Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	K. Kitao, Y. Tendow and A. Hashizume	NDS 96, 241 (2002)	1-Dec-2001

Q(β^-)=−2681 *8*; S(n)=9104.8 *11*; S(p)=10688 *8*; Q(α)=−4811.0 *9* 2012Wa38
Note: Current evaluation has used the following Q record.
Q(β^-)=−2681 *7*; S(n)=9107.4 *22*; S(p)=10689 *7*; Q(α)=−4808 *4* 1995Au04

^{120}Sn Levels

Cross Reference (XREF) Flags

A	^{120}In β^- decay (3.08 s)	I	^{120}Sn(p,p′),(^{3}He,^{3}He′),(α,α′),	Q	^{120}Sn(e,e′)
B	^{120}In β^- decay (46.2 s)	J	^{120}Sn(n,n′γ)	R	^{120}Sn(e,e′p) IAR
C	^{120}In β^- decay (47.3 s)	K	^{121}Sb(d,^{3}He),(t,α)	S	^{120}Sn(π^+,π^0),(π^-,π^0)
D	^{120}Sb β^+ decay (15.89 min)	L	^{122}Sn(p,t)	T	^{121}Sb(μ^-,nγ)
E	^{120}Sb ε decay (5.76 d)	M	^{124}Te(d,^{6}Li)	U	^{122}Sn(^{16}O,^{18}O)
F	Coulomb excitation	N	(HI,xnγ)	V	^{123}Sb(p,α)
G	^{118}Sn(t,p)	O	^{120}Sn(γ,γ′)	W	^{120}Sn(d,d′)
H	^{119}Sn(d,p),(t,d),(pol d,p)	P	^{120}Sn(p,p′γ)		

E(level)†	J$^\pi$	T$_{1/2}$‡	XREF	Comments
0.0	0$^+$	stable	ABCDEFGHIJKLMNOPQR TUV	
1171.265 *15*	2$^+$	0.640 ps *12*	ABCDEFGHIJKLMNOPQ TU	μ=−0.28 *14*; Q=−0.05 *10* XREF: K(1150). J$^\pi$: L(p,p′)=2. μ: transient field integral PAC (1989Ra17). Q: Coulomb excitation orientation (1989Ra17). T$_{1/2}$: weighted av of 0.652 ps *10* (from B(E2) in Coul. ex.), 0.617 ps *14* (from DSA in Coul. ex.), and 0.63 ps *8* in (γ,γ′).
1875.108 *25*	0$^+$	7.4 ps *10*	AB D FGHIJ LM P	J$^\pi$: L(t,p)=0. T$_{1/2}$: from B(E2) (Coul. ex.) in 1981Ba05.
2097.205 *20*	2$^+$	1.3 ps *4*	AB F HIJKLM OP	J$^\pi$: L(d,^{3}He)(t,α)=2; γ to 0$^+$; Coul. ex. T$_{1/2}$: from B(E2) (Coul. ex.) in 1981Ba05. Other: 0.7 ps *+4−2* (n,n′γ).
2159.931 *25*	0$^+$	>4 ps	AB D FGH J LM OP	J$^\pi$: L(t,p)=0. T$_{1/2}$: from B(E2) in Coul. ex.
2173			O	J$^\pi$: this level is not confirmed in (n,n′γ), where the authors claim that all levels with J=1 to 5 below E=3100 and with J=0 below 2900 are expected to be populated.
2194.299 *21*	4$^+$	1.4 ps *2*	BC EFG IJKLMN P	J$^\pi$: L(p,t)=4. T$_{1/2}$: from B(E2) in Coul. ex.; other: >0.76 ps from (n,n′γ).
2284.27 *6*	5$^-$	5.55 ns *3*	BC E G IJ LMN	μ=−0.280 *25*; Q=0.033 *2* μ: differential PAC (1989Ra17). Other: −0.37 *5* from integral PAC (1989Ra17). Q: differential PAC; value recalculated and relative to μ=0.094 *4* for ^{119}Sn (24 level, 3/2$^+$) (1989Ra17). J$^\pi$: L(p,t)=5; $\gamma\gamma(\theta)$ and $\gamma\gamma$(pol) in ε decay (5.76 d). T$_{1/2}$: from $\gamma\gamma$(t) in ε decay; weighted average of 6.05 ns *20* (1960Ik01), 5.2 ns *4* (1961Bo13), 5.53 ns *6* (1962Bo16), 5.55 ns *25* (1967Ra26), and 5.55 ns *3* (1980Mi13). Other: 8.24 ns *23* (1963Cu04).
2297@ *15*	0$^+$,1$^+$		H O	XREF: O(2310). J$^\pi$: L(d,p)(t,d)(pol d,p)=0.

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Adopted Levels, Gammas (continued)

^{120}Sn Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$[‡]	XREF	Comments
2355.383 *24*	2^+	0.33 ps *+10−7*	AB GHIJ LM OP	XREF: O(2361). Jπ: L(p,t)=2.
2400.30 *5*	3^-	0.116 ps *8*	B FG IJ LM PQ	Jπ: L(p,t)=3.
2420.90 *3*	2^+	0.46 ps *+21−10*	AB H JKLM OP	Jπ: E2 γ to 0^+.
2465.632 *23*	4^+	0.32 ps *+7−4*	B g IJ LM P	XREF: g(2478). Jπ: L(p,t)=4.
2481.63 *6*	7^-	11.8 μs *5*	BC E g IJ LMN	XREF: g(2478). Jπ: L(p,t)=7. $T_{1/2}$: from Xγ(t) (1960Ik01); others: 11 μs *1* (1960Ik01), 11.2 μs *10* (1961Bo13).
2540[b] *10*	(5−)		I	Jπ: L(p,p′)=(5).
2587.25 *15*	0^+	>0.34 ps	GH J LM O	Jπ: L(p,t)=0.
2643.353 *20*	4^+	>1.0 ps	B IJ LM	Jπ: L(p,t)=4.
2685.16 *6*	6^+		B g iJ	XREF: g(2693)i(2687). Jπ: E1+M2 γ to 5^-; γ(θ) and γ(lin. Pol) in (n,n′γ).
2691 *3*	$(2^+\&6^+)$		g i L	XREF: g(2693)i(2687). Jπ: l(p,t)=2+6. E(level): doublet in (p,t).
2695.94 *6*	4^-		B iJ M	XREF: i(2687). Jπ: M1+E2 γ to 5^-, D+Q γ to 3^-.
2728.12 *3*	2^+	0.24 ps *+5−8*	B HIJ LM O	Jπ: E2 γ to 0^+. $T_{1/2}$: other: 0.15 ps *7* in (γ,γ′).
2749.71 *6*	6^-		C iJ	XREF: i(2753). Jπ: M1+E2 γ′s to 5^- and 7^-.
2751 *3*	4^+		i L	XREF: i(2753). Jπ: L(p,t)=4.
2800.05 *7*	5^-		H J L	Jπ: L(p,t)=5.
2802 *10*	$(7^-,8^+)$		I	Jπ: L(p,p′)=(7,8).
2835.39 *3*	1^+	0.13 ps *+6−3*	HiJ l	XREF: i(2843)l(2840). Jπ: L(d,p)(t,d)(pol d,p)=2; D γ to 0^+.
2836.52 *7*	(8^+)	0.09 ps *+4−2*	C iJ l N	XREF: i(2843)l(2840). Jπ: D+Q γ to $(7)^-$, (E2) γ from (10^+).
2844.34 *7*	$(6)^-$		iJ	XREF: i(2843). Jπ: M1+E2 γ to 5^-, D+Q γ to $(7)^-$.
2857.61 *8*	(0^+)		G J	Jπ: from γ(θ) and population of this level in (n,n′γ).
2902.22 *22*	(10^+)	6.26 μs *11*	N	Jπ: from syst on $J^\pi=10^+$ isomers in ^{116}Sn-^{120}Sn isotopes. $T_{1/2}$: from (HI,xnγ).
2930.53 *5*	2^+	0.11 ps *2*	HIJ L O	Jπ: E2 γ to 0^+. $T_{1/2}$: from (γ,γ′).
2975.69 *7*	4^-		J L	Jπ: M1+E2 γ′s to 3^- and 5^-.
2997			H	
3009 *9*	2^+		L	Jπ: L(p,t)=2.
3034.75 *9*	(0^+)		J O	Jπ: from γ(θ) and population of this level in (n,n′γ).
3057.946 *24*	4^+		B IJ L O	XREF: I(3062). Jπ: L(p,p′)=4, L(p,t)=4.
3069.73 *8*	(6^+)		J	Jπ: stretched Q γ to 4^+.
3077.38 *8*	3^+		J	Jπ: M1+E2 γ to 2^+, D+Q γ to 4^+.
3100 *3*	(1^-)		KL	XREF: K(3090). Jπ: L(p,t)=(1).
3157.97 *9*	2^+	0.050 ps *+13−10*	HIJ L O	XREF: I(3161).

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Adopted Levels, Gammas (continued)

^{120}Sn Levels (continued)

E(level)†	Jπ	T1/2‡	XREF	Comments
				Jπ: E2 γ to 0+. T1/2: other: 0.071 fs *8* in (γ,γ′).
3179.06 *3*	4+		B G IJ L	Jπ: L(p,p′)=4, L(p,t)=4.
3208.54 *15*	0+		J L	Jπ: L(p,t)=0.
3210 *10*	1+,2+,3+		H	Jπ: L(d,p)(t,d)(pol d,p)=2.
3231.95 *7*	1+,2+,3+		J	Jπ: M1+E2 γ to 2+.
3237.33 *8*	(1,2)		J	Jπ: γ to 0+.
3252 *3*	5−		L	Jπ: L(p,t)=5.
3262.89 *11*			J	
3279.29 *9*	(1−)	0.012 ps *+4−3*	iJ L O	XREF: i(3281). Jπ: L(p,t)=(1). T1/2: other: 0.0049 ps *3* in (γ,γ′).
3284.62 *9*	2+	0.9 ps *3*	HiJ O	XREF: i(3281). Jπ: E2 γ to 0+, RUL rules out M2. T1/2: from (γ,γ′). Other: 0.17 ps *+44−8* in (n,n′γ).
3330 *10*	(6+,7−)		I	Jπ: L(p,p′)=(6,7).
3341 *3*			L	E(level): unresolved peak. Jπ=3−&4+ is suggested.
3349.92 *5*	(4)+		B J	Jπ: log *ft*=5.62 from (5)+, γ′s to 2+ and 4+.
3386.32 *15*	2+		HIJ L	Jπ: L(p,t)=2,3; Q γ to 0+ excludes 3−.
3438.23 *8*	4+		B iJ L	XREF: i(3438)L(3442). Jπ: L(p,t)=4,5; γ to 2+ excludes 5−.
3446.48 *7*	(7−,8−)		C i	XREF: i(3438). Jπ: log *ft*=4.25 from (8−), γ to (6)−.
3455 *3*			i L	XREF: i(3460).
3471.54 *10*	3−		GHiJ L	XREF: i(3460). Jπ: L(t,p)=3.
3547.58 *19*	1,2		H J O	Jπ: D,Q γ to 0+.
3559 *10*			I	
3581.90 *22*	(1,2)	0.06 ps *+6−3*	gHiJ O	XREF: g(3593)i(3585). Jπ: γ to 0+. T1/2: other: 0.35 ps *10* in (γ,γ′).
3600			gHi	XREF: g(3593)i(3585).
3631.14 *18*	2+		JK O	Jπ: γ′s to 2+ and 4+; γ from 1−.
3644.48 *16*	(6+,7−)		C HI	XREF: H(3660)I(3657). Jπ: L(p,p′)=(6,7).
3711.01 *17*	(1,2)	0.09 ps *+17−4*	HIJ V	Jπ: γ to 0+.
3765.31 *24*	1+,2+	0.089 ps *17*	HIJ O	Jπ: γ to 0+, L(d,p)(t,d)(pol d,p)=2. T1/2: from (γ,γ′).
3772.09 *20*	+		g JK	XREF: g(3780)K(3750). Jπ: L(d,^{3}He)(t,α)=4.
3777.21 *6*	4+		B gHI	XREF: g(3780)H(3800)I(3789). Jπ: L(p,p′)=4.
3835.36 *24*	2+	0.13 ps *6*	G IJ O	XREF: G(3818). Jπ: L(p,p′)=2. T1/2: from (γ,γ′). Other: 0.12 ps *+72−7* in (n,n′γ).
3857.56 *13*	(4)		B J	Jπ: γ′s to 2+ and 4+, log *ft*=6.06 from (5)+.
3874.96 *24*	2+		HIJ	Jπ: L(p,p′)=2.
3906.6 *3*	−		JK	Jπ: L(d,^{3}He)(t,α)=1.
3928& *10*			HI	XREF: H(3940).
3955 *10*			I	
3990.1 *4*	(2)+		HIJK	XREF: K(4000). Jπ: L(p,p′)=(2), L(d,^{3}He)(t,α)=4.
4006.5 *6*	(1,2)	0.17 ps *5*	J O	Jπ: γ to 0+. T1/2: from (γ,γ′).

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Adopted Levels, Gammas (continued)

^{120}Sn Levels (continued)

E(level)†	Jπ	XREF	Comments
4011.4 *6*	(1,2)	J	Jπ: γ to 0+.
4079.0 *4*	1+,2+,3+	HIJ	XREF: H(4060). Jπ: L(d,p)(t,d)(pol d,p)=2.
4096.5 *4*		J	
4110.4 *7*	1−	JK	Jπ: L(d,^{3}He)(t,α)=1, γ to 0+.
4146.9 *11*		O	
4180[a] *10*	−	i K	XREF: i(4190). Jπ: L(d,^{3}He)(t,α)=1.
4190	1+,2+,3+	Hi	XREF: i(4190). Jπ: L(d,p)(t,d)(pol d,p)=2.
4230 *20*	+	K	Jπ: L(d,^{3}He)(t,α)=4.
4318.2 *3*	0−,1−	JK	XREF: K(4330). Jπ: L(d,^{3}He)(t,α)=1, γ to 0+.
4360 *20*	−	H K	Jπ: L(d,^{3}He)(t,α)=1.
4410[a] *10*	−	K	Jπ: L(d,^{3}He)(t,α)=1.
4460[a] *20*	−	K	Jπ: L(d,^{3}He)(t,α)=1.
4580[a] *20*		K	
4650 *10*	−	K	Jπ: L(d,^{3}He)(t,α)=1.
4690 *20*	−	K	Jπ: L(d,^{3}He)(t,α)=1.
4720 *10*		K	
4770 *20*	−	K	Jπ: L(d,^{3}He)(t,α)=1.
4870[a] *10*		i K	XREF: i(4900). E(level): possible doublet.
4920[a] *20*	−	i K	XREF: i(4900). Jπ: L(d,^{3}He)(t,α)=1.
4970 *10*		K	
5030 *10*		K	
5090 *20*	−	K	Jπ: L(d,^{3}He)(t,α)=1.
5170[a] *10*	−	i K	XREF: i(5200). Jπ: L(d,^{3}He)(t,α)=1.
5230 *20*	+	i K	XREF: i(5200). Jπ: L(d,^{3}He)(t,α)=4.
6.3×10^3 *3*		I	
6728.6 *7*	1	O	Jπ: from γ(θ) in (γ,γ′).
6.9×10^3 *4*	−	I	Jπ: L(d,^{3}He)(t,α)=3.
7310.1[#] *7*	1	i O	XREF: i(7600). Jπ: from γ(θ) in (γ,γ′).
7686.6[#] *7*	1−	i O	XREF: i(7600). Jπ: from γ(θ) in (γ,γ′), E1 γ to g.s..
8.40×10^3 *15*		I	
8993.0 *4*	1	O	Jπ: from γ(θ) in (γ,γ′).
9.9×10^3 *5*		I	
13.3×10^3 *3*	2+	I	Jπ: L(p,p′)=2.
16.9×10^3 *4*	0+	I	Jπ: L(p,p′)=0.
19.2×10^3 *2*	(1−)	R	Jπ: from E1 excitation in (e,e′p).
19.4×10^3 *2*	(1−)	R	Jπ: from E1 excitation in (e,e′p).
20.6×10^3 *2*	(1−)	R	Jπ: from E1 excitation in (e,e′p).
20.9×10^3 *15*	3−,5−	I	Jπ: L(p,p′)=3,5.
25.0×10^3 *10*	(3−)	I	Jπ: L(p,p′)=(3).
27.9×10^3 *15*	1−,3−	I	Jπ: L(p,p′)=1,3.

† From a least-squares fit to the adopted E(γ′s) by the evaluators for levels connected with γ-transitions, except for levels populating in (γ,γ′) and for resonant levels. Others from (p,p′),(^{3}He,^{3}He′), unless otherwise noted. Also E(levels) were given in

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Adopted Levels, Gammas (continued)

^{120}Sn Levels (continued)

(d,d′), but those are not adopted due to poor resolution and questionable scale for energy of scattered particles. For the GDR′s with >34 MeV, see 1998Ba37.

‡ From DSA of γ′s in (n,n′γ), unless otherwise noted.

From (γ,γ′).

@ From (d,^{6}Li).

& From (p,p′),(d,d′),(^{3}He,^{3}He′).

a From (d,^{3}He),(t,α).

b This level is not confirmed in (n,n′γ), where the authors claim that all levels with J=1 to 5 below E=3100 and with J=0 below 2900 are expected to be populated.

Adopted Levels, Gammas (continued)

γ(^{120}Sn)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult.[a]	δ[a]	α[c]	Comments
1171.265	2^+	1171.25@ *2*	100	0.0	0^+	E2			B(E2)(W.u.)=11.41 *22*
1875.108	0^+	703.84 *2*	100	1171.265	2^+	[E2]			B(E2)(W.u.)=12.6 *17*
2097.205	2^+	222.2 *3*	0.38 *6*	1875.108	0^+				E_γ: observed only in (n,n′γ).
		925.924@ *19*	100 *4*	1171.265	2^+	M1+E2	−12 *2*		B(M1)(W.u.)=9.E−5 *5*; B(E2)(W.u.)=12 *4* Mult.: γ(θ), RUL. δ: other: −1.43 *25* (1974Ki04).
		2097.14@ *6*	56 *3*	0.0	0^+	E2[b]			B(E2)(W.u.)=0.11 *4* E_γ: other: 2098.3 *12* in β^- decay (3.08 s). E_γ: other: 990 *2* in β^- decay (3.08 s).
2159.931	0^+	988.66 *2*	100	1171.265	2^+				
2194.299	4^+	1023.048@ *18*	100	1171.265	2^+	E2			B(E2)(W.u.)=10.3 *15* Mult.: from ε decay (5.76 d).
2284.27	5^-	89.87 *16*	100 *5*	2194.299	4^+	E1		0.246	B(E1)(W.u.)=5.5×10^{-5} *4* Mult.: from ε decay (5.76 d).
		1112.98@ *18*	1.15 *7*	1171.265	2^+				B(E3)(W.u.)=0.99 *3* I_γ: other: <3.7 in β^- decay (46.2 s).
2355.383	2^+	1184.11@ *3*	100 *4*	1171.265	2^+	M1+E2	+1.0 *2*		B(M1)(W.u.)=0.014 *6*; B(E2)(W.u.)=7 *3* E_γ: other: 1185.8 *8* in β^- decay (3.08 s).
		2355.39@ *4*	41.6 *21*	0.0	0^+	E2			B(E2)(W.u.)=0.20 *7* I_γ: weighted av from β^- decay (46.2 s) and (n,n′γ).
2400.30	3^-	1229.08@ *6*	100	1171.265	2^+	E1+M2	+0.02 *2*		B(E1)(W.u.)=0.00129 *9*; B(M2)(W.u.)=2 *+4−2* E_γ: other: 1228.2 in Coul. ex.
2420.90	2^+	261.0 *4*	1.10 *22*	2159.931	0^+				E_γ: not observed in β^- decay (3.08 s, 46.2 s).
		323.82@ *10*	6.4 *4*	2097.205	2^+				E_γ: not observed in β^- decay (3.08 s).
		1249.60@ *4*	100 *4*	1171.265	2^+	M1+E2	−16 *4*		B(M1)(W.u.)=5.E−5 *4*; B(E2)(W.u.)=6 *3* E_γ: not observed in β^- decay (3.08 s). Mult.: from large mixing ratio.
		2420.89@ *4*	76 *7*	0.0	0^+	E2			B(E2)(W.u.)=0.17 *9* E_γ: other: 2422.0 *8* in β^- decay (3.08 s). I_γ: weighted av from (n,n′γ) and β^- decay (46.2 s).
2465.632	4^+	368.0 *3*	0.49 *11*	2097.205	2^+				E_γ: not observed in β^- decay (46.2 s). I_γ: if I(1294γ)=100.
		1294.33@ *2*	<100	1171.265	2^+				
2481.63	7^-	197.37# *2*	100	2284.27	5^-	E2		0.147	B(E2)(W.u.)=0.00397 *17* Mult.: from ε decay (5.76 d).
2587.25	0^+	1415.88@ *15*	100	1171.265	2^+				
2643.353	4^+	177.70@ *8*	7.7 *20*	2465.632	4^+				I_γ: unweighted av from β^- decay (46.2 s) and (n,n′γ).
		449.06@ *4*	15.4 *7*	2194.299	4^+	M1+E2	−0.38 *12*		B(M1)(W.u.)<0.022; B(E2)(W.u.)<17 I_γ: weighted av from β^- decay (46.2 s) and (n,n′γ).

$^{120}_{50}Sn_{70}$-6

Adopted Levels, Gammas (continued)

γ(^{120}Sn) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[a]	δ[a]	Comments
2643.353	4^+	546.13[@] *2*	37.5 *13*	2097.205	2^+	E2		B(E2)(W.u.)<77 I_γ: weighted av from β^- decay (46.2 s) and (n,n′γ).
		1472.07[@] *2*	100 *4*	1171.265	2^+	E2		B(E2)(W.u.)<1.4
2685.16	6^+	203.5 *2*	12.2 *10*	2481.63	7^-	(E1+M2)[b]	+0.1 *2*	
		400.88 *3*	100 *5*	2284.27	5^-	E1+M2	+0.01 *2*	
		490.95 *11*	19.3 *12*	2194.299	4^+			
2695.94	4^-	295.66 *3*	16.2 *8*	2400.30	3^-	(M1+E2)[b]	+0.01 *4*	
		411.66 *2*	100 *4*	2284.27	5^-	M1+E2	+0.08 *2*	
2728.12	2^+	1556.83 *3*	100 *5*	1171.265	2^+	M1+E2	−4.4 *8*	B(M1)(W.u.)=0.0007 *3*; B(E2)(W.u.)=3.9 *9*
		2728.09 *4*	79 *4*	0.0	0^+	E2		B(E2)(W.u.)=0.20 *5*
2749.71	6^-	268.099[@] *24*	100 *4*	2481.63	7^-	M1+E2	+0.05 *3*	
		465.41[@] *3*	60 *3*	2284.27	5^-	M1+E2	+0.03 *2*	
2800.05	5^-	515.78 *4*	100	2284.27	5^-	M1+E2	−0.02 *6*	
2835.39	1^+	1664.11 *3*	100 *5*	1171.265	2^+			
		2835.36 *4*	32.6 *17*	0.0	0^+	M1		B(M1)(W.u.)=0.0018 *9*
2836.52	(8^+)	354.90[#] *5*	100	2481.63	7^-	D(+Q)	−0.2 *2*	
2844.34	$(6)^-$	362.8 *2*	10.8 *10*	2481.63	7^-	(M1+E2)[b]	−0.3 *2*	
		560.07 *3*	100 *4*	2284.27	5^-	M1+E2	−0.03 *2*	
2857.61	(0^+)	1686.33 *7*	100	1171.265	2^+			
2902.22	(10^+)	65.7 *2*	100	2836.52	(8^+)	(E2)		B(E2)(W.u.)=2.10 *5* Mult.: from (HI,xnγ).
2930.53	2^+	1759.25 *7*	54 *3*	1171.265	2^+	M1+E2	+0.09 *6*	B(M1)(W.u.)=0.0128 *25*; B(E2)(W.u.)=0.02 *+4−25*
		2930.49 *7*	100 *6*	0.0	0^+	E2		B(E2)(W.u.)=0.44 *9*
2975.69	4^-	279.71 *6*	39.7 *20*	2695.94	4^-	D+Q	−0.09 *7*	
		575.34 *7*	35.0 *19*	2400.30	3^-	M1+E2	−0.01 *10*	
		691.56 *8*	100 *9*	2284.27	5^-	M1+E2	≈−0.4	
3034.75	(0^+)	1863.50 *8*	100	1171.265	2^+			
3057.946	4^+	414.56[@] *3*	7.3 *4*	2643.353	4^+	(M1+E2)[b]	−0.2 *2*	I_γ: from β^- decay (46.2 s). Other: 21.6 *12* in (n,n′γ).
		592.35[@] *7*	4.3 *3*	2465.632	4^+			I_γ: from β^- decay (46.2 s). Other: 10.7 *16* in (n,n′γ).
		637.03[@] *8*	5.4 *4*	2420.90	2^+			I_γ: from β^- decay (46.2 s). Other: <23 in (n,n′γ).
		702.62[§] *4*	7.4[§] *3*	2355.383	2^+			
		863.64[@] *3*	100 *3*	2194.299	4^+	M1(+E2)	−0.04 *4*	I_γ: from β^- decay (46.2 s).
		1886.65[@] *6*	13.6 *5*	1171.265	2^+			I_γ: from β^- decay (46.2 s).
3069.73	(6^+)	426.4 *4*	11.4 *15*	2643.353	4^+			
		604.0 *2*	33.3 *22*	2465.632	4^+			
		875.45 *8*	100 *5*	2194.299	4^+	Q		Mult.: stretched Q from γ(θ) in (n,n′γ).
3077.38	3^+	721.93 *15*	42 *3*	2355.383	2^+	M1+E2	+5 *+5−3*	
		883.22 *14*	61 *4*	2194.299	4^+	(M1+E2)[b]		δ: +3 *3* or −0.2 *2*.
		980.1 *2*	47 *3*	2097.205	2^+	M1+E2	+1.4 *+10−4*	Mult.: from large mixing ratio.

$^{120}_{50}Sn_{70}$-7

Adopted Levels, Gammas (continued)

γ(^{120}Sn) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[a]	δ[a]	Comments
3077.38	3+	1906.06 *13*	100 *6*	1171.265	2+	M1+E2	+4.2 *16*	Mult.: from large mixing ratio.
3157.97	2+	1986.7 *3*	18.8 *12*	1171.265	2+			
		3157.92 *9*	100 *6*	0.0	0+	E2		B(E2)(W.u.)=0.86 *24*
3179.06	4+	713.36[@] *3*	100 *4*	2465.632	4+	D+Q		I_γ: from β^- decay (46.2 s). δ: −0.22 *10* or +1.6 *5*.
		823.60[§] *17*	5.9[§] *13*	2355.383	2+			
		984.92[@] *6*	36.5 *19*	2194.299	4+	M1+E2	≈−2.5	I_γ: from β^- decay (46.2 s). Other: 46 *5* in (n,n′γ). Mult.: from large mixing ratio.
		1081.2[§] *6*	1.1[§] *6*	2097.205	2+			
		2007.82[@] *4*	76 *4*	1171.265	2+			I_γ: from β^- decay (46.2 s). I_γ: other: 90 *4* in (n,n′γ).
3208.54	0+	2037.26 *15*	100	1171.265	2+			
3231.95	1+,2+,3+	1134.74 *6*	100 *5*	2097.205	2+	M1+E2	+8 *4*	
		2060.7 *3*	14.0 *13*	1171.265	2+	(M1+E2)[b]		δ: +2 *2* or +0.8 *8*.
3237.33	(1,2)	2066.03 *7*	100 *5*	1171.265	2+			
		3238.3 *7*	9.7 *11*	0.0	0+			
3262.89		842.0 *2*	87 *6*	2420.90	2+			
		907.2 *3*	58 *6*	2355.383	2+			
		1068.5 *2*	24 *4*	2194.299	4+			
		2091.8 *2*	100 *5*	1171.265	2+			
3279.29	(1−)	3279.24 *9*	100	0.0	0+	D		
3284.62	2+	2113.26 *12*	59 *3*	1171.265	2+	(M1+E2)[b]	−0.4 *4*	B(M1)(W.u.)=0.0008 *4*; B(E2)(W.u.)=0.02 *+4−22*
		3284.64 *12*	100 *5*	0.0	0+	E2		B(E2)(W.u.)=0.029 *10*
3349.92	(4)+	706.43[§] *8*	35[§] *3*	2643.353	4+			
		929.08[§] *11*	35[§] *6*	2420.90	2+			
		1156.1[§] *3*	20[§] *4*	2194.299	4+			
		1253.03[§] *25*	9.1[§] *20*	2097.205	2+			
		2178.65[@] *5*	100 *6*	1171.265	2+			I_γ: from β^- decay (46.2 s).
3386.32	2+	2215.13 *15*	100 *8*	1171.265	2+	D+Q		δ: −0.31 *10* or +10 *+10−6*.
		3385.6 *4*	56 *3*	0.0	0+	Q		
3438.23	4+	1341.1[§] *7*	5.1[§] *19*	2097.205	2+			
		2266.94[@] *7*	100 *6*	1171.265	2+			
3446.48	(7−,8−)	609.96[&] *5*	21.5[&] *13*	2836.52	(8+)			
		696.75[&] *4*	32.1[&] *16*	2749.71	6−			
		964.86[&] *4*	100[&] *4*	2481.63	7−			
3471.54	3−	1071.46 *13*	100 *8*	2400.30	3−			
		1115.9 *2*	48 *4*	2355.383	2+			
		1374.1 *2*	43 *5*	2097.205	2+			

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Adopted Levels, Gammas (continued)

γ(^{120}Sn) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[a]	Comments
3471.54	3^-	2300.1 *4*	28 *3*	1171.265	2^+		
3547.58	1,2	2376.2 *2*	100 *5*	1171.265	2^+		
		3547.5 *6*	73 *5*	0.0	0^+	D,Q	Mult.: δ=−0.4 *2* or +4 *2* given in (1992De32) but the transition must be pure D or pure Q.
3581.90	(1,2)	853.5 *4*	40 *5*	2728.12	2^+		
		2410.6 *5*	24 *4*	1171.265	2^+		
		3582.0 *3*	100 *7*	0.0	0^+		
3631.14	2^+	1276.6 *6*	28 *4*	2355.383	2^+		
		1436.8 *6*	37 *6*	2194.299	4^+		
		2459.9 *2*	100 *6*	1171.265	2^+		
3644.48	$(6^+,7^-)$	808.4[&] *4*	18[&] *8*	2836.52	(8^+)		I_γ: from Iγ/Iγ(1163γ) in 1978Ch25. 1988Ra09 report <14.
		1162.78[&] *16*	100[&] *22*	2481.63	7^-		I_γ: uncertainty from 1978Ch25.
3711.01	(1,2)	2539.7 *2*	88 *5*	1171.265	2^+		
		3711.0 *3*	100 *7*	0.0	0^+		
3765.31	$1^+,2^+$	1410.0 *3*	89 *8*	2355.383	2^+		
		3765.1 *4*	100 *8*	0.0	0^+		
3772.09	$^+$	2600.8 *2*	100	1171.265	2^+		
3777.21	4^+	1133.88[§] *10*	38[§] *5*	2643.353	4^+		
		1311.57[§] *14*	21[§] *3*	2465.632	4^+		
		1421.6[§] *4*	8[§] *3*	2355.383	2^+		
		1494.2[§] *7*	7[§] *4*	2284.27	5^-		
		1582.76[§] *17*	43[§] *6*	2194.299	4^+		
		1679.89[§] *20*	18[§] *4*	2097.205	2^+		
		2605.94[§] *8*	100[§] *6*	1171.265	2^+		
3835.36	2^+	2664.0 *3*	100 *8*	1171.265	2^+		
		3835.4 *4*	96 *8*	0.0	0^+		
3857.56	(4)	1663.3[§] *6*	36[§] *18*	2194.299	4^+		
		1760.54[§] *20*	100[§] *29*	2097.205	2^+		
		2686.11[§] *17*	79[§] *11*	1171.265	2^+		
3874.96	2^+	1680.9 *3*	75 *5*	2194.299	4^+		
		2703.2 *4*	100 *7*	1171.265	2^+		
3906.6	$^-$	2735.3 *3*	100	1171.265	2^+		
3990.1	$(2)^+$	2819.1 *5*	74 *9*	1171.265	2^+		
		3989.5 *6*	100 *11*	0.0	0^+		
4006.5	(1,2)	4006.4 *6*	100	0.0	0^+		
4011.4	(1,2)	4011.3 *6*	100	0.0	0^+		
4079.0	$1^+,2^+,3^+$	2907.7 *4*	100	1171.265	2^+		
4096.5		2925.2 *4*	100	1171.265	2^+		
4110.4	1^-	4110.3 *7*	100	0.0	0^+		

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Adopted Levels, Gammas (continued)

γ(^{120}Sn) (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π
4318.2	0⁻,1⁻	3146.9 *3*	100 *9*	1171.265	2⁺	7686.6	1⁻	6522‡ *7*	7.3‡ *5*	1171.265	2⁺
		4318.1 *9*	29 *5*	0.0	0⁺			7695‡ *5*	100‡ *1*	0.0	0⁺
6728.6	1	4306‡	5‡ *3*	2420.90	2⁺	8993.0	1	5443‡	44‡ *27*	3547.58	1,2
		5559‡*d*	1‡ *3*	1171.265	2⁺			5963‡	60‡ *21*	3034.75	(0⁺)
		6730‡	100‡ *6*	0.0	0⁺			6264‡	28‡ *21*	2728.12	2⁺
7310.1	1	5150‡	14‡	2159.931	0⁺			6634‡	100‡ *25*	2355.383	2⁺
		7310‡	100‡	0.0	0⁺			6675‡	60‡ *20*	2297	0⁺,1⁺
7686.6	1⁻	4059‡	18‡ *6*	3631.14	2⁺			6833‡	33‡ *25*	2159.931	0⁺
		5095‡	8‡ *3*	2587.25	0⁺			6890‡	70‡ *21*	2097.205	2⁺
		5335‡ *4*	12.3‡ *8*	2355.383	2⁺			7823‡	33‡ *12*	1171.265	2⁺
		5520‡ *7*	1.4‡ *3*	2159.931	0⁺			8998‡	72‡ *14*	0.0	0⁺

† From (n,n′γ), unless otherwise noted.
‡ From (γ,γ′).
§ From β^- decay (46.2 s). Not observed in (n,n′γ).
& From β^- decay (47.3 s). Not observed in (n,n′γ).
@ From weighted av from (n,n′γ) and β^- decay (46.2 s).
# From weighted av from (n,n′γ) and β^- decay (47.3 s).
[a] From (n,n′γ) and placement in level scheme, unless otherwise noted.
[b] Mult=D+Q from γ(θ) in (n,n′γ). Δπ is from placement in level scheme.
[c] 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.
[d] Placement of transition in the level scheme is uncertain.

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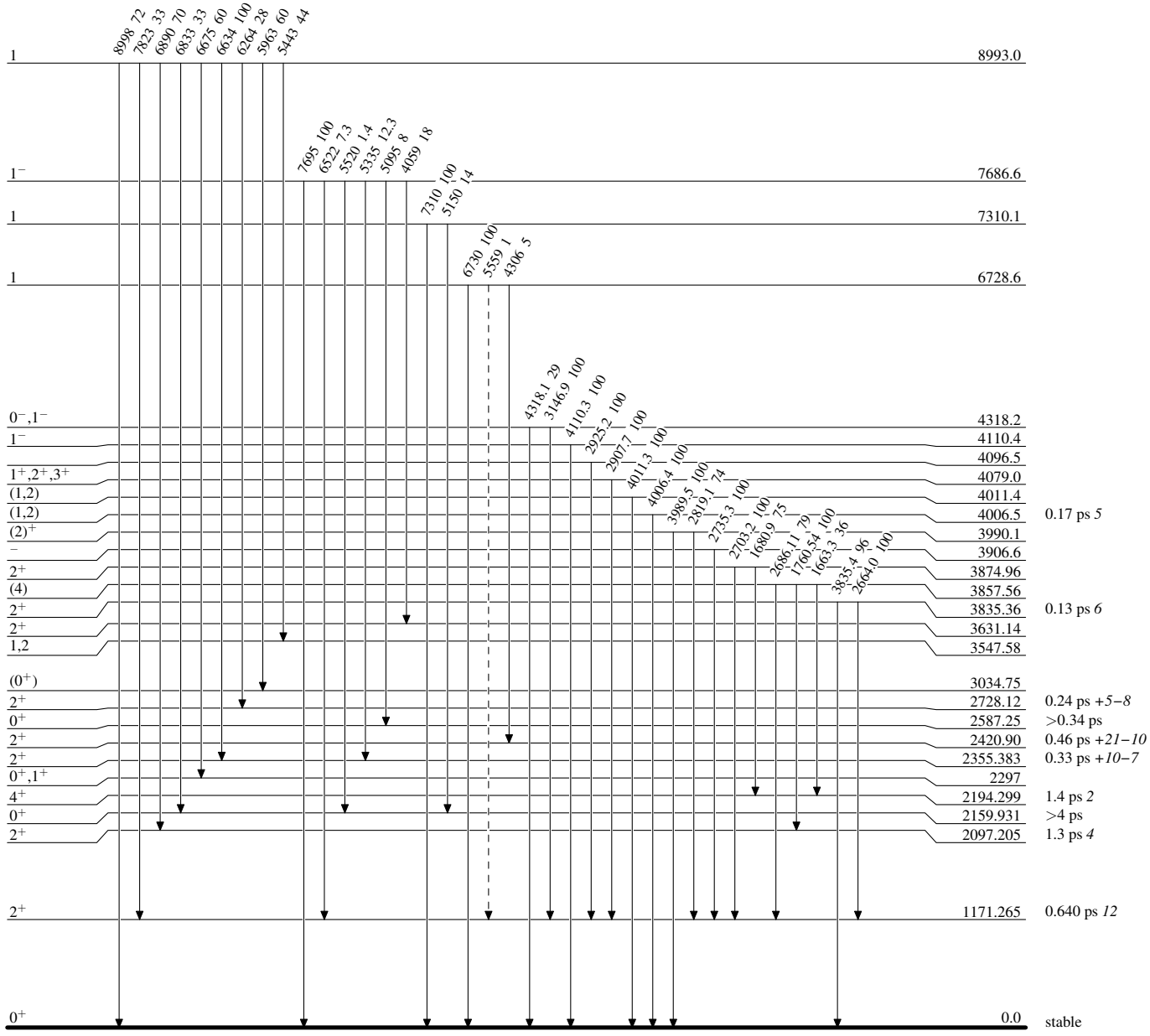
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

– – – – – – ► γ Decay (Uncertain)



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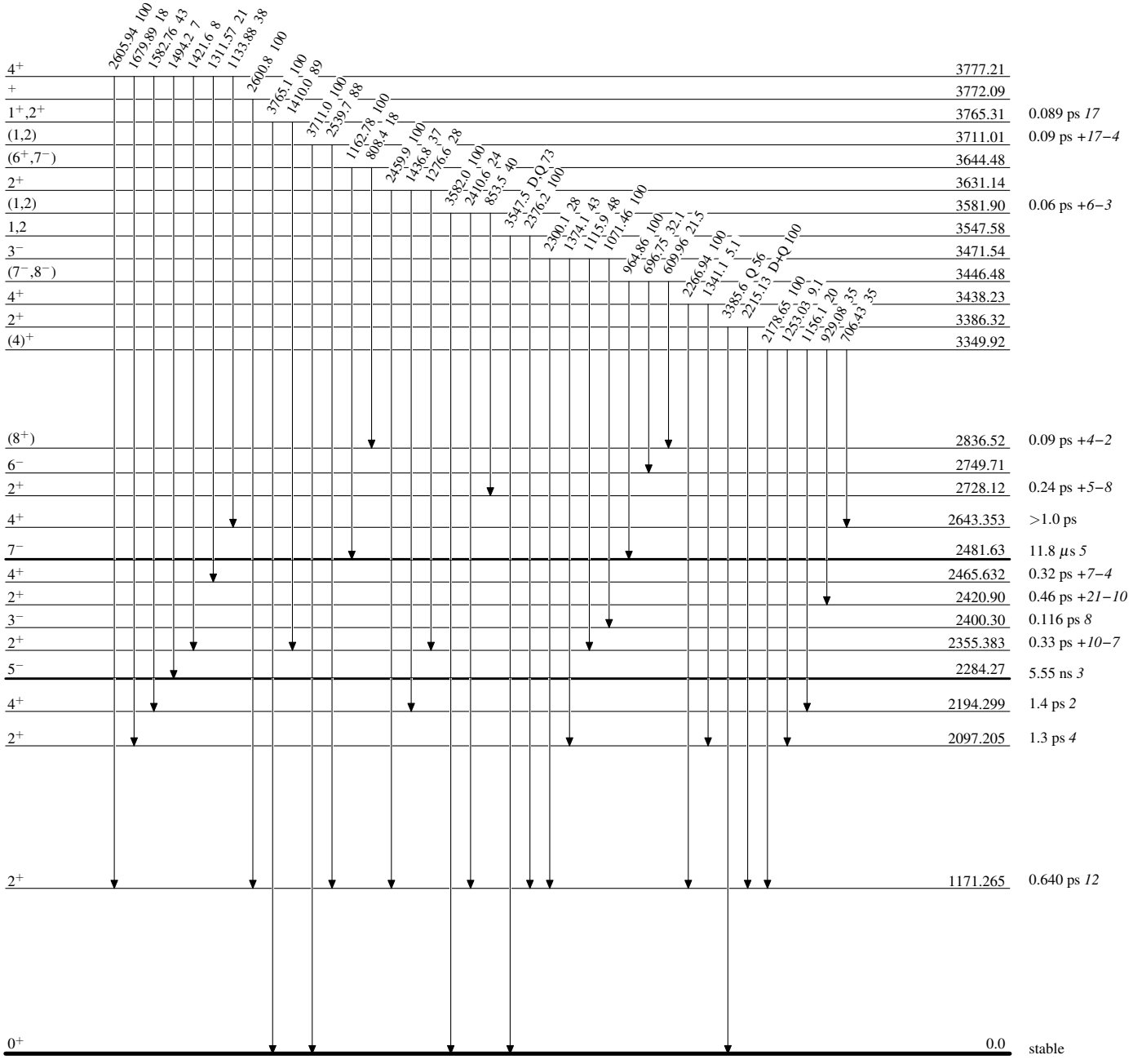
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



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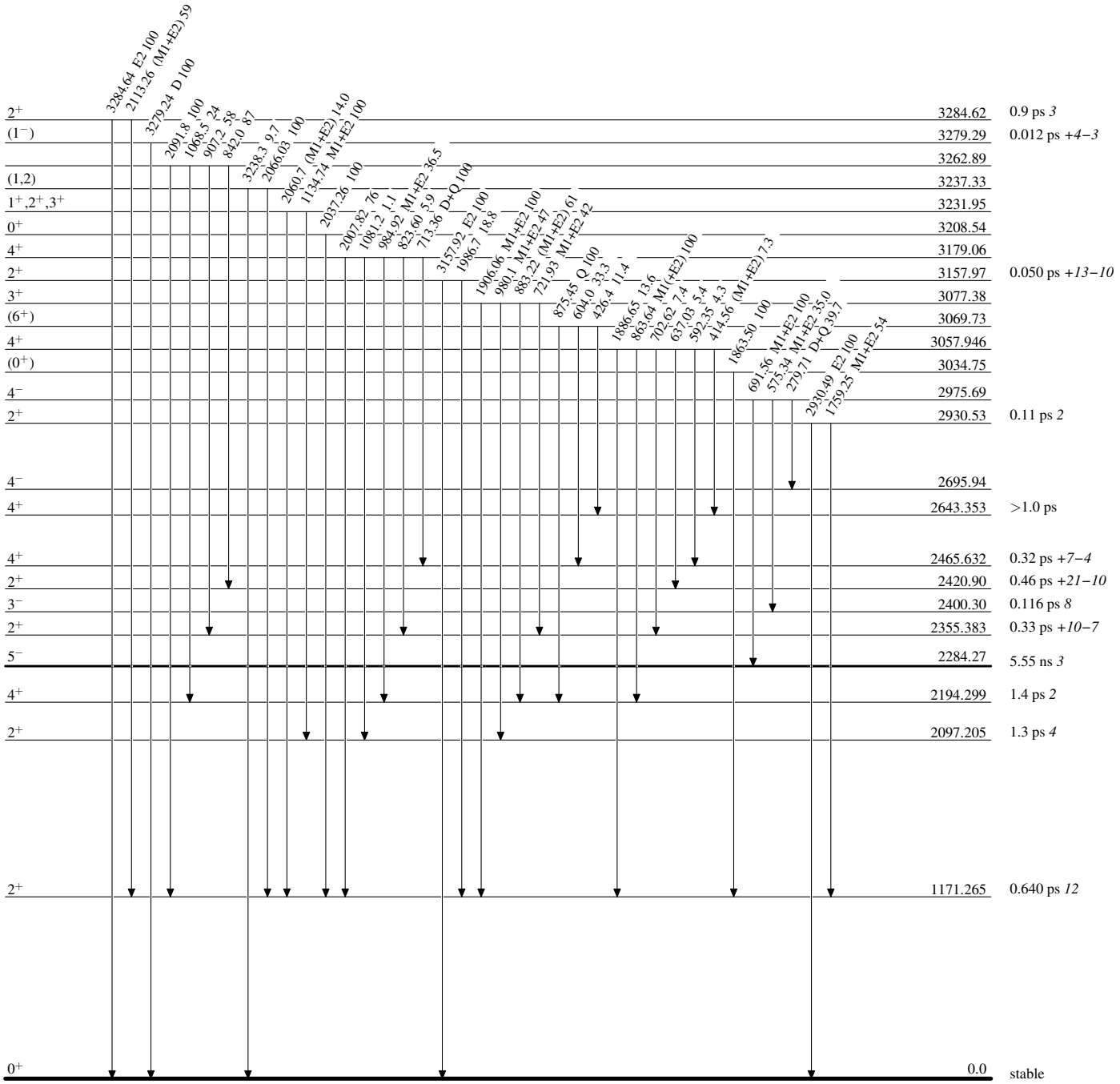
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



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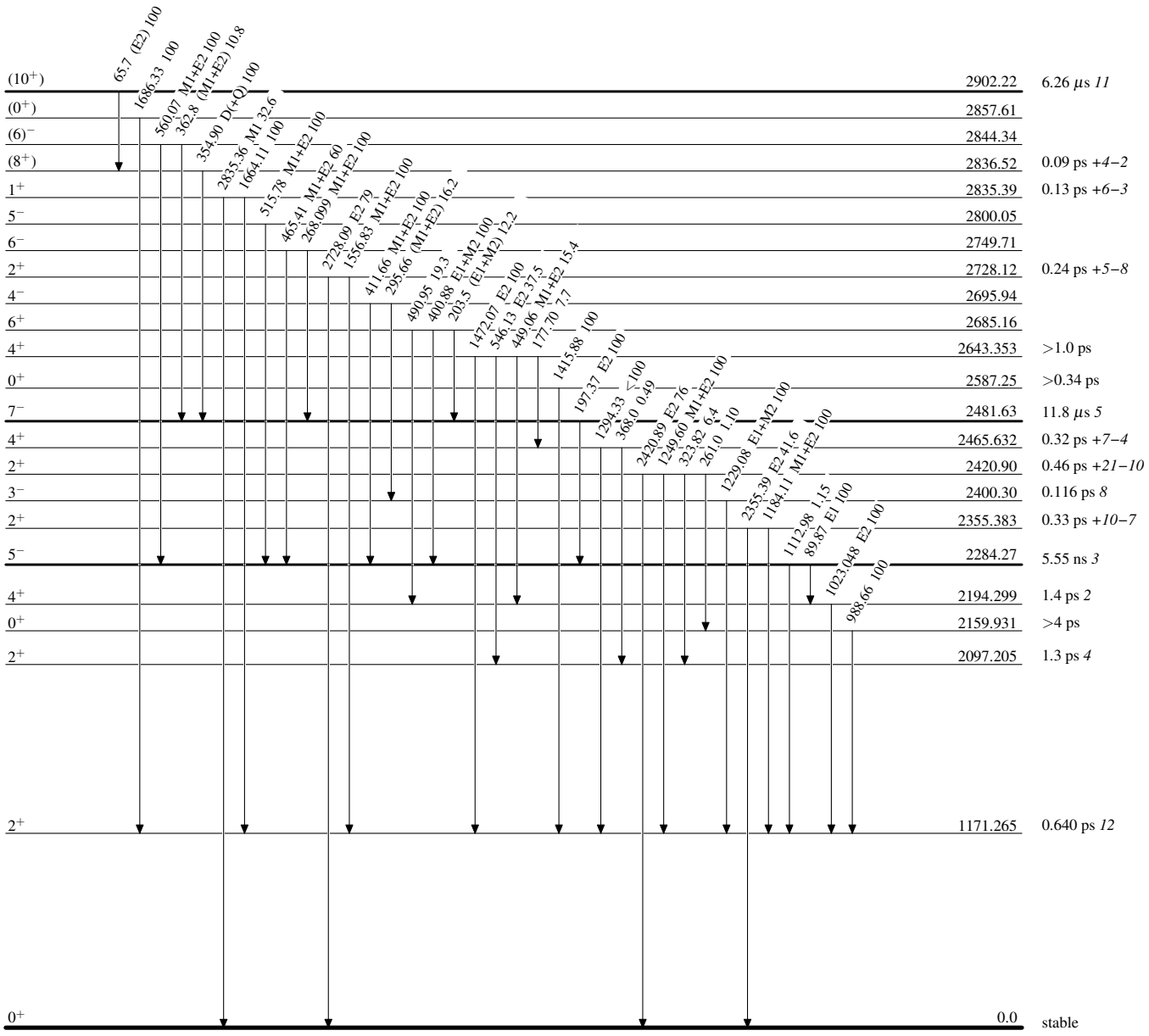
Adopted Levels, Gammas

Level Scheme (continued)

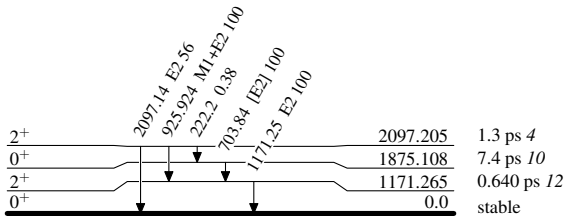
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



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