Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	H. Iimura, J. Katakura, S. Ohya	NDS 180, 1 (2022)	1-Oct-2021

Q(β^-)=378 *30*; S(n)=8193 *11*; S(p)=12892 *11*; Q(α)=−7828 *11* 2021Wa16

^{126}Sn Levels

Cross Reference (XREF) Flags

A	^{126}In β^- decay (1.64 s)	F	^{124}Sn(^{136}Xe,Xγ),(^{238}U,Xγ)	K	Coulomb excitation
B	^{126}In β^- decay (1.53 s)	G	^{127}In β^-n decay (1.09 s)	L	^{238}U(^{12}C,Fγ)
C	^{124}Sn(t,p)	H	^{127}In β^-n decay (3.67 s)	M	^{238}U(^{64}Ni,Xγ)
D	^{130}Te(d,^{6}Li)	I	^{124}Sn(^{18}O,^{16}O)		
E	^{124}Sn(^{14}C,^{12}C)	J	^{9}Be(^{238}U,Xγ)		

E(level)[†]	J$^\pi$	T$_{1/2}$	XREF	Comments
0.0	0$^+$	2.18×10^5 y *10*	ABCDEFGHIJKL	%β^-=100 T$_{1/2}$: weighted av. of 1.98×10^5 y *6* from plasma-mass spectrometry (2009Bi07), 2.35×10^5 y *7* from thermo-ionnisatio mass spectrometry (1999Ob04), 2.33×10^5 y 10 from plasma-mass spectrometry (2005Ca14), 2.07×10^5 y *21* from specific activity measurement (1996Ha45) and 2.5×10^5 y *2* from radiochemical method (1996Zh16).
1141.15 *4*	2$^+$	1.13 ps *7*	ABCDEF IJKL	μ=−0.24 *6* J$^\pi$: L(t,p)=2. T$_{1/2}$: weighted av. of 1.15 *7* ps deduced from B(E2)=0.127 *8* (2011Al25) and 1.04 *14* ps from DSAM (2012Ku24) in Coulomb ex. μ: from Coulomb ex.
2049.74 *6*	4$^+$[‡]		ABCDEF J L	J$^\pi$: E1 γ from 5$^-$; L(d,^{6}Li)=(4); see comment in footnote; L(t,p)=5 is inconsistent with 4$^+$.
2110.79 *6*	2$^{(+)}$		B E	J$^\pi$: γ's to 0$^+$ and 2$^+$; log *ft*=5.65 *3* from 3$^{(+)}$.
2130.08 *21*			B E	
2161.54 *7*	5$^-$[‡]	10.8 ns *7*	A CDEF J L	J$^\pi$: L(d,^{6}Li)=5, see comment in footnote ; L(t,p)=6 is inconsistent with 5$^-$. T$_{1/2}$: from $\beta\gamma$(t) in ^{126}In β^- decay (2012As05).
2194.21 *7*			B	
2218.99 *8*	7$^-$	6.1 μs *7*	A CDEF J LM	μ=−0.69 *7* J$^\pi$: L(d,^{6}Li)=7. T$_{1/2}$: weighted av. of 6.6 μs *14* from $\gamma\gamma$(t) in ^{126}In β^- decay (1979Fo10) and 5.9 μs *8* in ^{9}Be(^{238}U,Xγ) (2010Il01). μ: in ^{9}Be(^{238}U,Xγ) (2010Il01).
2256.51 *21*			B	
2276.85 *8*			B	
2298 *25*			D	
2370.46 *6*	2$^{(+)}$		BCD	J$^\pi$: L(t,p)=(2); log *ft*=6.46 *7* from 3$^{(+)}$, γ to 0$^+$.
2373.2 *4*			L	
2471.93 *16*			B	
2477.51 *8*	6$^-$		A	J$^\pi$: M1(+E2) γ's to 7$^-$ and 5$^-$.
2488.23 *9*	(8$^+$)		A F J LM	J$^\pi$: γ to 7$^-$, γ from (10$^+$) and systematics.
2550 *25*			D	
2564.5 *3*	(10$^+$)	7.6 μs *2*	F J LM	J$^\pi$: systematics. T$_{1/2}$: weighted av. of 7.7 μs *5* in ^{124}Sn(^{136}Xe,Xγ), (^{238}U,Xγ)

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Adopted Levels, Gammas (continued)

^{126}Sn Levels (continued)

E(level)†	J$^{\pi}$	T$_{1/2}$	XREF	Comments
				(2000Zh47), 7.5 μs 3 in ^{9}Be(^{238}U,Xγ) (2010Il01) and 7.6 μs 4 (1998GeZX).
2631.03 11			B	
2636.64 10	2$^{(+)}$		B	J$^{\pi}$: log ft=6.48 7 from 3$^{(+)}$; γ's to 0^{+} and 2^{+}.
2662.98 8			A D	
2712.06 8	2,3,4^{+}		B	J$^{\pi}$: log ft=6.90 17 from 3$^{(+)}$; γ to 2^{+}.
2720 5	3^{-}		CD	J$^{\pi}$: L(d,^{6}Li)=3, L(t,p)=3.
2742.57 7			B	
2795 25			D	
2840.24 10			A	
2886.41 13			B	
2892 5	(5^{-})		CD	J$^{\pi}$: L(t,p)=(5).
2971 25			D	
3067.29 8			A	
3246.55 10	2$^{(+)}$		B	J$^{\pi}$: log ft=5.74 4 from 3$^{(+)}$; γ to 0^{+}.
3283.83 9	(9^{-})		A CD M	J$^{\pi}$: γ to 7^{-}, γ from (11^{-}).
3300.3 3			B	
3344.83 9	2$^{(+)}$		B	J$^{\pi}$: log ft=5.049 8 from 3$^{(+)}$; γ to 0^{+}.
3385 25			D	
3424 5	4^{+}		CD	J$^{\pi}$: L(t,p)=4.
3435.0 6	2$^{(+)}$		B	J$^{\pi}$: log ft=6.94 6 from 3$^{(+)}$; γ to 0^{+}.
3454.87 11			A	
3504.5 3	2$^{(+)}$		B	J$^{\pi}$: log ft=6.68 4 from 3$^{(+)}$; γ to 0^{+}.
3595.5 3	(12^{+})		LM	J$^{\pi}$: γ to 10^{+}, γ from 13^{-} and systematics.
3625.79 11			A	
3783.41 13			A CD	
3809.21 17			A	
3818.0 4	2$^{(+)}$		B	J$^{\pi}$: log ft=6.69 4 from 3$^{(+)}$; γ to 0^{+}.
3830.75 13			A	
3855.54 8	(7^{-},8^{-})		A	J$^{\pi}$: log ft=4.52 3 from (8^{-}); γ to 6^{-}.
3860.3 3	2,3,4^{+}		B	J$^{\pi}$: log ft=6.42 5 from 3$^{(+)}$; γ to 2^{+}.
3886.54 9	2$^{(+)}$		B	J$^{\pi}$: log ft=5.43 5 from 3$^{(+)}$; γ to 0^{+}.
3917.3 5	2,3,4^{+}		B	J$^{\pi}$: log ft=6.62 5 from 3$^{(+)}$. γ to 2^{+}.
3926.03 21	(11^{-})		M	J$^{\pi}$: γ from 13^{-}, γ to 12^{+} , to 7^{-} with 2 γ's cascade.
3950.3 5			A	
3964.19 7	2$^{(+)}$		B	J$^{\pi}$: log ft=5.206 20 from 3$^{(+)}$; γ to 0^{+}.
3977.39 15			A	
3985 25			D	
4013.97 21	2,3,4$^{(+)}$		B	J$^{\pi}$: log ft=6.58 5 from 3$^{(+)}$. γ to 2^{+}.
4166.5 3	(13^{-})	≤3 ns	LM	J$^{\pi}$: E2 γ from (15^{-}), to 7^{-} with 3 γ's cascade. T$_{1/2}$: from 2014Is04.
4184 10			C	
4241.00 15	2$^{(+)}$		B	J$^{\pi}$: log ft=5.87 6 from 3$^{(+)}$; γ to 0^{+}.
4257.1 3	2$^{(+)}$		B	J$^{\pi}$: log ft=6.52 8 from 3$^{(+)}$; γ to 0^{+}.
4303.27 15	2$^{(+)}$		B	J$^{\pi}$: log ft=5.62 6 from 3$^{(+)}$; γ to 0^{+}.
4330.9 6	2$^{(+)}$		B	J$^{\pi}$: log ft=6.89 10 from 3$^{(+)}$; γ to 0^{+}.
4347.3 3	(15^{-})	126 ns 20	LM	J$^{\pi}$: systematics of isomer. T$_{1/2}$: weighted av. of 114 ns 12 (2014Is04) and 160 ns 20 (2012As05).
4447 10			C	
4556 5	(4^{+},5^{-})		C	J L(t,p)=(4,5).
4561.0 4	(14^{-})		M	J$^{\pi}$: from analogy with the other Sn isotope.
4583.1 5	(14^{+})		LM	J$^{\pi}$: a member of higher-seniority positive high-spin levels.
4656.5 5	2$^{(+)}$		B	J$^{\pi}$: log ft=6.52 7 from 3$^{(+)}$; γ to 0^{+}.
4699.5 6	2$^{(+)}$		B	J$^{\pi}$: log ft=6.82 13 from 3$^{(+)}$; γ to 0^{+}.
4734 5			C	

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Adopted Levels, Gammas (continued)

^{126}Sn Levels (continued)

E(level)†	J$^\pi$	$T_{1/2}$	XREF	Comments
4767 *5*	3⁻		C	J$^\pi$: L(t,p)=3.
4779.16 *21*	(7⁻,8⁻,9⁻)		A	J$^\pi$: log *ft*=5.18 *6* from (8⁻).
4797.1 *6*	2$^{(+)}$		B	J$^\pi$: log *ft*=6.65 *14* from 3$^{(+)}$; γ to 0⁺.
4807 *5*	3⁻		C	J$^\pi$: L(t,p)=3.
4838 *5*	3⁻		C	J$^\pi$: L(t,p)=3.
4869 *5*	3⁻		C	J$^\pi$: L(t,p)=3.
4935 *5*	5⁻		C	J$^\pi$: L(t,p)=5.
4974 *5*	5⁻		C	J$^\pi$: L(t,p)=5.
4990.2 *3*	(7⁻)		A	J$^\pi$: log *ft*=5.13 *4* from (8⁻); γ to 5⁻.
5009 *5*	5⁻		C	J$^\pi$: L(t,p)=5.
5041 *5*	5⁻		C	J$^\pi$: L(t,p)=5.
5061.0 *7*	(16⁺)	<30 ns	LM	J$^\pi$: a member of higher-seniority positive high-spin levels. $T_{1/2}$: estimated in 2012As05 from non-observation of any delayed component below the 16⁺ state.
5092 *5*	5⁻		C	J$^\pi$: L(t,p)=5.
5160 *5*	7⁻		C	J$^\pi$: L(t,p)=7.
5188 *5*			C	
5214 *5*	3⁻		C	J$^\pi$: L(t,p)=3.
5257 *5*	5⁻		C	J$^\pi$: L(t,p)=5.
5297 *5*	5⁻		C	J$^\pi$: L(t,p)=5.
5339 *10*	(4⁺)		C	J$^\pi$: L(t,p)=(4).
5367 *10*	(4⁺)		C	J$^\pi$: L(t,p)=(4).
5397 *10*			C	
5436 *10*			C	
5497.3 *3*	(17⁻)		LM	J$^\pi$: a member of higher-seniority negative high-spin levels.
5528 *10*			C	
5587 *10*			C	
5838.2 *8*	(18⁺)		LM	J$^\pi$: a member of higher-seniority positive high-spin levels.
6258.8 *4*	(19⁻)		LM	J$^\pi$: a member of higher-seniority negative high-spin levels.
7324.0 *6*			M	
8375.4 *7*			M	

† From least-squares fit to Eγ's for levels populated in γ ray studies, and from (t,p) and (d,^{6}Li) for levels populated only in particle-transfer studies.

‡ Cascade of E2, E1 and Mult(908.58)=[E2] γ's connecting J^π=7⁻ and 2⁺ levels yields J^π(2049.71)=4⁺ and J^π(2161.50)=5⁻.

γ(^{126}Sn)

E_i(level)	J^π_i	E_γ‡	I_γ‡	E_f	J^π_f	Mult.†	α#	Comments
1141.15	2⁺	1141.11 *5*	100	0.0	0⁺			
2049.74	4⁺	908.58 *5*	100	1141.15	2⁺			
2110.79	2$^{(+)}$	969.61 *5*	100 *7*	1141.15	2⁺			
		2110.83 *10*	20.8 *14*	0.0	0⁺			
2130.08		988.93 *20*	100	1141.15	2⁺			
2161.54	5⁻	111.79 *5*	100 *9*	2049.74	4⁺	E1	0.1323 *19*	B(E1)(W.u.)=1.57×10^{-5} *10*
		1020.41 *10*	0.66 *17*	1141.15	2⁺	[E3]	0.00256 *4*	B(E3)(W.u.)=0.60 *17*
2194.21		1053.06 *5*	100	1141.15	2⁺			
2218.99	7⁻	57.47 *5*	100	2161.54	5⁻	E2	11.53 *17*	B(E2)(W.u.)=0.31 *+4−3*
2256.51		1115.36 *20*	100	1141.15	2⁺			
2276.85		1135.70 *10*	100	1141.15	2⁺			
2370.46	2$^{(+)}$	1229.31 *5*	89 *5*	1141.15	2⁺			
		2370.41 *15*	100 *11*	0.0	0⁺			

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Adopted Levels, Gammas (continued)

$\gamma(^{126}Sn)$ (continued)

E_i(level)	J^π_i	E_γ‡	I_γ‡	E_f	J^π_f	Mult.†	α#	Comments
2373.2		211.7 *4*	100 *4*	2161.54	5^-			E_γ,I_γ: from $^{238}U(^{12}C,F\gamma)$.
2471.93		1330.77 *15*	100	1141.15	2^+			
2477.51	6^-	258.53 *5*	79 *6*	2218.99	7^-	M1(+E2)	0.050 *8*	
		315.93 *5*	100 *9*	2161.54	5^-	M1(+E2)	0.027 *3*	
2488.23	(8^+)	269.26 *5*	100	2218.99	7^-			
2564.5	(10^+)	76.3 *5*		2488.23	(8^+)			E_γ: from $^{124}Sn(^{136}Xe,X\gamma)$.
2631.03		1489.87 *10*	100	1141.15	2^+			
2636.64	$2^{(+)}$	1495.4 *3*	100 *18*	1141.15	2^+			
		2636.30 *20*	100 *10*	0.0	0^+			
2662.98		443.94 *5*	32 *3*	2218.99	7^-			
		501.43 *5*	100 *8*	2161.54	5^-			
2712.06	$2,3,4^+$	1570.96 *10*	100	1141.15	2^+			
2742.57		631.77 *5*	100 *6*	2110.79	$2^{(+)}$			
		1601.43 *10*	88 *6*	1141.15	2^+			
2840.24		362.73 *5*	100	2477.51	6^-			
2886.41		1745.15 *20*	100	1141.15	2^+			
3067.29		848.42 *25*	7.3 *9*	2218.99	7^-			
		905.78 *5*	100 *9*	2161.54	5^-			
3246.55	$2^{(+)}$	503.92 *20*	6.6 *13*	2742.57				
		2105.31 *15*	62 *6*	1141.15	2^+			
		3246.61 *15*	100 *10*	0.0	0^+			
3283.83	(9^-)	1064.85 *5*	100	2218.99	7^-			
3300.3		1250.52 *25*	100	2049.74	4^+			
3344.83	$2^{(+)}$	1068.10 *10*	2.04 *19*	2276.85				
		2203.54 *15*	10.2 *9*	1141.15	2^+			
		3344.61 *15*	100 *9*	0.0	0^+			
3435.0	$2^{(+)}$	3434.9 *6*	100	0.0	0^+			
3454.87		170.80 *20*	7.4 *15*	3283.83	(9^-)			
		387.52 *15*	44 *4*	3067.29				
		977.42 *15*	100 *11*	2477.51	6^-			
		1235.95 *10*	93 *8*	2218.99	7^-			
3504.5	$2^{(+)}$	3504.4 *3*	100	0.0	0^+			
3595.5	(12^+)	1030.9 *1*	100	2564.5	(10^+)			E_γ,I_γ: from $^{238}U(^{64}Ni,X\gamma)$.
3625.79		962.66 *10*	57 *9*	2662.98				
		1406.95 *10*	100 *9*	2218.99	7^-			
3783.41		1564.41 *10*	100	2218.99	7^-			
3809.21		1590.21 *15*	100	2218.99	7^-			
3818.0	$2^{(+)}$	3817.9 *4*	100	0.0	0^+			
3830.75		1611.75 *10*	100	2218.99	7^-			
3855.54	$(7^-,8^-)$	571.74 *5*	10.1 *7*	3283.83	(9^-)			
		788.30 *5*	27.7 *20*	3067.29				
		1192.53 *5*	14.9 *10*	2662.98				
		1367.35 *10*	9.5 *7*	2488.23	(8^+)			
		1377.99 *5*	78 *7*	2477.51	6^-			
		1636.50 *10*	100 *7*	2218.99	7^-			
3860.3	$2,3,4^+$	2719.1 *3*	100	1141.15	2^+			
3886.54	$2^{(+)}$	1174.32 *10*	6.6 *9*	2712.06	$2,3,4^+$			
		2745.36 *20*	20.2 *21*	1141.15	2^+			
		3886.82 *15*	100 *11*	0.0	0^+			
3917.3	$2,3,4^+$	2776.1 *5*	100	1141.15	2^+			
3926.03	(11^-)	642.2 *2*	80 *20*	3283.83	(9^-)			E_γ,I_γ: from $^{238}U(^{64}Ni,X\gamma)$.
		1361.6 *3*	100 *20*	2564.5	(10^+)			E_γ,I_γ: from $^{238}U(^{64}Ni,X\gamma)$.
3950.3		1731.3 *5*	100	2218.99	7^-			
3964.19	$2^{(+)}$	1077.73 *15*	13.3 *17*	2886.41				
		1252.34 *10*	71 *4*	2712.06	$2,3,4^+$			

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Adopted Levels, Gammas (continued)

$\gamma(^{126}Sn)$ (continued)

E_i(level)	J_i^π	E_γ‡	I_γ‡	E_f	J_f^π	Mult.†	α#	Comments
3964.19	$2^{(+)}$	1327.46 *10*	24.2 *21*	2636.64	$2^{(+)}$			
		1593.73 *10*	46 *4*	2370.46	$2^{(+)}$			
		1687.20 *10*	92 *9*	2276.85				
		2822.9 *3*	42 *4*	1141.15	2^+			
		3964.20 *15*	100 *9*	0.0	0^+			
3977.39		1314.46 *15*	35 *4*	2662.98				
		1758.30 *20*	100 *8*	2218.99	7^-			
4013.97	$2,3,4^{(+)}$	1643.50 *20*	100	2370.46	$2^{(+)}$			
4166.5	(13^-)	240.5 *2*	22.0 *25*	3926.03	(11^-)			E_γ,I_γ: from $^{238}U(^{64}Ni,X\gamma)$.
		571.0 *1*	100 *6*	3595.5	(12^+)			E_γ,I_γ: from $^{238}U(^{64}Ni,X\gamma)$.
4241.00	$2^{(+)}$	4240.92 *15*	100	0.0	0^+			
4257.1	$2^{(+)}$	4257.0 *3*	100	0.0	0^+			
4303.27	$2^{(+)}$	4303.19 *15*	100	0.0	0^+			
4330.9	$2^{(+)}$	4330.8 *6*	100	0.0	0^+			
4347.3	(15^-)	180.8 *1*	100	4166.5	(13^-)	E2	0.198 *3*	B(E2)(W.u.)=0.52 *9* E_γ,I_γ: from $^{238}U(^{64}Ni,X\gamma)$. Mult.: from α(exp)=0.25 *5* by intesity imbalances (2012As05).
4561.0	(14^-)	213.7 *3*	100 *2*	4347.3	(15^-)			E_γ,I_γ: from $^{238}U(^{64}Ni,X\gamma)$.
4583.1	(14^+)	987.6 *4*	100	3595.5	(12^+)			E_γ,I_γ: from $^{238}U(^{64}Ni,X\gamma)$.
4656.5	$2^{(+)}$	4656.4 *5*	100	0.0	0^+			
4699.5	$2^{(+)}$	4699.4 *6*	100	0.0	0^+			
4779.16	$(7^-,8^-,9^-)$	1495.4 *3*	50 *16*	3283.83	(9^-)			
		2560.10 *25*	100 *8*	2218.99	7^-			
4797.1	$2^{(+)}$	4797.0 *6*	100 *9*	0.0	0^+			
4990.2	(7^-)	2828.6 *3*	100	2161.54	5^-			
5061.0	(16^+)	477.9 *4*	100 *9*	4583.1	(14^+)			E_γ,I_γ: from $^{238}U(^{64}Ni,X\gamma)$.
		713.7@	<7	4347.3	(15^-)			E_γ,I_γ: from $^{238}U(^{64}Ni,X\gamma)$.
5497.3	(17^-)	1150.0 *1*	100	4347.3	(15^-)			E_γ,I_γ: from $^{238}U(^{64}Ni,X\gamma)$.
5838.2	(18^+)	777.2 *5*	100	5061.0	(16^+)			E_γ,I_γ: from $^{238}U(^{64}Ni,X\gamma)$.
6258.8	(19^-)	761.5 *2*	100	5497.3	(17^-)			E_γ,I_γ: from $^{238}U(^{64}Ni,X\gamma)$.
7324.0		1826.7 *5*	100	5497.3	(17^-)			E_γ,I_γ: from $^{238}U(^{64}Ni,X\gamma)$.
8375.4		2116.6 *6*	100	6258.8	(19^-)			E_γ,I_γ: from $^{238}U(^{64}Ni,X\gamma)$.

† From α(exp) in ^{126}In β^- decay, unless otherwise noted.
‡ From ^{126}In β^- decay (1979Fo10) unless otherwise noted.
# 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.
@ Placement of transition in the level scheme is uncertain.

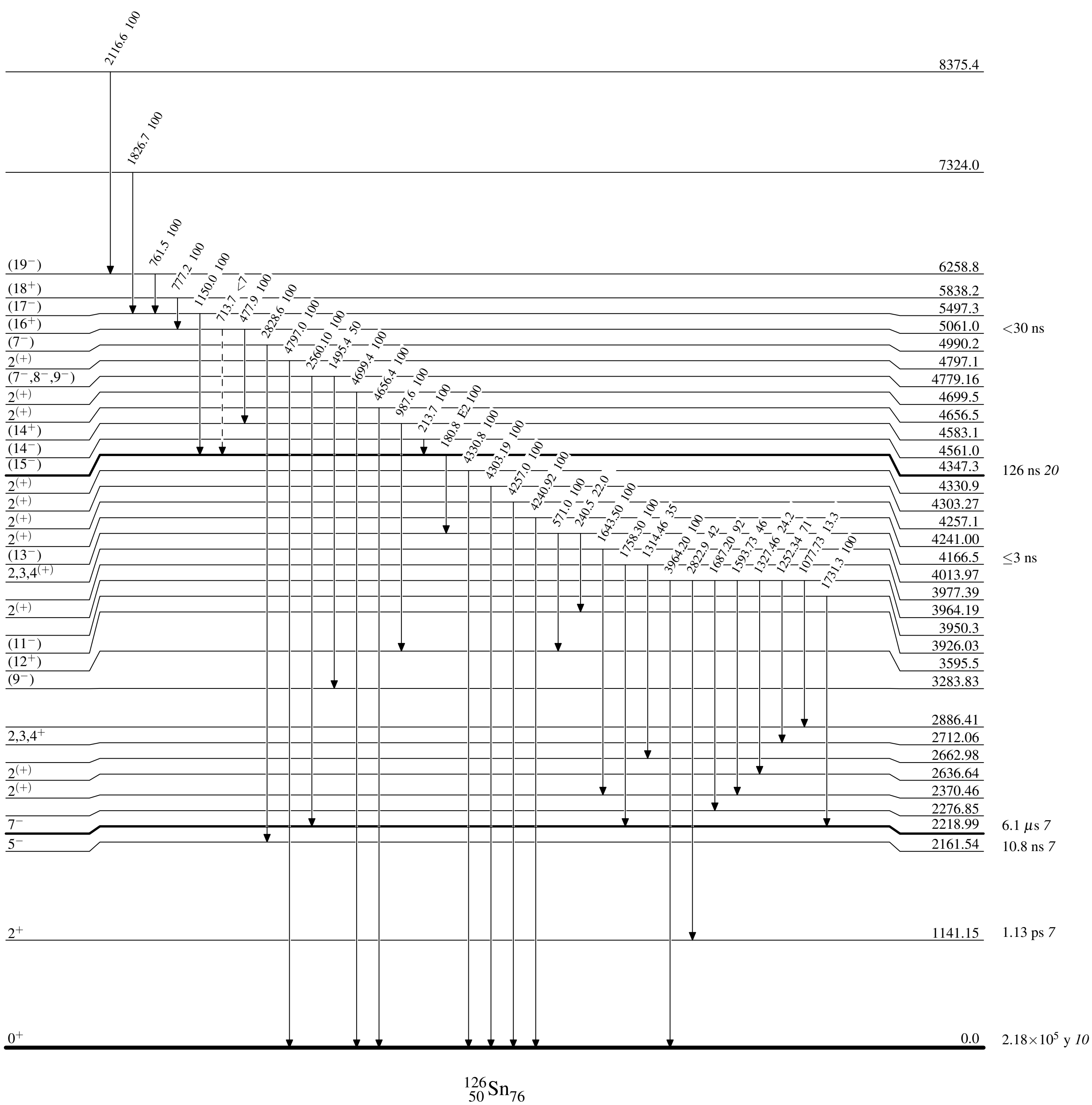
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

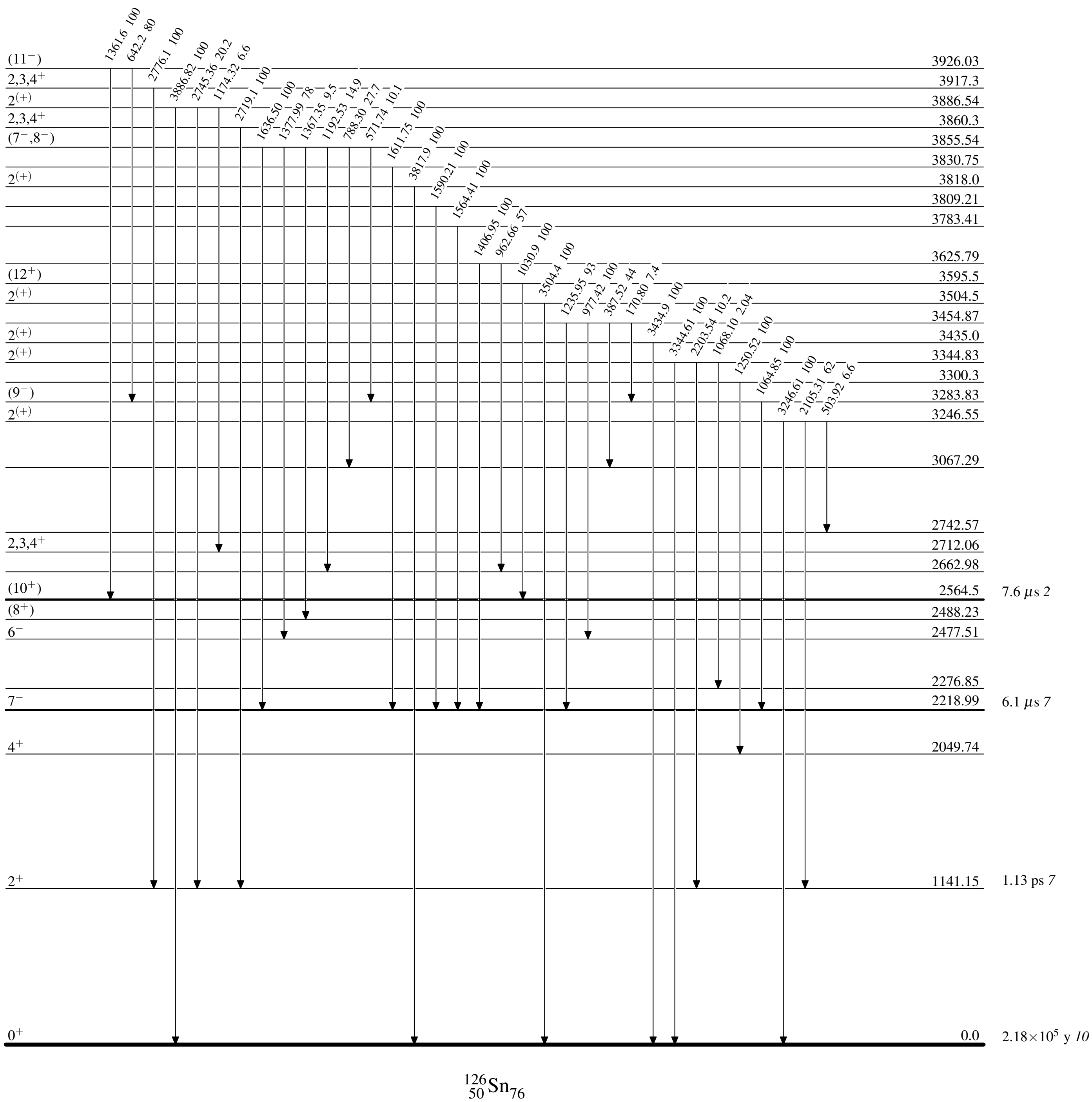
γ Decay (Uncertain)



Adopted Levels, Gammas

Level Scheme (continued)

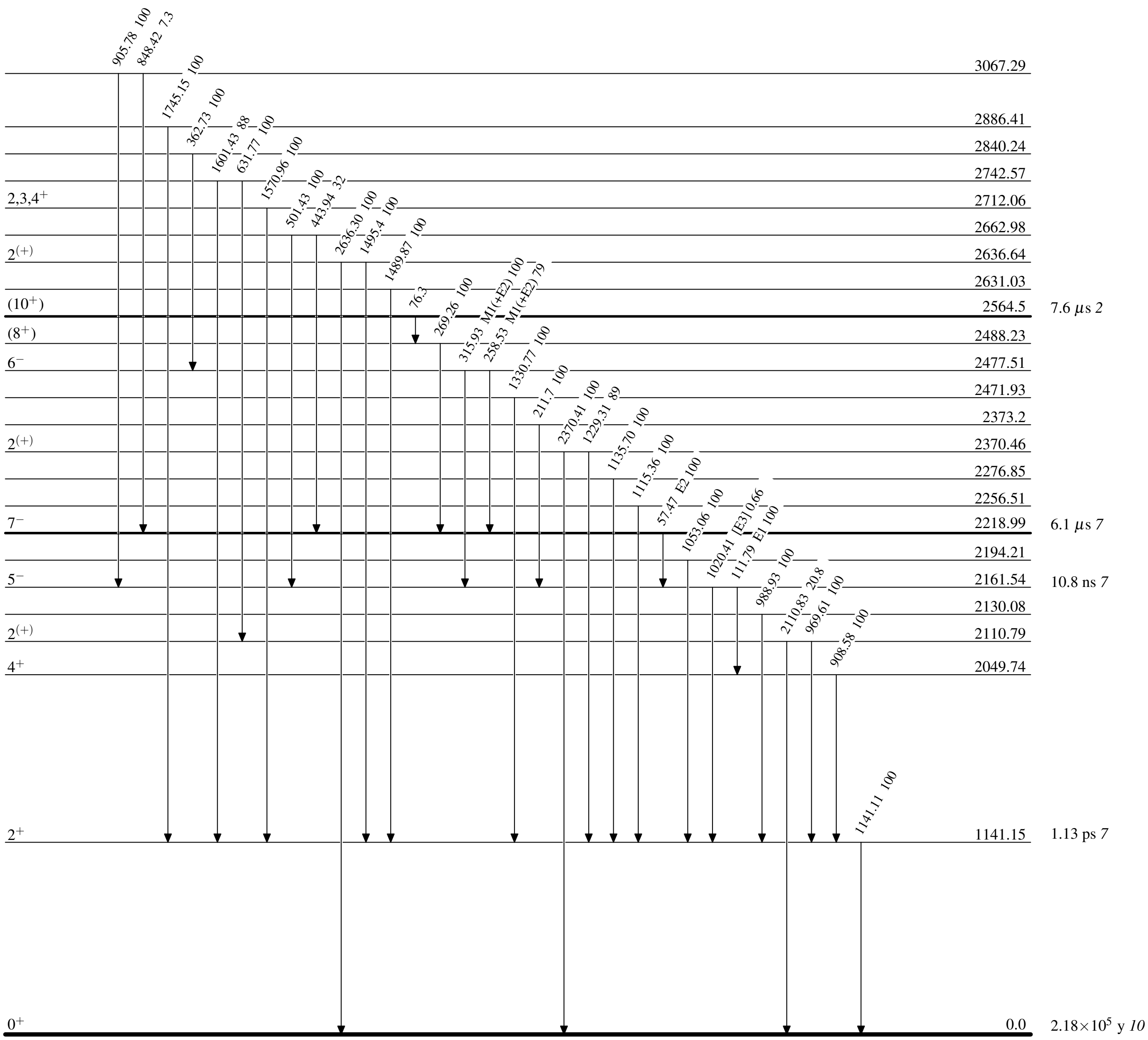
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{126}_{50}Sn_{76}$