

Adopted Levels, Gammas

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

$Q(\beta^-) = -2681.8$ 8; $S(n) = 9104.8$ 11; $S(p) = 10688$ 8; $Q(\alpha) = -4811.0$ 9 [2012Wa38](#)
 Note: Current evaluation has used the following Q record -2681 79107.4 2210689 7 -4808 4 [1995Au04](#).

 ^{120}Sn LevelsCross Reference (XREF) Flags

A	^{120}In β^- decay (3.08 s)	I	$^{120}\text{Sn}(p,p'),(^3\text{He},^3\text{He}'),(\alpha,\alpha')$,	Q	$^{120}\text{Sn}(e,e')$
B	^{120}In β^- decay (46.2 s)	J	$^{120}\text{Sn}(n,n'\gamma)$	R	$^{120}\text{Sn}(e,e'p)$ IAR
C	^{120}In β^- decay (47.3 s)	K	$^{121}\text{Sb}(d,^3\text{He}), (t,\alpha)$	S	$^{120}\text{Sn}(\pi^+, \pi^0), (\pi^-, \pi^0)$
D	^{120}Sb β^+ decay (15.89 min)	L	$^{122}\text{Sn}(p,t)$	T	$^{121}\text{Sb}(\mu^-, n\gamma)$
E	^{120}Sb ε decay (5.76 d)	M	$^{124}\text{Te}(d,^6\text{Li})$	U	$^{122}\text{Sn}(^{16}\text{O}, ^{18}\text{O})$
F	Coulomb excitation	N	(HI, xn γ)	V	$^{123}\text{Sb}(p,\alpha)$
G	$^{118}\text{Sn}(t,p)$	O	$^{120}\text{Sn}(\gamma, \gamma')$	W	$^{120}\text{Sn}(d,d')$
H	$^{119}\text{Sn}(d,p), (t,d), (\text{pol } d,p)$	P	$^{120}\text{Sn}(p,p'\gamma)$		

E(level) [†]	J ^π	T _{1/2} [‡]	XREF	Comments
0.0	0 ⁺	stable	ABCDEFGHIJKLMN O P Q R T U V	
1171.265 15	2 ⁺	0.640 ps 12	ABCDEFGHIJKLMN O P Q T U	$\mu = -0.28$ 14; $Q = -0.05$ 10 XREF: K(1150). J^π : 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^π : 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^π : L(d, ^3He)(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^π : L(t,p)=0. T _{1/2} : from B(E2) in Coul. ex.
2173			O	J^π : 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^π : 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	$\mu = -0.280$ 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 $\mu = 0.094$ 4 for ^{119}Sn (24 level, 3/2 ⁺) (1989Ra17). J^π : L(p,t)=5; $\gamma\gamma(\theta)$ and $\gamma\gamma(\text{pol})$ 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^π : L(d,p)(t,d)(pol d,p)=0.

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Adopted Levels, Gammas (continued) ^{120}Sn Levels (continued)

E(level) [†]	J ^π	T _{1/2} [‡]	XREF		Comments
2355.383 24	2 ⁺	0.33 ps +10-7	AB	GHIJ LM OP	XREF: O(2361). J ^π : L(p,t)=2.
2400.30 5	3 ⁻	0.116 ps 8	B	FG IJ LM PQ	J ^π : L(p,t)=3.
2420.90 3	2 ⁺	0.46 ps +21-10	AB	H JKLM OP	J ^π : E2 γ to 0 ⁺ .
2465.632 23	4 ⁺	0.32 ps +7-4	B	g IJ LM P	XREF: g(2478). J ^π : L(p,t)=4.
2481.63 6	7 ⁻	11.8 μs 5	BC E g	IJ LMN	XREF: g(2478). J ^π : L(p,t)=7. T _{1/2} : from Xγ(t) (1960Ik01); others: 11 μs I (1960Ik01), 11.2 μs IO (1961Bo13).
2540 ^b 10	(5 ⁻)			I	J ^π : L(p,p')=(5).
2587.25 15	0 ⁺	>0.34 ps		GH J LM O	J ^π : L(p,t)=0.
2643.353 20	4 ⁺	>1.0 ps	B	IJ LM	J ^π : L(p,t)=4.
2685.16 6	6 ⁺		B	g iJ	XREF: g(2693)i(2687). J ^π : 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). J ^π : l(p,t)=2+6.
2695.94 6	4 ⁻		B	iJ M	E(level): doublet in (p,t). XREF: i(2687).
2728.12 3	2 ⁺	0.24 ps +5-8	B	HIJ LM O	J ^π : M1+E2 γ to 5 ⁻ , D+Q γ to 3 ⁻ . J ^π : E2 γ to 0 ⁺ .
2749.71 6	6 ⁻		C	iJ	T _{1/2} : other: 0.15 ps 7 in (γ,γ'). XREF: i(2753).
2751 3	4 ⁺			i L	J ^π : M1+E2 γ's to 5 ⁻ and 7 ⁻ . XREF: i(2753).
2800.05 7	5 ⁻			H J L	J ^π : L(p,t)=4.
2802 10	(7 ⁻ ,8 ⁺)			I	J ^π : L(p,p')=(7,8).
2835.39 3	1 ⁺	0.13 ps +6-3		HiJ l	XREF: i(2843)l(2840). J ^π : 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).
2844.34 7	(6 ⁻)			iJ	J ^π : D+Q γ to (7) ⁻ , (E2) γ from (10 ⁺). XREF: i(2843).
2857.61 8	(0 ⁺)		G	J	J ^π : M1+E2 γ to 5 ⁻ , D+Q γ to (7) ⁻ . J ^π : from γ(θ) and population of this level in (n,n'γ).
2902.22 22	(10 ⁺)	6.26 μs 11		N	J ^π : from syst on J ^π =10 ⁺ isomers in ¹¹⁶ Sn- ¹²⁰ Sn isotopes.
2930.53 5	2 ⁺	0.11 ps 2		HIJ L O	T _{1/2} : from (HI,xny). J ^π : E2 γ to 0 ⁺ .
2975.69 7	4 ⁻			J L	T _{1/2} : from (γ,γ'). J ^π : M1+E2 γ's to 3 ⁻ and 5 ⁻ .
2997				H	
3009 9	2 ⁺			L	J ^π : L(p,t)=2.
3034.75 9	(0 ⁺)			J O	J ^π : from γ(θ) and population of this level in (n,n'γ).
3057.946 24	4 ⁺		B	IJ L O	XREF: I(3062). J ^π : L(p,p')=4, L(p,t)=4.
3069.73 8	(6 ⁺)			J	J ^π : stretched Q γ to 4 ⁺ .
3077.38 8	3 ⁺			J	J ^π : M1+E2 γ to 2 ⁺ , D+Q γ to 4 ⁺ .
3100 3	(1 ⁻)			KL	XREF: K(3090).
3157.97 9	2 ⁺	0.050 ps +13-10		HIJ L O	J ^π : L(p,t)=(1). XREF: I(3161). J ^π : E2 γ to 0 ⁺ .

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Adopted Levels, Gammas (continued) ^{120}Sn Levels (continued)

E(level) [†]	J ^π	T _{1/2} [‡]	XREF		Comments
3179.06 3	4 ⁺		B	G IJ L	T _{1/2} : other: 0.071 fs 8 in (γ,γ').
3208.54 15	0 ⁺			J L	J ^π : L(p,p')=4, L(p,t)=4.
3210 10	1 ⁺ ,2 ⁺ ,3 ⁺			H	J ^π : L(p,t)=0.
3231.95 7	1 ⁺ ,2 ⁺ ,3 ⁺			J	J ^π : L(d,p)(t,d)(pol d,p)=2.
3237.33 8	(1,2)			J	J ^π : M1+E2 γ to 2 ⁺ .
3252 3	5 ⁻			L	J ^π : γ to 0 ⁺ .
3262.89 11				J	J ^π : L(p,t)=5.
3279.29 9	(1 ⁻)	0.012 ps +4-3		iJ L 0	XREF: i(3281).
					J ^π : L(p,t)=(1).
3284.62 9	2 ⁺	0.9 ps 3		HiJ 0	T _{1/2} : other: 0.0049 ps 3 in (γ,γ').
					XREF: i(3281).
					J ^π : E2 γ to 0 ⁺ , RUL rules out M2.
3330 10	(6 ⁺ ,7 ⁻)			I	T _{1/2} : from (γ,γ'). Other: 0.17 ps +44-8 in (n,n'γ).
3341 3				L	J ^π : L(p,p')=(6,7).
3349.92 5	(4) ⁺		B	J	E(level): unresolved peak. J ^π =3-&4 ⁺ is suggested.
3386.32 15	2 ⁺			HIJ L	J ^π : log ft=5.62 from (5) ⁺ , γ's to 2 ⁺ and 4 ⁺ .
3438.23 8	4 ⁺		B	iJ L	J ^π : L(p,t)=2,3; Q γ to 0 ⁺ excludes 3 ⁻ .
					XREF: i(3438)L(3442).
3446.48 7	(7 ⁻ ,8 ⁻)		C	i	J ^π : L(p,t)=4,5; γ to 2 ⁺ excludes 5 ⁻ .
					XREF: i(3438).
3455 3				i L	J ^π : log ft=4.25 from (8 ⁻), γ to (6) ⁻ .
3471.54 10	3 ⁻			GHiJ L	XREF: i(3460).
					XREF: i(3460).
3547.58 19	1,2			H J 0	J ^π : L(t,p)=3.
3559 10				I	J ^π : D,Q γ to 0 ⁺ .
3581.90 22	(1,2)	0.06 ps +6-3		gHiJ 0	XREF: g(3593)i(3585).
					J ^π : γ to 0 ⁺ .
3600				gHi	T _{1/2} : other: 0.35 ps 10 in (γ,γ').
3631.14 18	2 ⁺			JK 0	XREF: g(3593)i(3585).
3644.48 16	(6 ⁺ ,7 ⁻)		C	HI	J ^π : γ's to 2 ⁺ and 4 ⁺ ; γ from 1 ⁻ .
					XREF: H(3660)I(3657).
3711.01 17	(1,2)	0.09 ps +17-4		HIJ	J ^π : L(p,p')=(6,7).
3765.31 24	1 ⁺ ,2 ⁺	0.089 ps 17		HIJ 0	J ^π : γ to 0 ⁺ .
					J ^π : γ to 0 ⁺ , L(d,p)(t,d)(pol d,p)=2.
3772.09 20	+			g JK	T _{1/2} : from (γ,γ').
					XREF: g(3780)K(3750).
3777.21 6	4 ⁺		B	gHI	J ^π : L(d, ³ He)(t,α)=4.
					XREF: g(3780)H(3800)I(3789).
3835.36 24	2 ⁺	0.13 ps 6		G IJ 0	J ^π : L(p,p')=4.
					XREF: G(3818).
					J ^π : L(p,p')=2.
3857.56 13	(4)		B	J	T _{1/2} : from (γ,γ'). Other: 0.12 ps +72-7 in (n,n'γ).
3874.96 24	2 ⁺			HIJ	J ^π : γ's to 2 ⁺ and 4 ⁺ , log ft=6.06 from (5) ⁺ .
3906.6 3	-			JK	J ^π : L(p,p')=2.
3928& 10				HI	J ^π : L(d, ³ He)(t,α)=1.
3955 10				I	XREF: H(3940).
3990.1 4	(2) ⁺			HIJK	XREF: K(4000).
					J ^π : L(p,p')=(2), L(d, ³ He)(t,α)=4.
4006.5 6	(1,2)	0.17 ps 5		J 0	J ^π : γ to 0 ⁺ .
					T _{1/2} : from (γ,γ').
4011.4 6	(1,2)			J	J ^π : γ to 0 ⁺ .
4079.0 4	1 ⁺ ,2 ⁺ ,3 ⁺			HIJ	XREF: H(4060).

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Adopted Levels, Gammas (continued) ^{120}Sn Levels (continued)

E(level) [†]	J ^π	XREF	Comments
4096.5 4		J	J ^π : L(d,p)(t,d)(pol d,p)=2.
4110.4 7	1 ⁻	JK	J ^π : L(d, ³ He)(t,α)=1, γ to 0 ⁺ .
4146.9 11		0	
4180 ^a 10	-	i K	XREF: i(4190).
4190	1 ⁺ ,2 ⁺ ,3 ⁺	Hi	J ^π : L(d, ³ He)(t,α)=1. XREF: i(4190).
4230 20	+	K	J ^π : L(d,p)(t,d)(pol d,p)=2.
4318.2 3	0 ⁻ ,1 ⁻	JK	J ^π : L(d, ³ He)(t,α)=4. XREF: K(4330).
4360 20	-	H K	J ^π : L(d, ³ He)(t,α)=1, γ to 0 ⁺ .
4410 ^a 10	-	K	J ^π : L(d, ³ He)(t,α)=1.
4460 ^a 20	-	K	J ^π : L(d, ³ He)(t,α)=1.
4580 ^a 20	-	K	J ^π : L(d, ³ He)(t,α)=1.
4650 10	-	K	J ^π : L(d, ³ He)(t,α)=1.
4690 20	-	K	J ^π : L(d, ³ He)(t,α)=1.
4720 10	-	K	
4770 20	-	K	J ^π : L(d, ³ He)(t,α)=1.
4870 ^a 10		i K	XREF: i(4900).
4920 ^a 20	-	i K	E(level): possible doublet. XREF: i(4900).
4970 10		K	J ^π : L(d, ³ He)(t,α)=1.
5030 10		K	
5090 20	-	K	J ^π : L(d, ³ He)(t,α)=1.
5170 ^a 10	-	i K	XREF: i(5200).
5230 20	+	i K	J ^π : L(d, ³ He)(t,α)=1. XREF: i(5200).
6.3×10 ³ 3		I	J ^π : L(d, ³ He)(t,α)=4.
6728.6 7	1	0	J ^π : from γ(θ) in (γ,γ').
6.9×10 ³ 4	-	I	J ^π : L(d, ³ He)(t,α)=3.
7310.1 [#] 7	1	i 0	XREF: i(7600).
7686.6 [#] 7	1 ⁻	i 0	J ^π : from γ(θ) in (γ,γ'). XREF: i(7600).
8.40×10 ³ 15		I	J ^π : from γ(θ) in (γ,γ').
8993.0 4	1	0	J ^π : from γ(θ) in (γ,γ').
9.9×10 ³ 5		I	
13.3×10 ³ 3	2 ⁺	I	J ^π : L(p,p')=2.
16.9×10 ³ 4	0 ⁺	I	J ^π : L(p,p')=0.
19.2×10 ³ 2	(1 ⁻)	R	J ^π : from E1 excitation in (e,e'p).
19.4×10 ³ 2	(1 ⁻)	R	J ^π : from E1 excitation in (e,e'p).
20.6×10 ³ 2	(1 ⁻)	R	J ^π : from E1 excitation in (e,e'p).
20.9×10 ³ 15	3 ⁻ ,5 ⁻	I	J ^π : L(p,p')=3,5.
25.0×10 ³ 10	(3 ⁻)	I	J ^π : L(p,p')=(3).
27.9×10 ³ 15	1 ⁻ ,3 ⁻	I	J ^π : 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

Adopted Levels, Gammas (continued)

 ^{120}Sn Levels (continued)

populating in (γ, γ') and for resonant levels. Others from $(p, p'), (^3\text{He}, ^3\text{He}')$, unless otherwise noted. Also E(levels) were given in (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 $(n, n'\gamma)$, unless otherwise noted.

From (γ, γ') .

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

& From $(p, p'), (d, d'), (^3\text{He}, ^3\text{He}')$.

^a From $(d, ^3\text{He}), (t, \alpha)$.

^b This level is not confirmed in $(n, n'\gamma)$, 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)

$\gamma(^{120}\text{Sn})$									
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. ^b	δ^b	α^d	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.: $\gamma(\theta)$, RUL.
									δ : other: -1.43 25 (1974Ki04).
		2097.14 & 6	56 3	0.0	0 ⁺	E2 ^c			B(E2)(W.u.)=0.11 4
2159.931	0 ⁺	988.66 2	100	1171.265	2 ⁺				E_γ : other: 2098.3 12 in β^- decay (3.08 s).
2194.299	4 ⁺	1023.048 & 18	100	1171.265	2 ⁺	E2			E_γ : other: 990 2 in β^- decay (3.08 s).
									B(E2)(W.u.)=10.3 15
2284.27	5 ⁻	89.87 16	100 5	2194.299	4 ⁺	E1		0.246	Mult.: from ε decay (5.76 d).
									B(E1)(W.u.)=5.5 $\times 10^{-5}$ 4
									Mult.: from ε decay (5.76 d).
		1112.98 & 18	1.15 7	1171.265	2 ⁺				B(E3)(W.u.)=0.99 3
2355.383	2 ⁺	1184.11 & 3	100 4	1171.265	2 ⁺	M1+E2	+1.0 2		I_γ : other: <3.7 in β^- decay (46.2 s).
									B(M1)(W.u.)=0.014 6; B(E2)(W.u.)=7 3
		2355.39 & 4	41.6 21	0.0	0 ⁺	E2			E_γ : other: 1185.8 8 in β^- decay (3.08 s).
									B(E2)(W.u.)=0.20 7
2400.30	3 ⁻	1229.08 & 6	100	1171.265	2 ⁺	E1+M2	+0.02 2		I_γ : weighted av from β^- decay (46.2 s) and (n,n' γ).
									B(E1)(W.u.)=0.00129 9; B(M2)(W.u.)=2 +4-2
2420.90	2 ⁺	261.0 4	1.10 22	2159.931	0 ⁺				E_γ : other: 1228.2 in Coul. ex.
		323.82 & 10	6.4 4	2097.205	2 ⁺				E_γ : not observed in β^- decay (3.08 s, 46.2 s).
		1249.60 & 4	100 4	1171.265	2 ⁺	M1+E2	-16 4		E_γ : not observed in β^- decay (3.08 s).
									B(M1)(W.u.)=5.E-5 4; B(E2)(W.u.)=6 3
									E_γ : not observed in β^- decay (3.08 s).
		2420.89 & 4	76 7	0.0	0 ⁺	E2			Mult.: from large mixing ratio.
									B(E2)(W.u.)=0.17 9
									E_γ : other: 2422.0 8 in β^- decay (3.08 s).
2465.632	4 ⁺	368.0 3	0.49 11	2097.205	2 ⁺				I_γ : weighted av from (n,n' γ) and β^- decay (46.2 s).
									E_γ : not observed in β^- decay (46.2 s).
									I_γ : if I(1294 γ)=100.
		1294.33 & 2	<100	1171.265	2 ⁺				
2481.63	7 ⁻	197.37 ^a 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).
		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).

Adopted Levels, Gammas (continued)

$\gamma(^{120}\text{Sn})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. ^b	δ^b	Comments
2643.353	4 ⁺	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) ^c	+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) ^c	+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 ^a 5	100	2481.63	7 ⁻	D(+Q)	-0.2 2	
2844.34	(6 ⁻)	362.8 2	10.8 10	2481.63	7 ⁻	(M1+E2) ^c	-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,xn γ).
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	$\approx$ -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) ^c	-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 $\gamma(\theta)$ 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) ^c		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.
		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 ⁺			

Adopted Levels, Gammas (continued)

$\gamma(^{120}\text{Sn})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. ^b	δ^b	Comments
3157.97	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) ^c		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) ^c	-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 ⁺			
		2300.1 4	28 3	1171.265	2 ⁺			
3547.58	1,2	2376.2 2	100 5	1171.265	2 ⁺			

Adopted Levels, Gammas (continued)

$\gamma(^{120}\text{Sn})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. ^b	Comments
3547.58	1,2	3547.5 6	73 5	0.0	0 ⁺	D,Q	Mult.: $\delta=-0.4$ 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 $I_\gamma/I_\gamma(1163\gamma)$ 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 ⁺		
4318.2	0 ⁻ ,1 ⁻	3146.9 3	100 9	1171.265	2 ⁺		

Adopted Levels, Gammas (continued)

$\gamma(^{120}\text{Sn})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π
4318.2	0 ⁻ ,1 ⁻	4318.1 9	29 5	0.0	0 ⁺	7686.6	1 ⁻	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 ^{‡e}	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 ⁺
		6522 [‡] 7	7.3 [‡] 5	1171.265	2 ⁺						

[†] 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).

^a From weighted av from (n,n'γ) and β⁻ decay (47.3 s).

^b From (n,n'γ) and placement in level scheme, unless otherwise noted.

^c Mult=D+Q from γ(θ) in (n,n'γ). Δπ is from placement in level scheme.

^d 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.

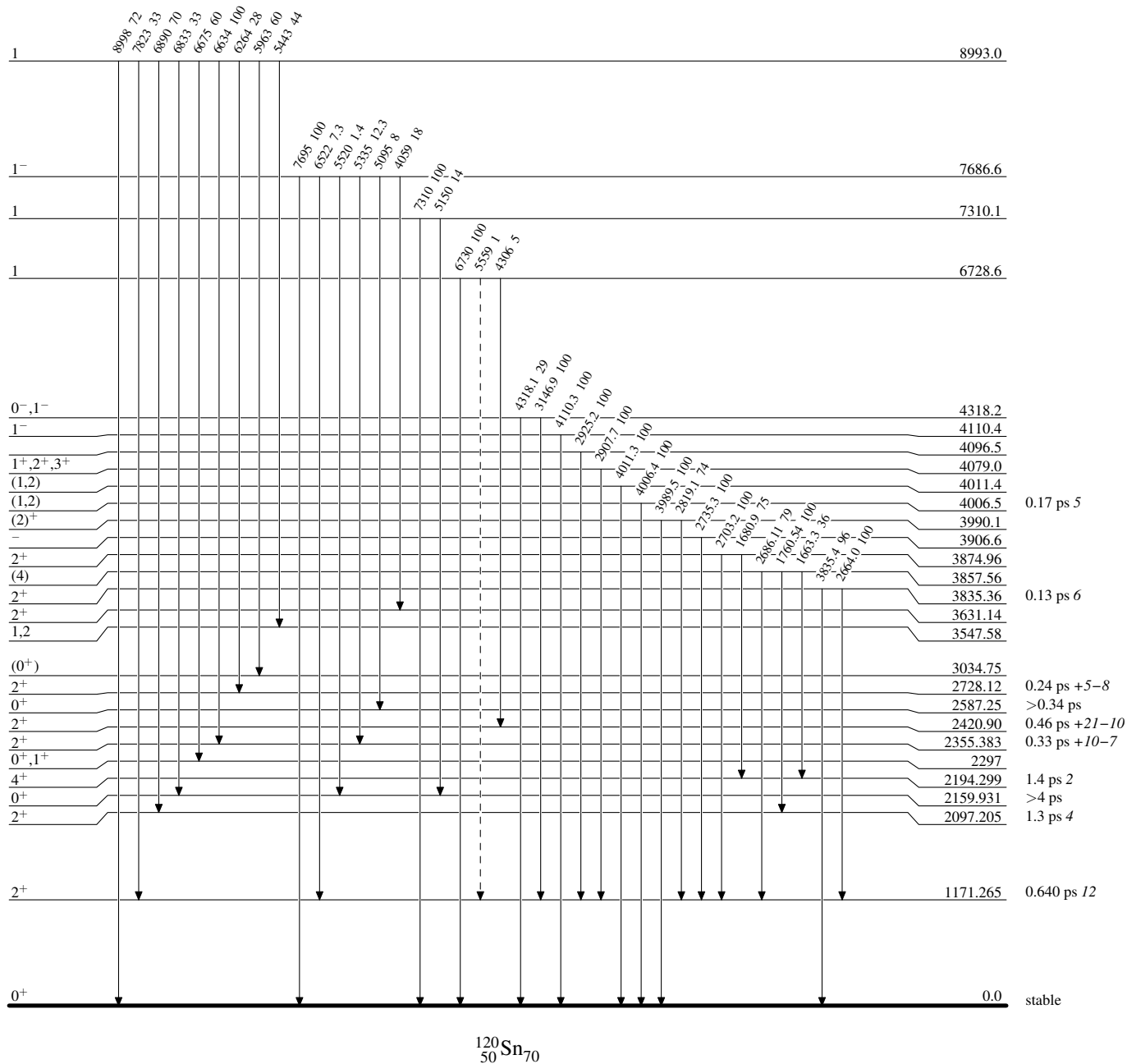
^e Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Legend

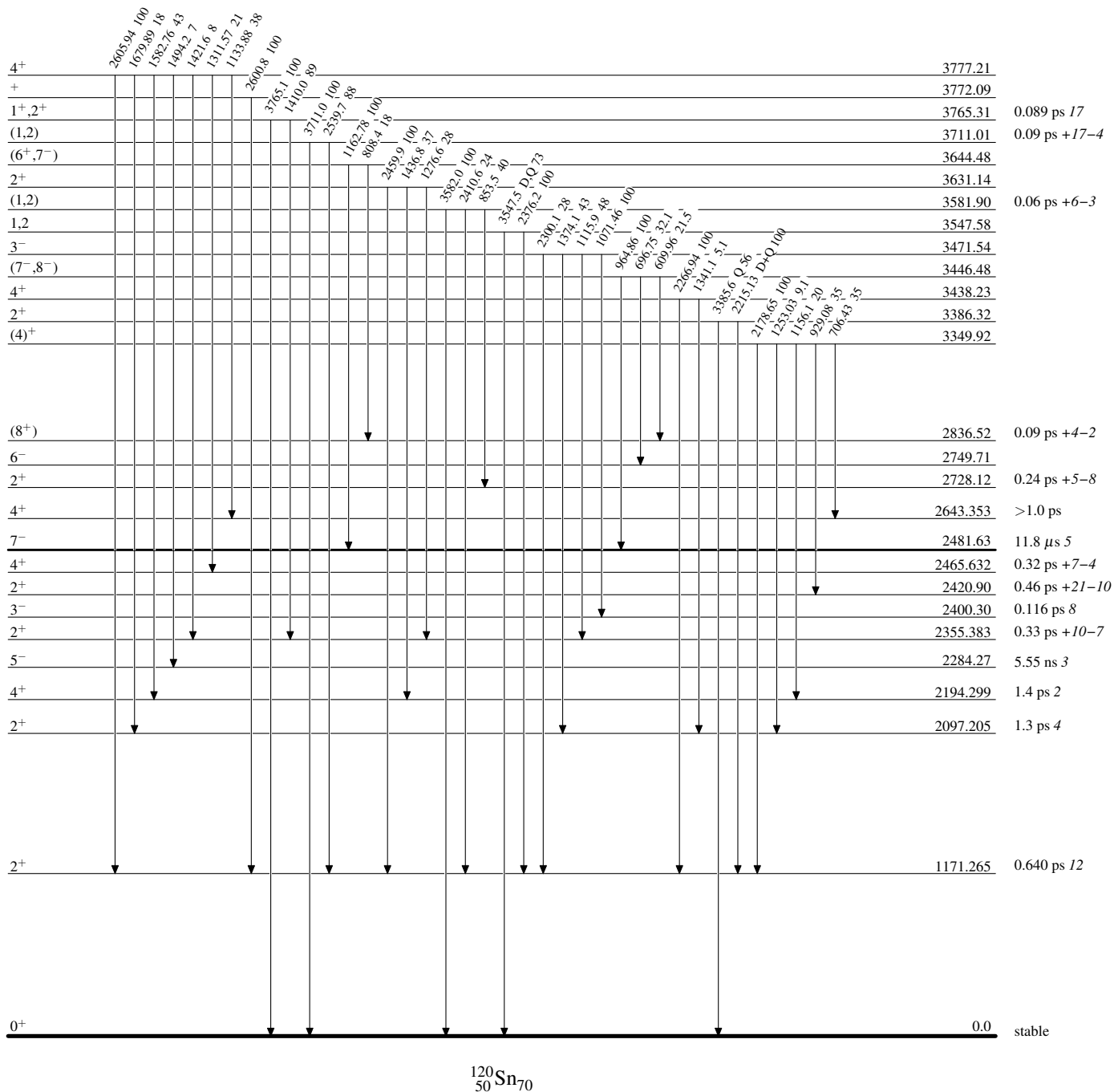
Level Scheme

Intensities: Relative photon branching from each level

-----► γ Decay (Uncertain)


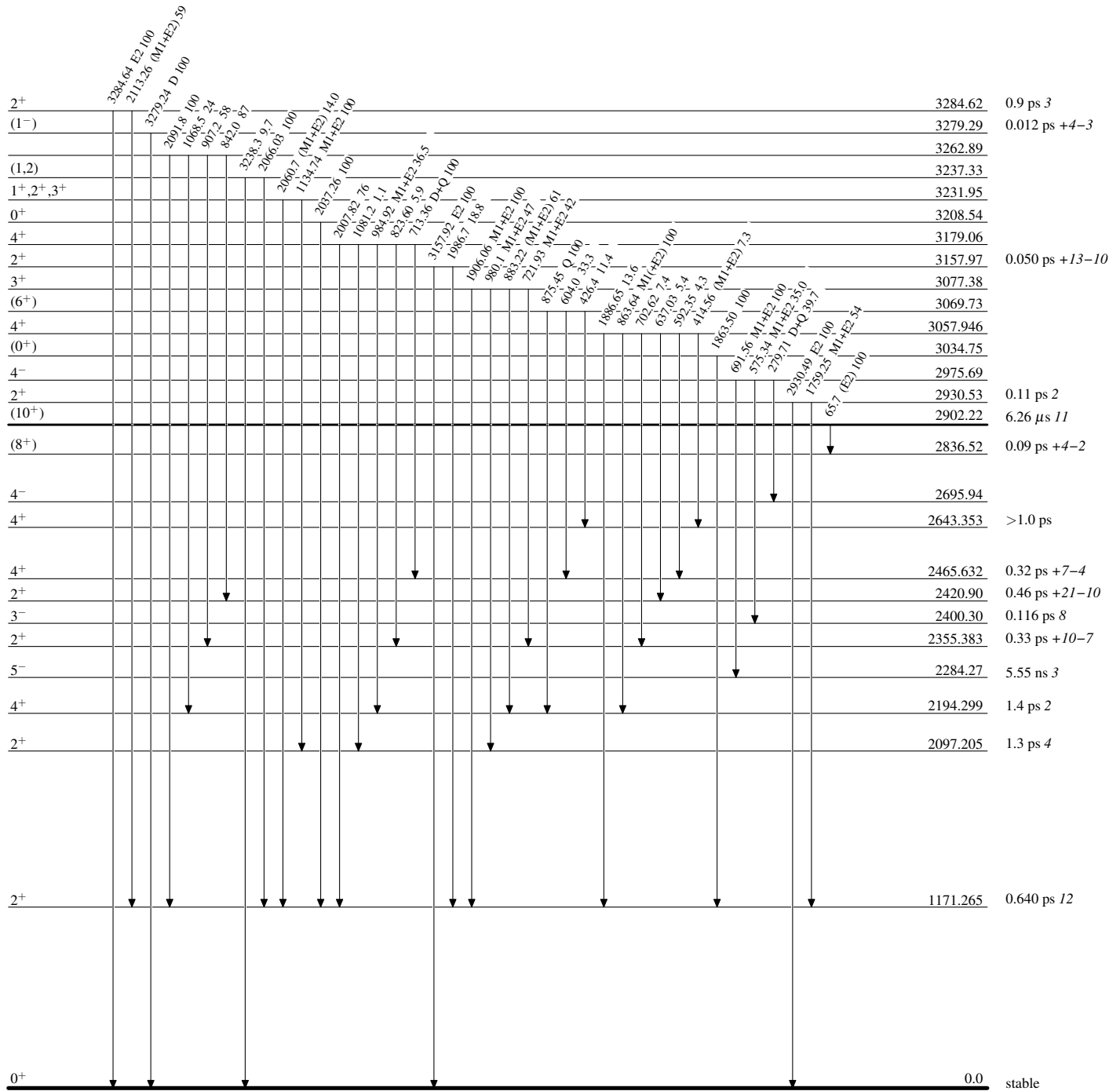
Adopted Levels, GammasLevel Scheme (continued)

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

