^{125}Sn β^- decay (9.64 d) 1980Ve04,1971Ma01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	J. Katakura	NDS 112, 495 (2011)	1-Jan-2010

Parent: ^{125}Sn: E=0.0; J^π=11/2$^-$; $T_{1/2}$=9.64 d *3*; Q(β^-)=2357 *3*; %β^- decay=100.0

The decay scheme is that proposed by 1980Ve04 and 1971Ma01, but 2227 level was only reported by 1971Ma01.

1980Ve04: ^{124}Sn(n,γ)^{125}Sn, semi γ, scin-semi $\gamma\gamma(\theta)$, $\gamma\gamma$-coin.

1979Gr01: semi γ.

1971Ma01: ^{124}Sn(d,p)^{125}Sn chem, semi γ, NaI(Tl)-Ge(Li) $\gamma\gamma$-coin, $\gamma\gamma(\theta)$.

1950Ha58,1950Ke11: mag spect β.

1966Au02: semi γ, scin β, $\gamma\gamma(\theta)$.

1967Wi13: semi γ, $\gamma\gamma$-coin.

1974Ga03: semi-semi, $\gamma\gamma(\theta)$, (pol γ)$\gamma(\theta)$.

Others: 1957Bu40, 1966De12, 1971ArZX.

^{125}Sb Levels

E(level)‡	J^π†	$T_{1/2}$	E(level)‡	J^π†
0.0	7/2$^+$	2.75856 y *25*	1982.86 *4*	11/2$^-$
332.21 *4*	5/2$^+$		2002.14 *2*	9/2,11/2$^+$
1067.32 *3*	9/2$^+$		2201.02 *2*	9/2,11/2$^+$
1089.51 *3*	11/2$^+$		2227.0 *4*	
1349.65 *4*	7/2$^+$		2240.73 *4*	9/2$^+$
1419.87 *4*	9/2$^+$		2253.40 *5*	9/2,11/2,13/2
1591.61 *5*	7/2$^+$,9/2$^+$		2275.77 *1*	9/2,11/2$^+$
1806.70 *2*	(9/2)$^+$		2288.23 *8*	(11/2$^+$)
1889.86 *2*	9/2$^-$,11/2$^-$			

† From Adopted Levels.

‡ From a least-squares fit (by evaluators) to Eγ's.

β^- radiations

E(decay)	E(level)	Iβ^-†	Log *ft*	Comments
(69 *3*)	2288.23	0.29 *8*	6.13 *14*	av Eβ=17.76 *81*
(81 *3*)	2275.77	0.21 *6*	6.49 *14*	av Eβ=21.10 *82*
(104 *3*)	2253.40	0.14 *4*	6.99 *13*	av Eβ=27.23 *85*
(116 *3*)	2240.73	0.58 *16*	6.53 *13*	av Eβ=30.72 *84*
(130 *3*)	2227.0	≈0.005	≈8.7	av Eβ=34.58 *86*
(156 *3*)	2201.02	0.061 *17*	7.90 *13*	av Eβ=42.00 *87*
(355 *3*)	2002.14	2.2 *6*	7.49 *12*	av Eβ=103.9 *10*
(374 *3*)	1982.86	4.3 *12*	7.27 *13*	av Eβ=110.3 *10*
(467 *3*)	1889.86	6.6 *18*	7.41 *12*	av Eβ=142.2 *11*
(550 *3*)	1806.70	0.13 *4*	9.36 *14*	av Eβ=171.9 *11*
(765 *3*)	1591.61	0.055 *16*	10.23 *13*	av Eβ=253.0 *12*
(937 *3*)	1419.87	0.18 *9*	10.04 *22*	av Eβ=321.3 *13*
(1007 *3*)	1349.65	0.38 *11*	10.38[1u] *13*	av Eβ=364.0 *12*
(1267 *3*)	1089.51	3.0 *9*	9.30 *13*	av Eβ=458.9 *13*
(1290 *3*)	1067.32	0.6 *3*	10.03 *22*	av Eβ=468.4 *13*
(2357 *3*)	0.0	81.4 *50*	10.13[1u] *3*	av Eβ=941.1 *14*

E(decay): ΔJ=2−yes shape determined from a F-K plot (1950Ha58,1950Ke11).

Iβ^-: Recalculated by the evaluators from the value of 82.5% *50* deduced by 1967Wi13 from I(469.85γ, ^{125}Sb)/I(463.38γ, ^{125}Te) and the level scheme. Uncertainty of 6% assigned by the evaluators.

† Absolute intensity per 100 decays.

$\gamma(^{125}Sb)$

Iγ normalization: From Σ(I(γ+ce) to g.s.)=100-81.4 *50*.

$\gamma\gamma(\theta)$ data

cascade	A_2	A_4	ref
469 - 1087	-0.054 *14*	-0.002 *2*	1980Ve04
	-0.065 *16*	+0.009 *24*	1974Ga03
1087 - 332	+0.02 *2*	+0.03 *3*	1980Ve04
	+0.042 *5*	-0.009 *20*	1979Gr01
351 - 469	-0.154 *11*	-0.14 *16*	1980Ve04
	+0.12 *1*	+0.000 *12*	1979Gr01
800 - 1089	+0.14 *3*	-0.1 *5*	1980Ve04
	+0.203 *22*	-0.02 *4*	1979Gr01
893 - 1089	+0.10 *5*	-0.10 *8*	1980Ve04
822 - 1067	+0.159 *9*	-0.006 *14*	1980Ve04
	+0.199 *22*	-0.00 *3*	1979Gr01
1017 - 332	-0.19 *4*	+0.026 *20*	1980Ve04
915 - 1067	+0.119 *4*	+0.017 *6*	1980Ve04
	+0.213 *15*	+0.01 *3*	1979Gr01
1151 - 1089	+0.27 *5*	-0.109 *10*	1980Ve04
1173 - 1067	+0.33 *7*	-0.11 *10*	1980Ve04
1221 - 1067	+0.26 *5*	+0.15 *8*	1980Ve04
469 - 1419	+0.095 *18*	+0.08 *3*	1980Ve04
469-(1087)-332	-0.039 *14*	+0.024 *17*	1980Ve04
	-0.021 *8*	-0.005 *13*	1979Gr01

E_γ[‡]	I_γ[bc]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ	α[†]	Comments
[x]234.70 *10*	0.36 *2*								
258.25[d#@e] *10*	<0.21[d]	1349.65	7/2$^+$	1089.51	11/2$^+$				I_γ: ΔIγ=0.01.
258.25[d#@e] *10*	<0.21[d]	2240.73	9/2$^+$	1982.86	11/2$^-$				
270.60 *5*	1.10 *2*	2253.40	9/2,11/2,13/2	1982.86	11/2$^-$				
282.45 *5*	0.19 *2*	1349.65	7/2$^+$	1067.32	9/2$^+$				
286.2 *2*	0.06 *1*	2288.23	(11/2$^+$)	2002.14	9/2,11/2$^+$				
311.3 *1*	0.09 *1*	2201.02	9/2,11/2$^+$	1889.86	9/2$^-$,11/2$^-$				
332.10 *5*	14.5 *3*	332.21	5/2$^+$	0.0	7/2$^+$	M1+E2	−0.24 *4*	0.0242	α(K)=0.0209 *3*; α(L)=0.00264 *4*; α(M)=0.000522 *8*; α(N+..)=0.0001107 *17*

^{125}Sn β^- decay (9.64 d) 1980Ve04,1971Ma01 (continued)

$\gamma(^{125}Sb)$ (continued)

E_γ[‡]	I_γ[bc]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ	α[†]	Comments
									α(N)=0.0001007 *16*; α(O)=9.93×10^{-6} *15* Mult.: From α(K)exp=0.018 *5* (1971Ka05). δ: From (1977Kr13).
350.95 *5*	2.72 *5*	2240.73	9/2$^+$	1889.86	9/2$^-$,11/2$^-$	D+Q	0.42 *3*		Mult.,δ: From (351γ)(470γ)(θ) (1980Ve04).
363.5 *2*	0.030 *5*	2253.40	9/2,11/2,13/2	1889.86	9/2$^-$,11/2$^-$				
386.6 *2*	0.05 *1*	1806.70	(9/2)$^+$	1419.87	9/2$^+$				
x398[a] *1*	≈0.005								
434.13 *10*	0.25 *2*	2240.73	9/2$^+$	1806.70	(9/2)$^+$				
469.85 *5*	15.3 *3*	1889.86	9/2$^-$,11/2$^-$	1419.87	9/2$^+$	E1(+M2)	+0.010 *24*	0.00292 *6*	α=0.00292 *6*; α(K)=0.00254 *5*; α(L)=0.000307 *6*; α(M)=6.03×10^{-5} *12*; α(N+..)=1.274×10^{-5} *25* α(N)=1.160×10^{-5} *22*; α(O)=1.138×10^{-6} *22* Mult.,δ: From (pol 470γ)(1087γ)(θ) (1974Ga03). δ: Other: 0.045 *+22−45* from (470γ)(1087γ)(θ) (1980Ve04).
x487.2[&] *2*	0.13 *2*								
524.30 *5*	0.10 *1*	1591.61	7/2$^+$,9/2$^+$	1067.32	9/2$^+$				
563.0 *2*	0.16 *2*	1982.86	11/2$^-$	1419.87	9/2$^+$				
652.6 *1*	0.42 *1*	2002.14	9/2,11/2$^+$	1349.65	7/2$^+$				
684.0 *2*	0.11 *2*	2275.77	9/2,11/2$^+$	1591.61	7/2$^+$,9/2$^+$				
800.28 *5*	11.00 *22*	1889.86	9/2$^-$,11/2$^-$	1089.51	11/2$^+$	E1(+M2)	0.18 *+11−8*	0.0011 *3*	α=0.0011 *3*; α(K)=0.0010 *3*; α(L)=0.00012 *4*; α(M)=2.3×10^{-5} *7*; α(N+..)=4.8×10^{-6} *15* α(N)=4.4×10^{-6} *13*; α(O)=4.4×10^{-7} *13* Mult.: From (800γ)(pol 1087γ)(θ) (1974Ga03). δ: From (800γ)(1087γ)(θ) (1980Ve04).
822.48 *5*	44.1 *9*	1889.86	9/2$^-$,11/2$^-$	1067.32	9/2$^+$	E1		0.000849 *12*	α=0.000849 *12*; α(K)=0.000740 *11*; α(L)=8.79×10^{-5} *13*; α(M)=1.727×10^{-5} *25*; α(N+..)=3.66×10^{-6} α(N)=3.33×10^{-6} *5*; α(O)=3.30×10^{-7} *5* Mult.: From (822γ)(pol 1067γ)(θ) (1974Ga03).
890.5[&e] *5*	0.09 *2*	2240.73	9/2$^+$	1349.65	7/2$^+$				
893.40 *5*	3.0 *1*	1982.86	11/2$^-$	1089.51	11/2$^+$	D+Q	0.29 *17*	0.0011 *5*	α=0.0011 *5*; α(K)=0.0010 *4*; α(L)=0.00012 *6*; α(M)=2.3×10^{-5} *11*; α(N+..)=4.8×10^{-6} *22* α(N)=4.4×10^{-6} *20*; α(O)=4.4×10^{-7} *20* Mult.,δ: From (893γ)(1087γ)(θ) (1980Ve04).
903.5[&e] *5*	0.13 *3*	2253.40	9/2,11/2,13/2	1349.65	7/2$^+$				
912.0[e] *5*	0.07 *2*	2002.14	9/2,11/2$^+$	1089.51	11/2$^+$				
915.55 *5*	42.6 *9*	1982.86	11/2$^-$	1067.32	9/2$^+$	E1+M2	−0.02 *1*	0.000688 *10*	α=0.000688 *10*; α(K)=0.000600 *9*; α(L)=7.11×10^{-5} *11*; α(M)=1.395×10^{-5} *21*; α(N+..)=2.96×10^{-6} *5* α(N)=2.69×10^{-6} *4*; α(O)=2.67×10^{-7} *4*

$^{125}_{51}Sb_{74}$-3

^{125}Sn β^- decay (9.64 d) 1980Ve04,1971Ma01 (continued)

$\gamma(^{125}Sb)$ (continued)

E_γ[‡]	I_γ[bc]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ	α[†]	Comments
									Mult.,δ: From (pol 916γ)(1087γ)(θ) (1974Ga03). δ: Other: 0.071≤from (916γ)(1067γ)(θ) (1980Ve04).
[x]921.43 *5*	0.85 *2*								
934.63 *5*	2.15 *4*	2002.14	9/2,11/2$^+$	1067.32	9/2$^+$				
1017.40 *5*	3.30 *7*	1349.65	7/2$^+$	332.21	5/2$^+$	M1+E2	2.1 *+5−3*	0.00137 *3*	α=0.00137 *3*; α(K)=0.001190 *23*; α(L)=0.000147 *3*; α(M)=2.89×10^{-5} *6*; α(N+..)=6.12×10^{-6} *11* α(N)=5.57×10^{-6} *10*; α(O)=5.48×10^{-7} *11* Mult.,δ: From (1017γ)(332γ)(θ) (1980Ve04).
1067.10 *5*	100	1067.32	9/2$^+$	0.0	7/2$^+$	M1+E2	−0.86 *18*	0.00134 *4*	α=0.00134 *4*; α(K)=0.00117 *4*; α(L)=0.000142 *4*; α(M)=2.79×10^{-5} *7*; α(N+..)=5.93×10^{-6} *15* α(N)=5.39×10^{-6} *14*; α(O)=5.35×10^{-7} *14* Mult.: from (823γ)(pol 1067γ)(θ), (pol 915γ)(1067γ)(θ) (1974Ga03). δ: From 1977Kr13. Other: 1.56 *22* from (822γ)(1067γ)(θ) (1980Ve04).
1087.70 *10*	12.3 *2*	1419.87	9/2$^+$	332.21	5/2$^+$				
1089.15 *10*	47.3 *9*	1089.51	11/2$^+$	0.0	7/2$^+$	E2		0.001133 *16*	α=0.001133 *16*; α(K)=0.000983 *14*; α(L)=0.0001211 *17*; α(M)=2.39×10^{-5} *4*; α(N+..)=5.05×10^{-6} α(N)=4.60×10^{-6} *7*; α(O)=4.52×10^{-7} *7* Mult.: From (800γ)(pol 1089γ)(θ) (1974Ga03).
1111.4 *1*	0.14 *2*	2201.02	9/2,11/2$^+$	1089.51	11/2$^+$				
1137.5[a] *5*	≈0.03	2227.0		1089.51	11/2$^+$				
1151.23 *5*	1.18 *2*	2240.73	9/2$^+$	1089.51	11/2$^+$	M1+E2	2.1 *+12−10*	0.00105 *7*	α=0.00105 *7*; α(K)=0.00091 *6*; α(L)=0.000111 *6*; α(M)=2.19×10^{-5} *12*; α(N+..)=6.91×10^{-6} *20* α(N)=4.22×10^{-6} *24*; α(O)=4.17×10^{-7} *25*; α(IPF)=2.27×10^{-6} *8* Mult.,δ: From (1151γ)(1089γ)(θ) (1980Ve04).
1163.84 *5*	0.32 *2*	2253.40	9/2,11/2,13/2	1089.51	11/2$^+$				
1173.30 *5*	1.87 *4*	2240.73	9/2$^+$	1067.32	9/2$^+$	M1+E2	≥1.1	0.00102 *5*	α=0.00102 *5*; α(K)=0.00088 *5*; α(L)=0.000107 *5*; α(M)=2.12×10^{-5} *10*; α(N+..)=8.37×10^{-6} *15* α(N)=4.08×10^{-6} *19*; α(O)=4.04×10^{-7} *20*; α(IPF)=3.88×10^{-6} *12* Mult.,δ: From (1173γ)(1067γ)(θ) (1980Ve04).
1186.15 *15*	0.09 *1*	2275.77	9/2,11/2$^+$	1089.51	11/2$^+$				
1198.70 *15*	0.16 *1*	2288.23	(11/2$^+$)	1089.51	11/2$^+$				
1208.4 *2*	0.08 *2*	2275.77	9/2,11/2$^+$	1067.32	9/2$^+$				
1220.88 *10*	2.76 *6*	2288.23	(11/2$^+$)	1067.32	9/2$^+$	M1+E2	≥9.9	0.000901 *13*	α=0.000901 *13*; α(K)=0.000774 *11*; α(L)=9.44×10^{-5} *14*; α(M)=1.86×10^{-5} *3*; α(N+..)=1.349×10^{-5} *1* α(N)=3.59×10^{-6} *5*; α(O)=3.54×10^{-7} *5*; α(IPF)=9.55×10^{-6} *14* Mult.,δ: From (1221γ)(1067γ)(θ) (1980Ve04).

$^{125}_{51}Sb_{74}$-4

^{125}Sn β^- decay (9.64 d) 1980Ve04,1971Ma01 (continued)

$\gamma(^{125}Sb)$ (continued)

E_γ[‡]	I_γ[bc]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ	α[†]	Comments
1259.35 *10*	0.32 *2*	1591.61	7/2$^+$,9/2$^+$	332.21	5/2$^+$				
[x]1291.3[&] *2*	0.050 *15*								
1349.42 *10*	0.61 *2*	1349.65	7/2$^+$	0.0	7/2$^+$				
1419.70 *5*	5.02 *10*	1419.87	9/2$^+$	0.0	7/2$^+$	D(+Q)	+0.01 *3*	0.000830 *12*	α=0.000830 *12*; α(K)=0.000680 *10*; α(L)=8.11×10^{-5} *12*; α(M)=1.595×10^{-5} *23*; α(N+..)=5.30×10^{-5} α(N)=3.09×10^{-6} *5*; α(O)=3.09×10^{-7} *5*; α(IPF)=4.96×10^{-5} *7* Mult.: From (470γ)(1419γ)(θ) (1971Ma01,1980Ve04). δ: From 1977Kr13. Other: 4.4 *8* from (470γ)(1419γ)(θ) (1980Ve04).
1557.3 *1*	0.042 *10*	1889.86	9/2$^-$,11/2$^-$	332.21	5/2$^+$				
1591.4 *2*	0.26 *2*	1591.61	7/2$^+$,9/2$^+$	0.0	7/2$^+$				
1806.690[#@] *16*	1.53 *3*	1806.70	(9/2)$^+$	0.0	7/2$^+$				
1889.884[#@] *16*	0.76 *4*	1889.86	9/2$^-$,11/2$^-$	0.0	7/2$^+$				
1982.5 *2*	0.033 *10*	1982.86	11/2$^-$	0.0	7/2$^+$				
2002.134[#@] *12*	19.8 *4*	2002.14	9/2,11/2$^+$	0.0	7/2$^+$				
[x]2038.3[&] *2*	0.030 *5*								
2201.002[#@] *12*	0.40 *2*	2201.02	9/2,11/2$^+$	0.0	7/2$^+$				
2227.0[a] *5*	≈0.02	2227.0		0.0	7/2$^+$				
2275.748[#@] *10*	1.88 *4*	2275.77	9/2,11/2$^+$	0.0	7/2$^+$				

[†] Additional information 1.
[‡] From 1980Ve04, unless otherwise noted. There may be systematic error because the energies in the region where the precise γ's (2000He14) are adopted show systematic differences of about 0.4 keV.
[#] 1980Ve04 report Eγ=258.25 *10* with Iγ=0.20 *1* for a transition doubly placed from the 1349 and 2240 levels. The transition is not included in the least squares adjustment. That adjustment gives expected energies of 260.14 *5* and 257.84 *5* for placements from the 1349 and 2240 levels, respectively.
[@] From table 7 of 2000He14, but not included in their table of recommended values.
[&] Only reported in 1980Ve04.
[a] Only reported in 1971Ma01.
[b] From 1980Ve04.
[c] For absolute intensity per 100 decays, multiply by 0.097 *26*.
[d] Multiply placed with undivided intensity.
[e] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

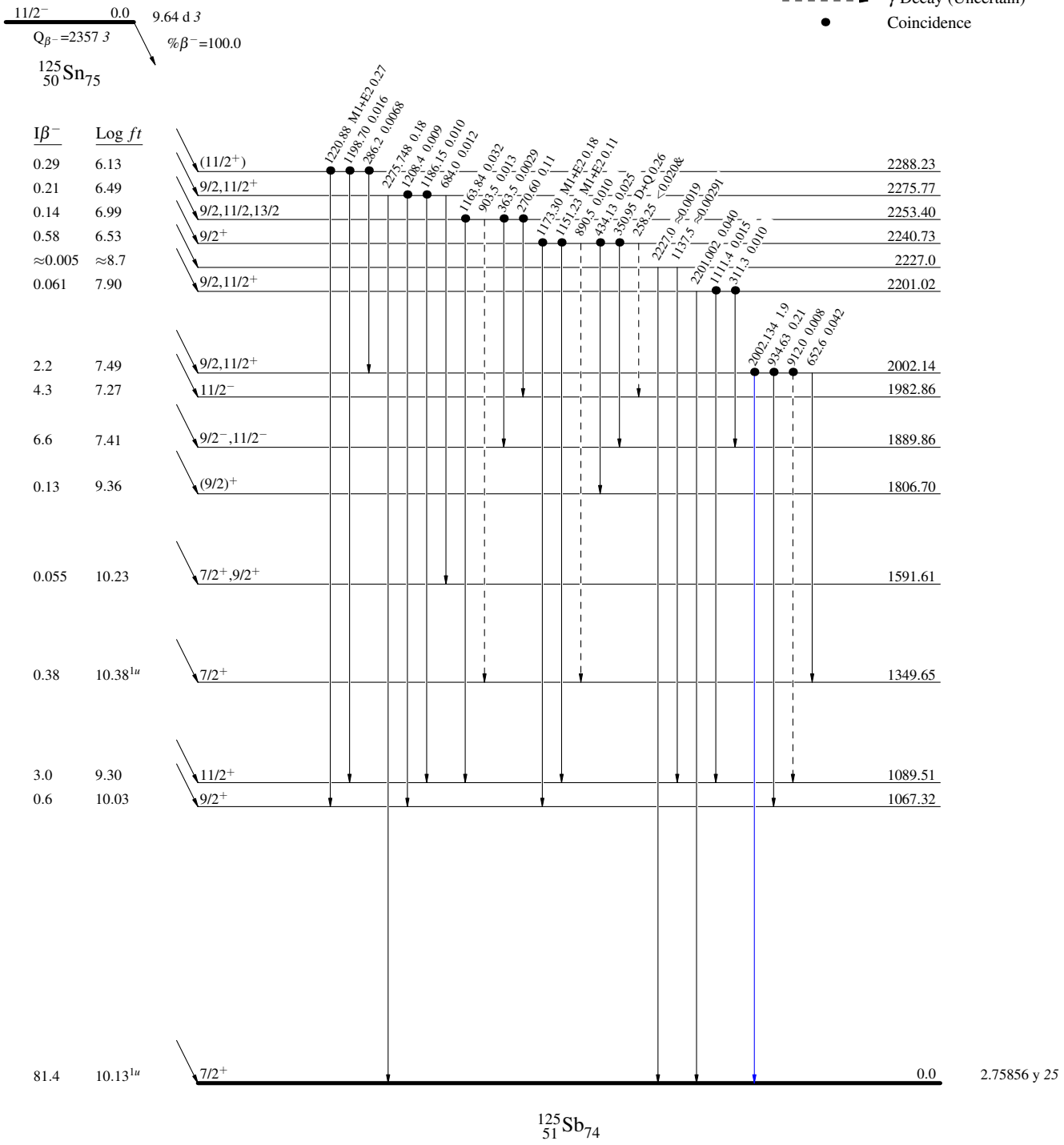
$^{125}_{51}Sb_{74}$-5

^{125}Sn β^- decay (9.64 d) 1980Ve04,1971Ma01

Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given

Legend
- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)
- Coincidence



^{125}Sn β^- decay (9.64 d) 1980Ve04,1971Ma01

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given

Legend
- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)
- Coincidence