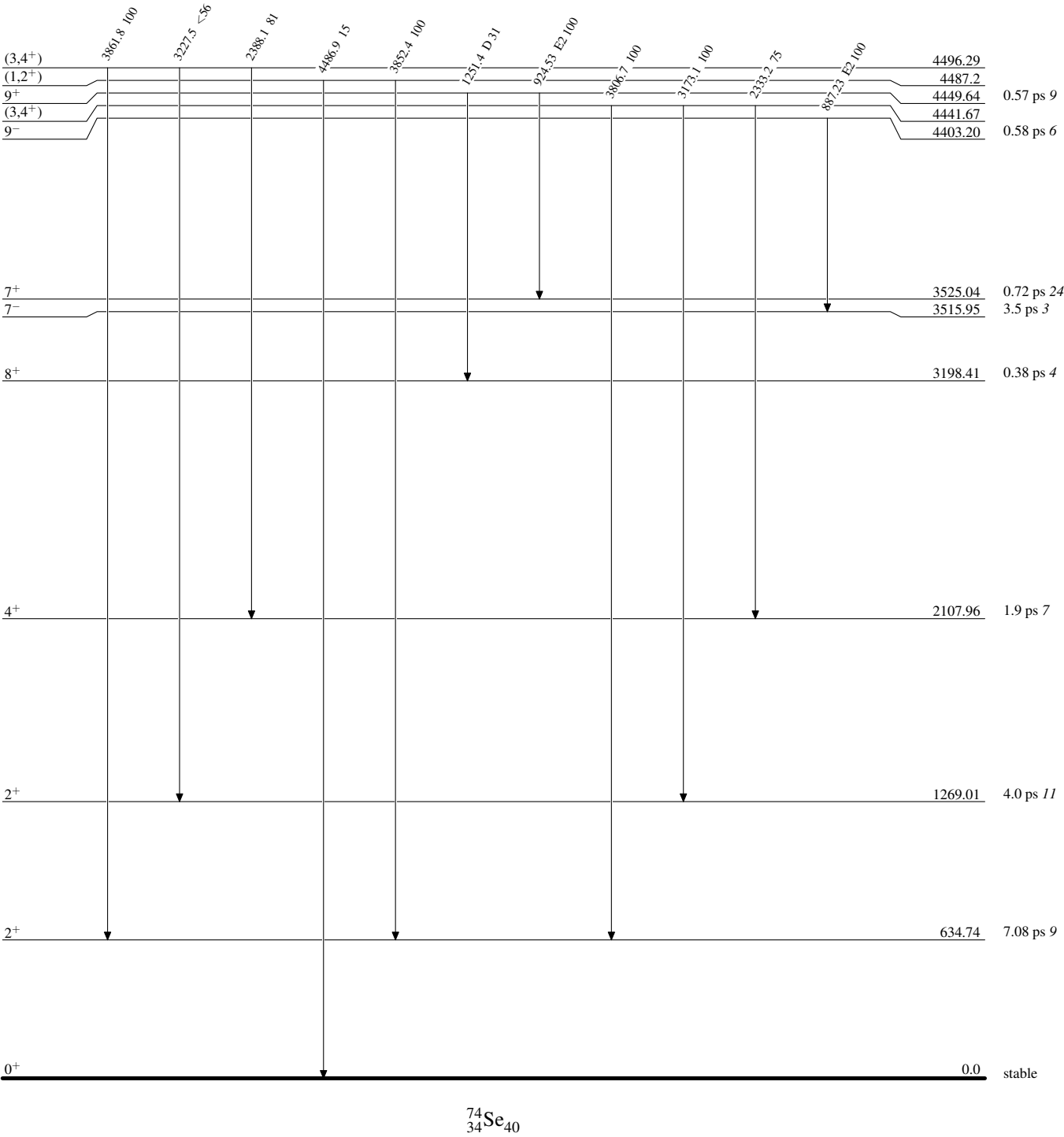
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

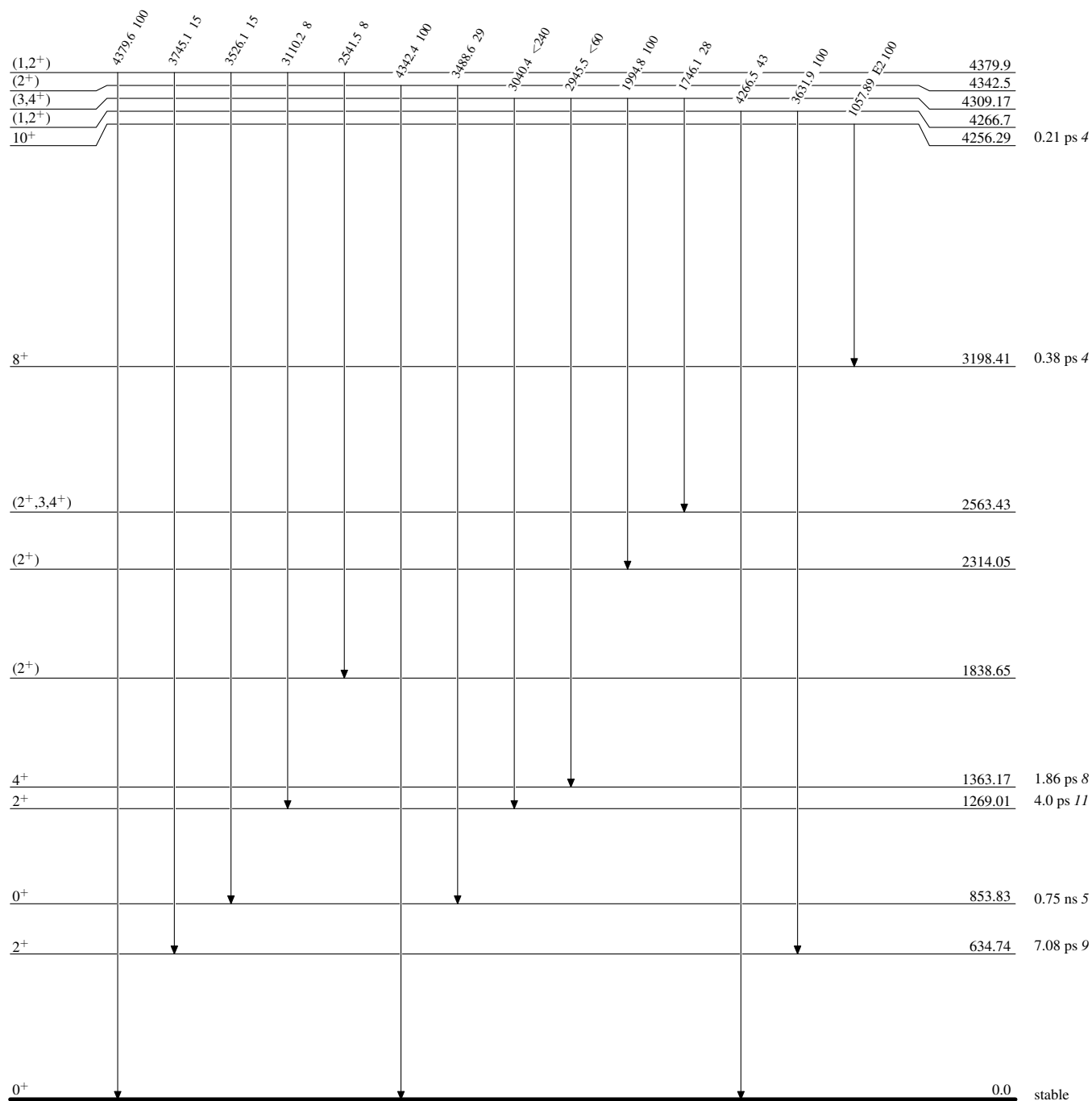


⁷⁴Se₃₄⁻¹⁶

Adopted Levels, Gammas

Level Scheme (continued)

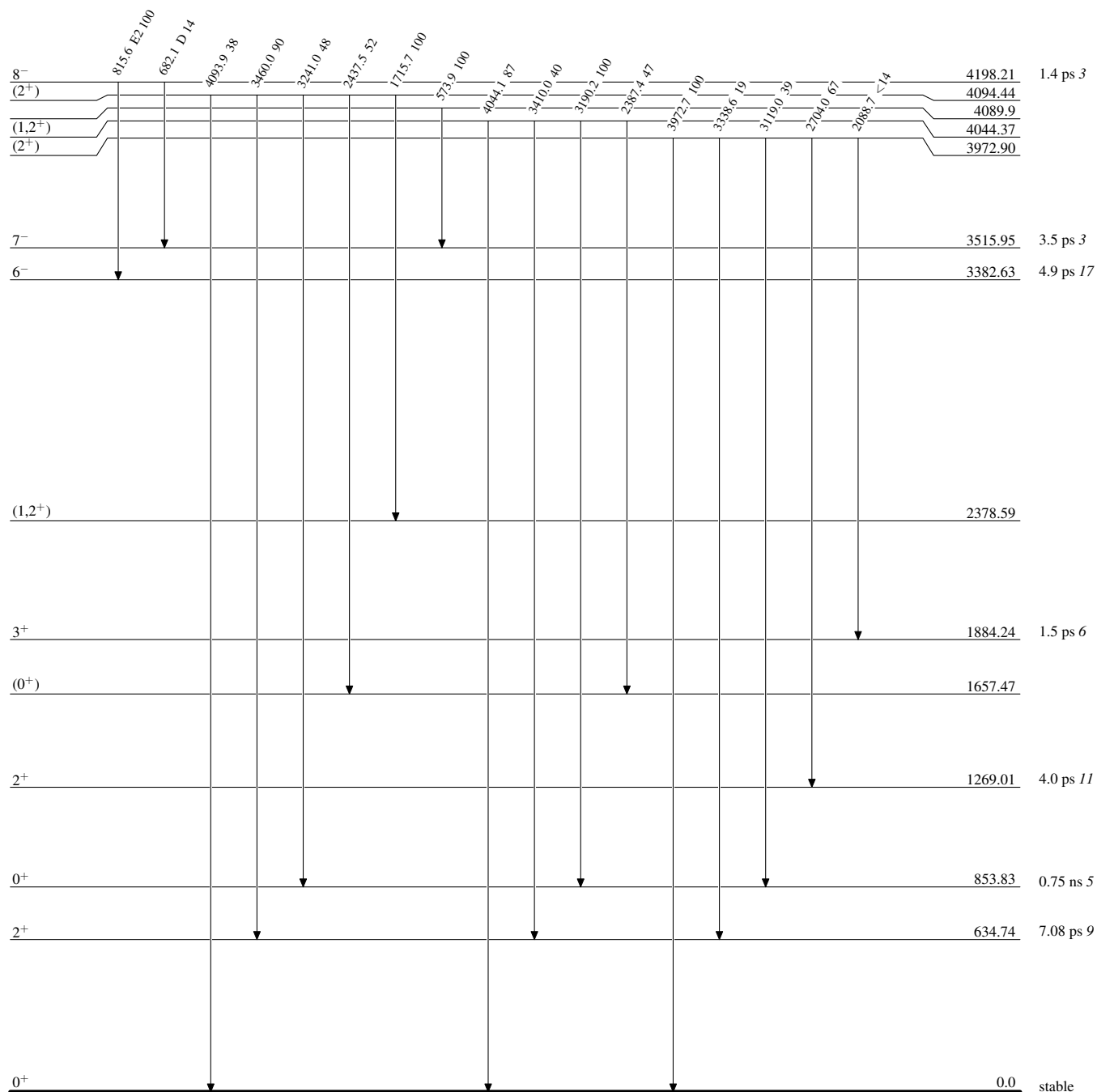
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



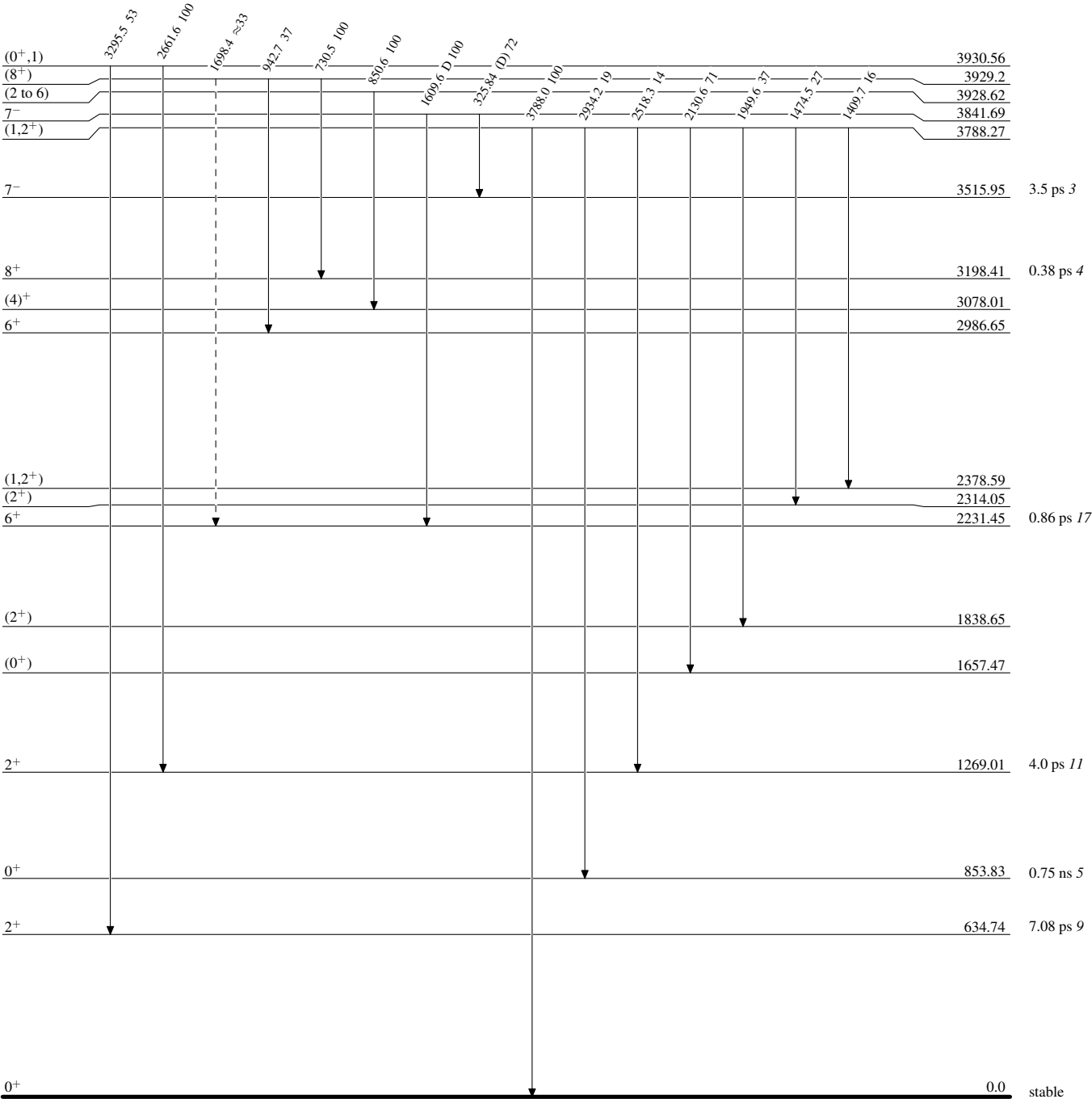
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

-----► γ Decay (Uncertain)

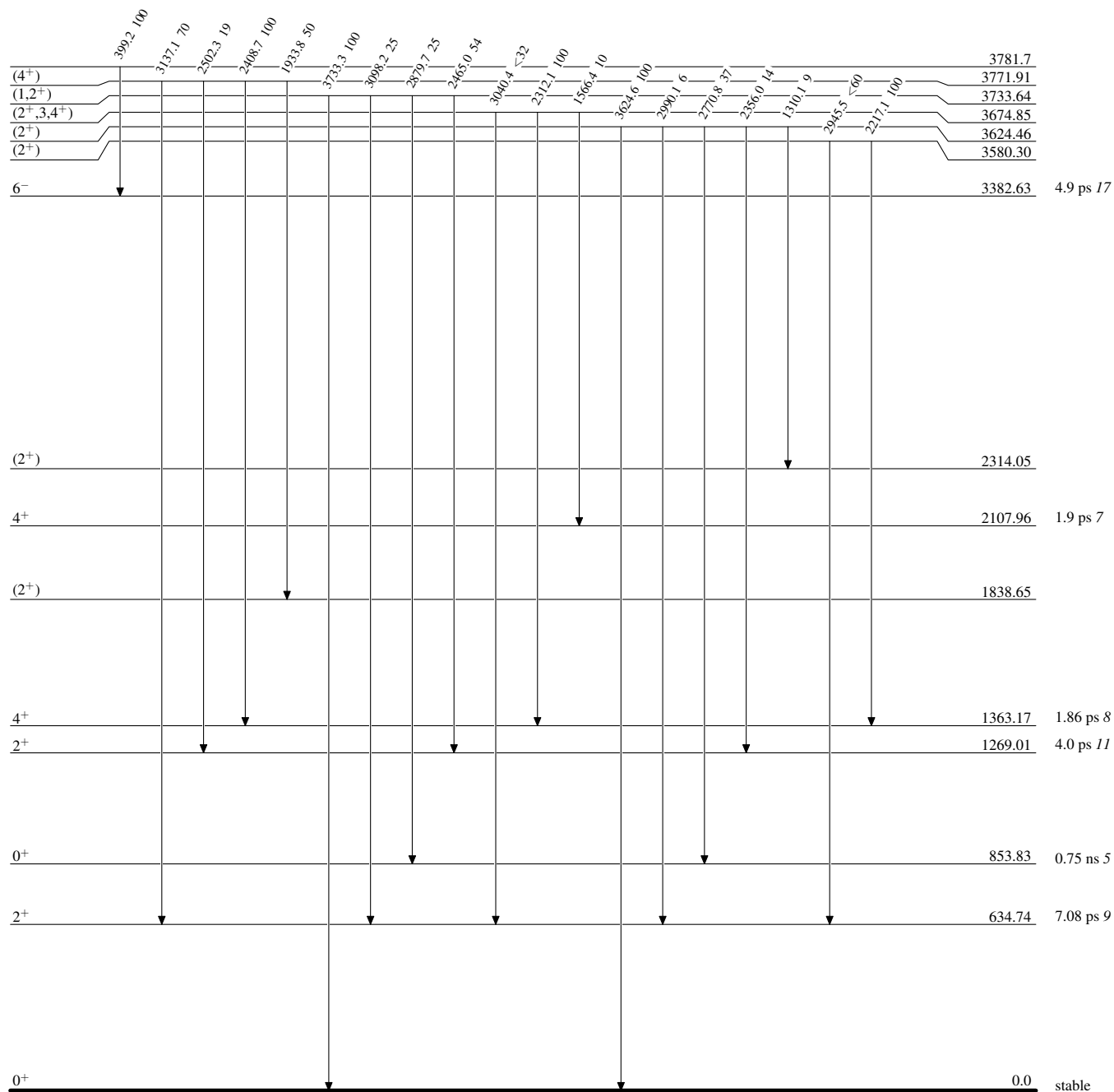


⁷⁴Se₃₄

Adopted Levels, Gammas

Level Scheme (continued)

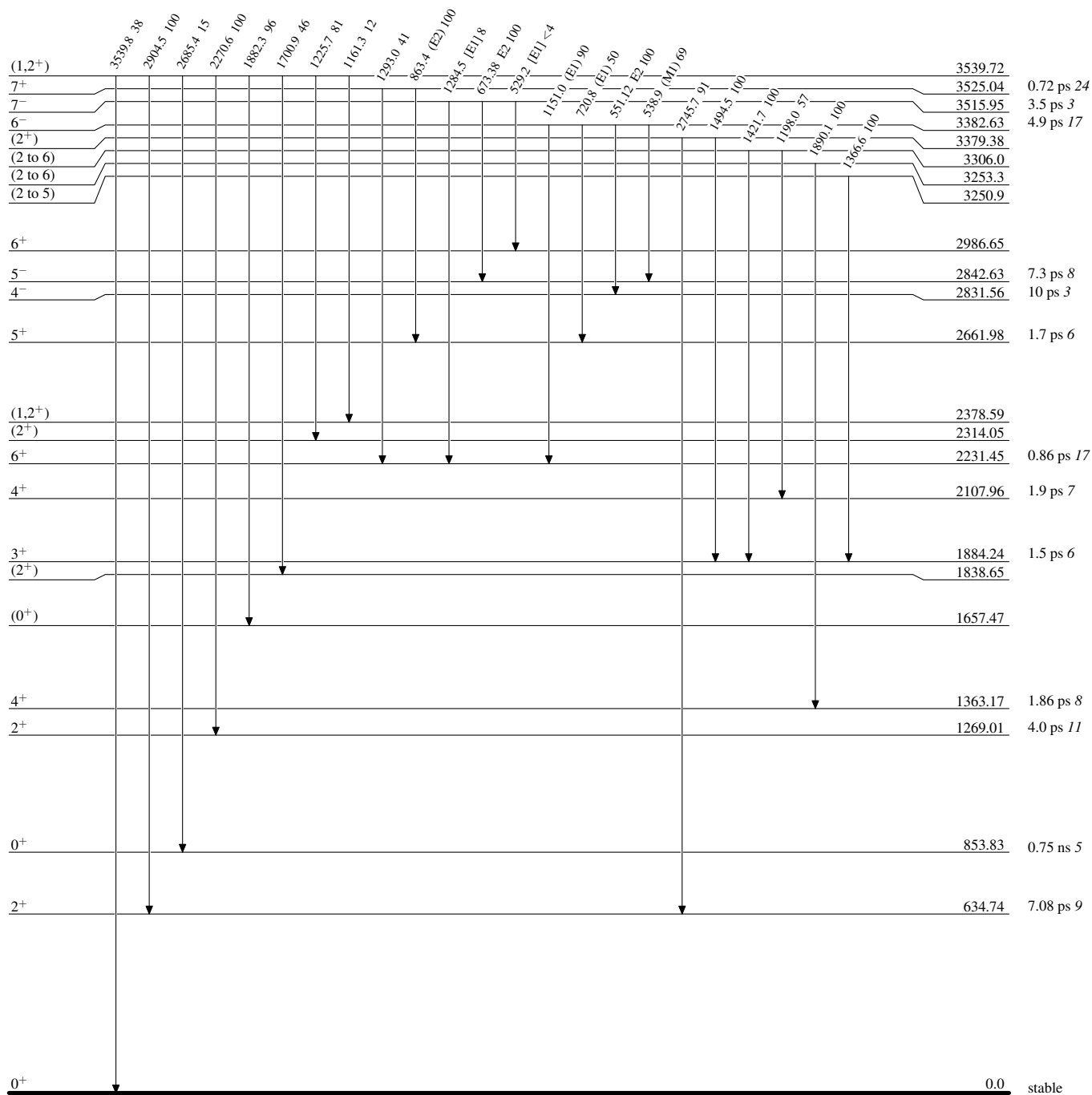
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

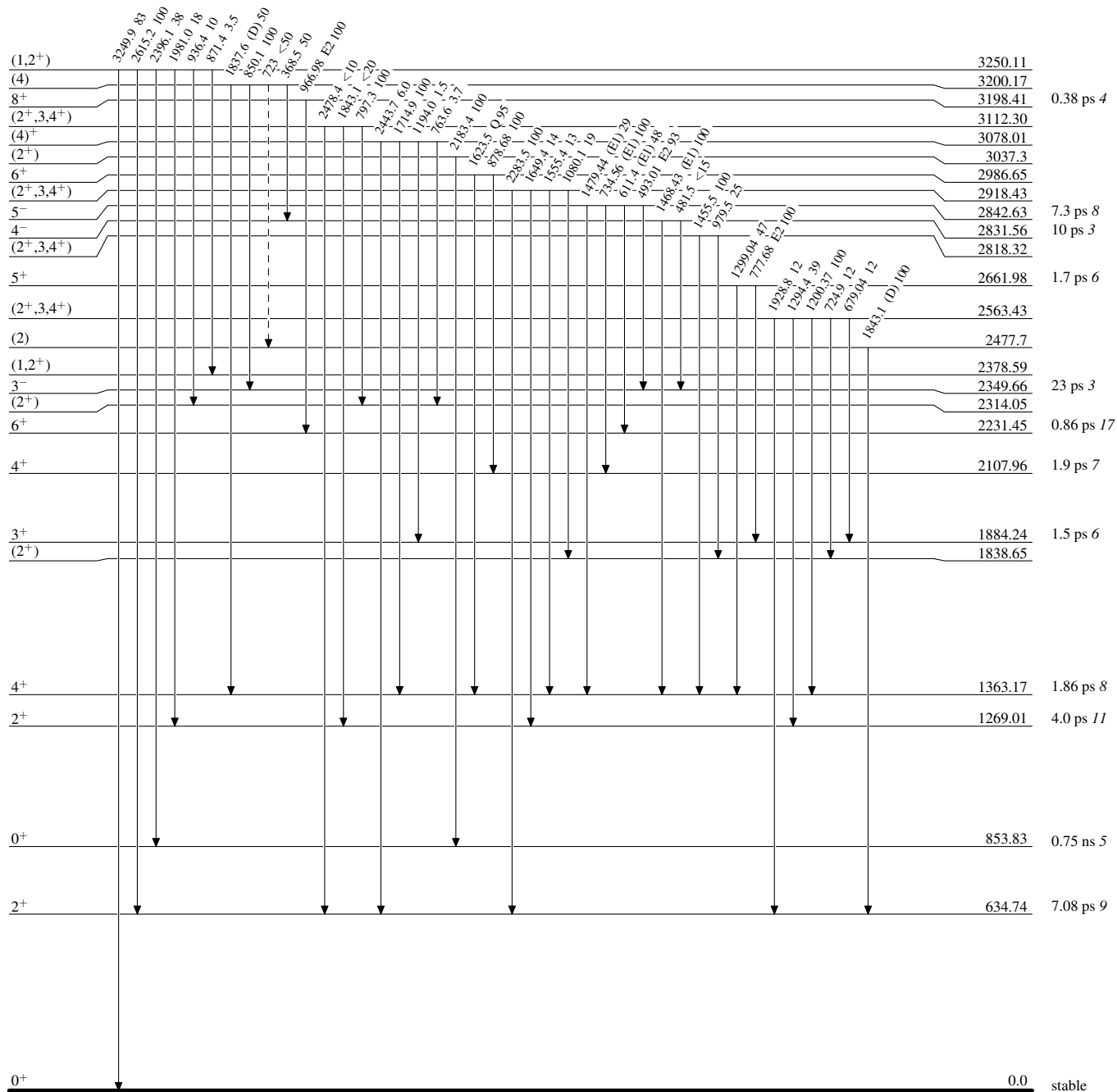


Adopted Levels, Gammas

Legend

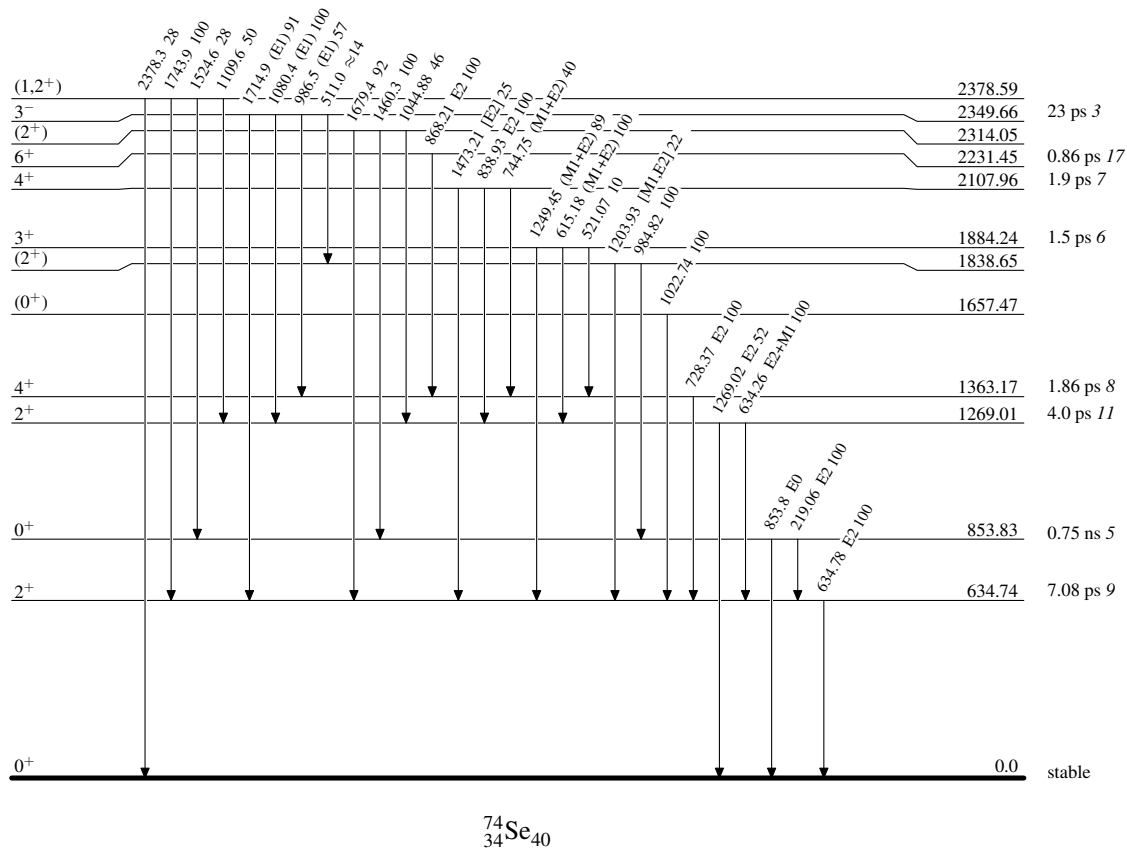
Level Scheme (continued)

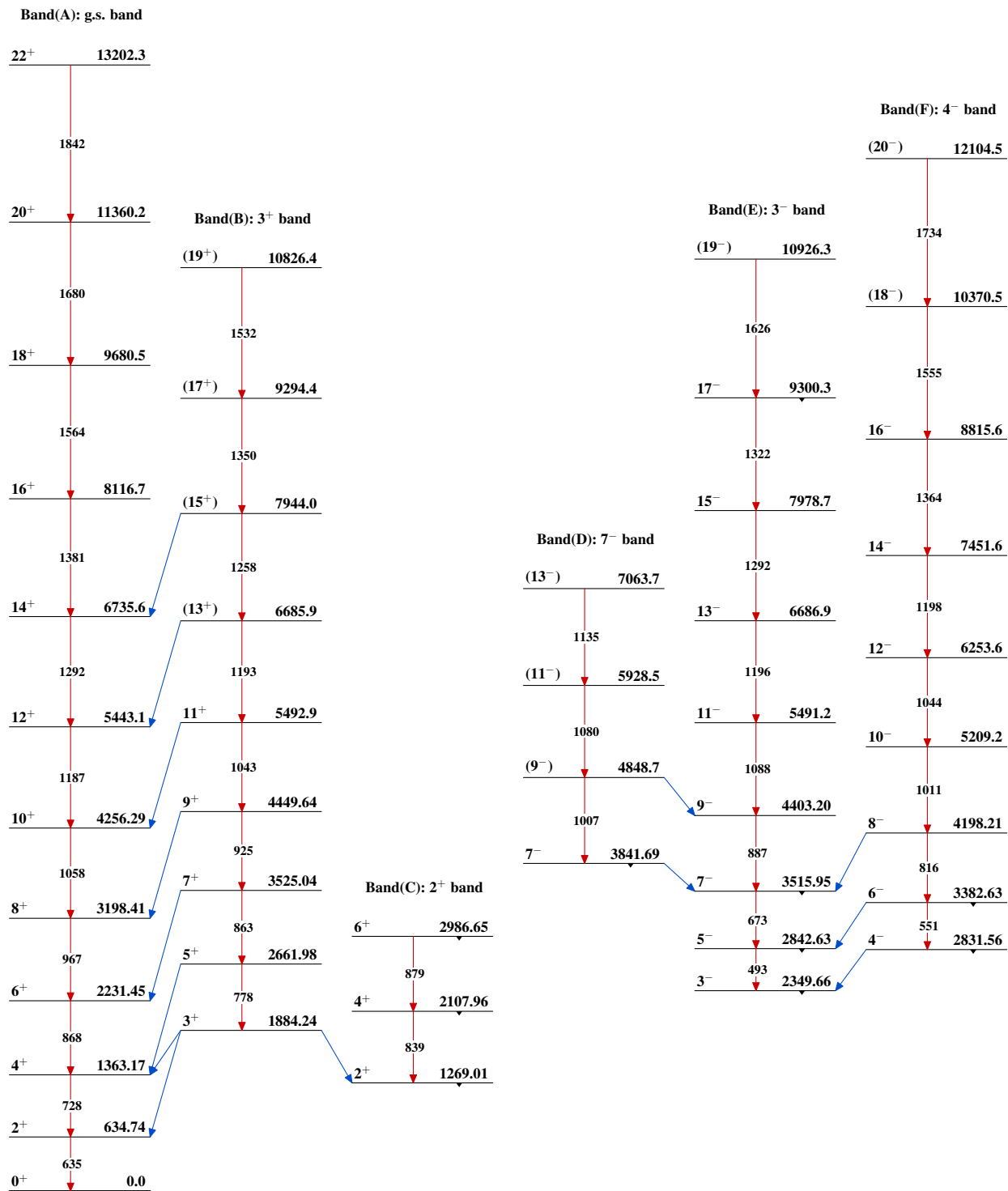
Intensities: Relative photon branching from each level

-----► γ Decay (Uncertain)


Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level

 $^{74}_{34}\text{Se}_{40}$

Adopted Levels, Gammas

Adopted Levels, Gammas (continued)