^{125}Sb β^- decay 1998Sa55,1976Wa13,1990Me15

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

Parent: ^{125}Sb: E=0.0; $J^\pi=7/2^+$; $T_{1/2}$=2.75856 y *25*; Q(β^-)=766.7 *21*; %β^- decay=100.0

The decay scheme is from 1998Sa55,1999Sa73.

1998Sa55,1999Sa73: HPGe, γ; mini-orange spectrometer, Ice.

1998Ro20: $\gamma\gamma(\theta)$, mixing ratio.

1997De38: HPGe, $\gamma\gamma(\theta)$, mixing ratio.

1993Fa02: HPGe γ.

1992De26: Plastic scin $\beta\gamma$(t).

1992Sm02: Semi γ, $4\pi\beta$-γ coin.

1991Go22: Mini-orange spectrometer, Ice.

1990Me15: HPGe γ.

1990He05: HPGe γ.

1990Lo03: Semi γ, $4\pi\beta$-γ coin.

1984Iw03: Semi γ.

1983Si14: Semi γ, $\gamma\gamma(\theta)$.

1976Wa13: Compton-suppression spectrometer.

1972Sa08: Plastic scin $\beta\gamma$(t).

1970Ma20: Mag spect βce(t), (ce)(ce)(t).

1968Ko08: Plastic scin $\beta\gamma$-coin, $\beta\gamma$(t).

1966Ma49: Magnetic spectrograph ce.

Others: semi γ: 1968In01, 1968St16, 1969Au09, 1970Na12, 1971Ma08, 1973Gu10, 1977Ar10, 1979Pr08, 1977Ge12, 1980Ro22, 1988RaZM 1992ScZZ; magnetic spectrograph ce: 1959Na06; semi ce: 1970Na12; $\gamma\gamma(\theta)$: 1964In02, 1968In01, 1969Kn03, 1969Si05, 1970Ba69, 1970Cr07, 1970Wy01, 1971Ba44, 1971Ro17, 1971Wy02, 1972Ba12; oriented nuclei $\gamma(\theta)$: 1968An05, 1968St16, 1971Kr11; liquid scin branching ratio: 1998Gr13; recommended standard: 1979He19, 2000He14.

^{125}Te Levels

E(level)†	J^π‡	$T_{1/2}$	Comments
0.0	$1/2^+$	stable	
35.491 *3*	$3/2^+$	1.482 ns *8*	$T_{1/2}$: From Adopted Levels.
144.776 *11*	$11/2^-$	57.40 d *15*	%IT=100 $T_{1/2}$: From Adopted Levels.
321.090 *11*	$9/2^-$	0.672 ns *13*	$T_{1/2}$: From weighted average of $\beta\gamma$(t), βce(t): 0.695 ns *15* (1968Ko08), 0.68 ns *3* (1969Ho42), 0.76 ns *2* (1970Be47), 0.68 ns *3* (1970Ma20), 0.65 ns *3* (1970Be51), 0.704 ns *21* (1972Sa33), 0.67 ns *4* (1972Be21), 0.647 ns *8* (1992De26); Other: 0.87 ns *8* (1966In02).
402.09 *4*	$7/2^+$		
443.554 *6*	$3/2^+$	19.1 ps *6*	$T_{1/2}$: From Adopted Levels. Other: ≤ 100 ps βce(t) (1970Ma20).
463.365 *3*	$5/2^+$	13.2 ps *5*	$T_{1/2}$: From Adopted Levels. Others: 19 ps *3* $\beta\gamma$(t) (1970Be47), 14 ps *6* βce(t) (1970Ma20), 26 ps *8* $\beta\gamma$(t) (1972Sa08).
525.227 *9*	$7/2^-$	≤160 ps	$T_{1/2}$: From $\beta\gamma$(t) (1968Ko08). Other: ≤500 ps βce(t) (1970Ma20).
538.60 *5*	$(1/2^+)$		
636.090 *4*	$7/2^+$	40 ps *20*	$T_{1/2}$: From βce(t) (1970Ma20). Others: ≤160 ps $\beta\gamma$(t) (1968Ko08), ≤70 ps $\beta\gamma$(t) (1992De26).
642.204 *4*	$7/2^+$	≤70 ps	$T_{1/2}$: From $\beta\gamma$(t) (1992De26). Other: ≤600 ps βce(t) (1970Ma20).
652.90 *5*	(5/2)		
671.443 *4*	$5/2^+$	1.26 ps *6*	$T_{1/2}$: From Adopted Levels. Other: 40 ps *15* βce(t) (1970Ma20).
728.8 *5*	$3/2^+$		

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

‡ From Adopted Levels.

^{125}Sb β^- decay 1998Sa55,1976Wa13,1990Me15 (continued)

β^- radiations

E(decay)	E(level)	Iβ^-[†]	Log *ft*	Comments
(37.9[‡] *22*)	728.8	<0.000069	>11.0	av Eβ=9.63 *56*
(95.3 *21*)	671.443	13.42 *17*	6.93 *3*	av Eβ=24.91 *58*
(113.8 *21*)	652.90	0.055 *3*	9.56 *4*	av Eβ=30.03 *59*
(124.5 *21*)	642.204	5.75 *7*	7.661 *24*	av Eβ=33.02 *59*
(130.6 *21*)	636.090	17.88 *19*	7.233 *23*	av Eβ=34.74 *60*
(241.5 *21*)	525.227	1.609 *19*	9.120 *14*	av Eβ=67.48 *65*
(303.3 *21*)	463.365	40.3 *4*	8.041 *11*	av Eβ=86.94 *68* E(decay): 302 *4* from 1966Ma49.
(323.1 *21*)	443.554	0.052 *13*	11.02 *11*	av Eβ=93.34 *69*
(364.6 *21*)	402.09	0.0222 *11*	11.562 *23*	av Eβ=106.97 *70*
(445.6 *21*)	321.090	7.18 *8*	9.342 *9*	av Eβ=134.50 *73* E(decay): 444 *8* from 1966Ma49.
(621.9 *21*)	144.776	13.6 *9*	9.77[1*u*] *3*	av Eβ=215.47 *78* Iβ^-: From 1998Gr13; others: 13.4% (1959Na06),13.7% (1964Ma30), determined from a F-K plot. E(decay): 621 *2* determined from spectrum with ΔJ=2−yes shape. Value from weighted average of 619 *3* (1959Na06), 623 *3* (1964Ma30), 621 *3* (1966Ma49).

[†] Absolute intensity per 100 decays.
[‡] Existence of this branch is questionable.

^{125}Sb β^- decay 1998Sa55,1976Wa13,1990Me15 (continued)

$\gamma(^{125}Te)$

Iγ normalization: from Σ((I(γ+ce) to g.s.+144.8 level))=100-13.6% *9*, with I(γ+ce)(35γ) deduced from feeding to the 35 level.

$\gamma\gamma(\theta)$ data

cascade	A_2	A_4	ref
204 - 176	-0.471 *11*		1997De38
	-0.405 *12*	0.032 *46*	1998Ro20
321 - 176	-0.144 *13*		1997De38
	-0.144 *12*	0.00 *1*	1998Ro20
166 - 204	-0.41 *2*	0.04 *4*	1998Ro20

E_γ	I_γ[cg]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[d]	δ[e]	α[†f]	Comments
19.80 *6*	0.069 *3*	463.365	5/2$^+$	443.554	3/2$^+$	[M1]		10.93 *19*	α(L)=8.79 *15*; α(M)=1.76 *3*; α(N+..)=0.384 *7* α(N)=0.346 *6*; α(O)=0.0373 *7* E_γ: From 1998Sa55.
35.489‡ *5*	14.78 *3*	35.491	3/2$^+$	0.0	1/2$^+$	M1+E2	0.031 *3*	13.69	α(K)=11.70 *17*; α(L)=1.596 *25*; α(M)=0.319 *5*; α(N+..)=0.0697 *11* α(N)=0.0630 *10*; α(O)=0.00674 *10* I_γ: From intensity balance. Experimental value is 15.2 *10*. Mult.: From ^{125}I ε decay. α(L)exp=1.70 *17*, L1:L2:L3=100:9.3:1.9.
[x]58.43& *5*	0.042& *20*								E_γ: Not placed in the level scheme. But also reported in 1983Si14 and 1993Fa02. 1983Si14 proposed the transition from 729 keV to 671-keV level.
61.85& *16*	0.007& *3*	525.227	7/2$^-$	463.365	5/2$^+$	[E1]		0.750 *12*	α(K)=0.641 *10*; α(L)=0.0875 *14*; α(M)=0.0173 *3*; α(N+..)=0.00367 *6* α(N)=0.00334 *6*; α(O)=0.000331 *6*
81.02& *4*	0.017& *1*	402.09	7/2$^+$	321.090	9/2$^-$	E1		0.354	α(K)=0.304 *5*; α(L)=0.0402 *6*; α(M)=0.00796 *12*; α(N+..)=0.001697 *24* α(N)=0.001541 *22*; α(O)=0.0001558 *22* α(K)exp=0.47 *11*.
110.895[a] *12*	0.0035 *4*	636.090	7/2$^+$	525.227	7/2$^-$	[E1]		0.1468	α(K)=0.1266 *18*; α(L)=0.01628 *23*; α(M)=0.00323 *5*; α(N+..)=0.000692 *10* α(N)=0.000628 *9*; α(O)=6.46×10^{-5} *9* α(K)exp=1.11 *24*.
116.955[a] *11*	0.887 *9*	642.204	7/2$^+$	525.227	7/2$^-$	E1		0.1264	α(K)=0.1090 *16*; α(L)=0.01398 *20*; α(M)=0.00277 *4*;

^{125}Sb β^- decay 1998Sa55,1976Wa13,1990Me15 (continued)

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

E_γ	I_γ[cg]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[d]	δ[e]	α[†f]	Comments
									α(N+..)=0.000595 *9* α(N)=0.000539 *8*; α(O)=5.56×10^{-5} *8* α(K)exp=0.081 *7*. E_γ: 1998Sa55 report 116.956 *16*.
132.81[&] *14*	0.0029[&] *19*	671.443	5/2$^+$	538.60	(1/2$^+$)	[E2]		0.624	α(K)=0.471 *7*; α(L)=0.1225 *18*; α(M)=0.0254 *4*; α(N+..)=0.00522 *8* α(N)=0.00480 *7*; α(O)=0.000424 *7*
172.719[‡] *8*	0.646 *24*	636.090	7/2$^+$	463.365	5/2$^+$	M1(+E2)	−0.004 *8*	0.1484	α(K)=0.1280 *18*; α(L)=0.01642 *23*; α(M)=0.00328 *5*; α(N+..)=0.000719 *10* α(N)=0.000649 *9*; α(O)=7.04×10^{-5} *10* α(K)exp=0.096 *8*.
176.314[#] *2*	23.11 *5*	321.090	9/2$^-$	144.776	11/2$^-$	M1+E2	−0.60 *2*	0.164 *3*	α(K)=0.1376 *21*; α(L)=0.0216 *5*; α(M)=0.00437 *9*; α(N+..)=0.000936 *19* α(N)=0.000850 *17*; α(O)=8.57×10^{-5} *16* δ: Weighted av from −0.58 *7* (1997De38), −0.59 *2* (1998Ro20) and −0.62 *3* (from the L subshell ratios and the sign from alignment measurement (1972Ke19)). α(K)exp=0.138 *10*, K/L=6.5 *5*, L1:L2:L3=100:23.8:18.6.
178.842[‡] *5*	0.114 *8*	642.204	7/2$^+$	463.365	5/2$^+$	M1+E2		0.18 *5*	α(K)=0.15 *3*; α(L)=0.026 *11*; α(M)=0.0052 *23*; α(N+..)=0.0011 *5* α(N)=0.0010 *5*; α(O)=0.00010 *4* α(K)exp=0.140 *23*.
198.654[‡] *11*	0.0432 *20*	642.204	7/2$^+$	443.554	3/2$^+$	[E2]		0.1534	α(K)=0.1233 *18*; α(L)=0.0241 *4*; α(M)=0.00493 *7*; α(N+..)=0.001032 *15* α(N)=0.000944 *14*; α(O)=8.85×10^{-5} *13*
204.138[@] *10*	1.070 *21*	525.227	7/2$^-$	321.090	9/2$^-$	M1+E2	+1.60 *3*	0.1270 *19*	α(K)=0.1039 *15*; α(L)=0.0185 *3*; α(M)=0.00377 *6*; α(N+..)=0.000796 *12* α(N)=0.000726 *11*; α(O)=7.00×10^{-5} *11* δ: Weighted av from +1.3 *2* (1997De38), +1.74 *9* (1998Ro20) and +1.60 *2* (1998Ro20). α(K)exp=0.090 *10*.
208.077[@] *5*	0.837 *14*	671.443	5/2$^+$	463.365	5/2$^+$	M1+E2	+0.105 *14*	0.0901	α(K)=0.0777 *11*; α(L)=0.00999 *15*; α(M)=0.00199 *3*; α(N+..)=0.000437 *7* α(N)=0.000394 *6*; α(O)=4.27×10^{-5} *6* α(K)exp=0.086 *5*.
209.32[&] *9*	0.152[&] *9*	652.90	(5/2)	443.554	3/2$^+$				
227.891[‡] *10*	0.443 *6*	671.443	5/2$^+$	443.554	3/2$^+$	(M1+E2)		0.083 *13*	α(K)=0.069 *9*; α(L)=0.011 *4*; α(M)=0.0022 *7*; α(N+..)=0.00047 *14* α(N)=0.00043 *13*; α(O)=4.3×10^{-5} *10* α(K)exp=0.101 *6*.

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^{125}Sb β^- decay 1998Sa55,1976Wa13,1990Me15 (continued)

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

E_γ	I_γ[cg]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[d]	δ[e]	α[†f]	Comments
314.95[a] *11*	0.0136 *16*	636.090	7/2$^+$	321.090	9/2$^-$	(E1)		0.00833 *12*	α=0.00833 *12*; α(K)=0.00723 *11*; α(L)=0.000891 *13*; α(M)=0.0001766 *25*; α(N+..)=3.85×10^{-5} α(N)=3.47×10^{-5} *5*; α(O)=3.71×10^{-6} *6* α(K)exp=0.043 *9*.
321.04[a] *4*	1.404 *9*	642.204	7/2$^+$	321.090	9/2$^-$	E1(+M2)	−0.003 *13*	0.00793 *12*	α=0.00793 *12*; α(K)=0.00688 *10*; α(L)=0.000847 *13*; α(M)=0.0001680 *25*; α(N+..)=3.66×10^{-5} α(N)=3.30×10^{-5} *5*; α(O)=3.53×10^{-6} *6* α(N)=3.30×10^{-5} *5*; α(O)=3.53×10^{-6} *5* α(K)exp=0.011 *7*. δ: From 1998Ro20.
331.82[&] *6*	0.0085[&] *8*	652.90	(5/2)	321.090	9/2$^-$				
366.56[&] *11*	0.027[&] *2*	402.09	7/2$^+$	35.491	3/2$^+$				
380.452[‡] *8*	5.124 *19*	525.227	7/2$^-$	144.776	11/2$^-$	E2		0.0182	α(K)=0.01537 *22*; α(L)=0.00230 *4*; α(M)=0.000465 *7*; α(N+..)=9.95×10^{-5} *14* α(N)=9.04×10^{-5} *13*; α(O)=9.15×10^{-6} *13* α(K)exp=0.0142 *6*, K/L=6.8 *5*.
401.95[&] *12*	0.021[&] *2*	402.09	7/2$^+$	0.0	1/2$^+$	[M3]		0.193	α(K)=0.1600 *23*; α(L)=0.0268 *4*; α(M)=0.00552 *8*; α(N+..)=0.001200 *17* α(N)=0.001086 *16*; α(O)=0.0001137 *16*
408.065[‡] *10*	0.623 *6*	443.554	3/2$^+$	35.491	3/2$^+$	M1+E2	+1.50 *7*	0.01500	α(K)=0.01278 *18*; α(L)=0.00179 *3*; α(M)=0.000359 *5*; α(N+..)=7.75×10^{-5} *11* α(N)=7.02×10^{-5} *10*; α(O)=7.30×10^{-6} *11* α(K)exp=0.0169 *12*.
427.874[#] *4*	100	463.365	5/2$^+$	35.491	3/2$^+$	M1+E2	−0.538 *11*	0.01360	α(K)=0.01172 *17*; α(L)=0.001511 *22*; α(M)=0.000302 *5*; α(N+..)=6.59×10^{-5} *10* α(N)=5.95×10^{-5} *9*; α(O)=6.40×10^{-6} *9* α(K)exp=0.0114 *3*, K/L=7.3 *5*, L1:L2:L3=100:12.7:7.6.
443.555[@] *9*	1.035 *6*	443.554	3/2$^+$	0.0	1/2$^+$	M1+E2	−2.3 *1*	0.01169	α(K)=0.00995 *14*; α(L)=0.001398 *20*; α(M)=0.000281 *4*; α(N+..)=6.06×10^{-5} *9* α(N)=5.49×10^{-5} *8*; α(O)=5.69×10^{-6} *8* α(K)exp=0.011 *3*.
463.365[#] *4*	35.45 *10*	463.365	5/2$^+$	0.0	1/2$^+$	E2		0.01014	α(K)=0.00861 *12*; α(L)=0.001226 *18*; α(M)=0.000246 *4*; α(N+..)=5.31×10^{-5} *8* α(N)=4.81×10^{-5} *7*; α(O)=4.96×10^{-6} *7* K/L=7.4 *3*, L1:L2:L3=100:16.9:12.5.
489.73[&] *8*	0.0046[&] *23*	525.227	7/2$^-$	35.491	3/2$^+$				
491.29[&] *14*	0.016[&] *8*	636.090	7/2$^+$	144.776	11/2$^-$				
497.37[a] *12*	0.0108 *12*	642.204	7/2$^+$	144.776	11/2$^-$	[M2]		0.0312	α(K)=0.0267 *4*; α(L)=0.00364 *6*; α(M)=0.000733 *11*;

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^{125}Sb β^- decay 1998Sa55,1976Wa13,1990Me15 (continued)

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

E_γ	I_γ[cg]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[d]	δ[e]	α[†f]	Comments
									α(N+..)=0.0001607 *23* α(N)=0.0001450 *21*; α(O)=1.566×10^{-5} *22* E_γ: 1998Sa55 report 497.41 *14*.
503.10[&] *6*	0.013[&] *6*	538.60	(1/2$^+$)	35.491	3/2$^+$				
538.62[&] *12*	0.0047[&] *25*	538.60	(1/2$^+$)	0.0	1/2$^+$				
600.597[#] *2*	59.62 *16*	636.090	7/2$^+$	35.491	3/2$^+$	E2		0.00494 *7*	α=0.00494 *7*; α(K)=0.00423 *6*; α(L)=0.000571 *8*; α(M)=0.0001143 *16*; α(N+..)=2.48×10^{-5} *4* α(N)=2.24×10^{-5} *4*; α(O)=2.36×10^{-6} *4* α(K)exp=0.00418 *13*, K/L=7.4 *4*, L1:L2:L3=100:12.3:9.4.
606.713[#] *3*	16.83 *6*	642.204	7/2$^+$	35.491	3/2$^+$	E2		0.00481 *7*	α=0.00481 *7*; α(K)=0.00412 *6*; α(L)=0.000555 *8*; α(M)=0.0001111 *16*; α(N+..)=2.41×10^{-5} *4* α(N)=2.18×10^{-5} *3*; α(O)=2.29×10^{-6} *4* Mult.: From α(K)exp=0.00383 *17*, K/L=5.7 *5*.
617.40[&] *14*	0.018[&] *2*	652.90	(5/2)	35.491	3/2$^+$				
635.950[#] *3*	37.9 *3*	671.443	5/2$^+$	35.491	3/2$^+$	M1+E2	+0.332 *3*	0.00515 *8*	α=0.00515 *8*; α(K)=0.00446 *7*; α(L)=0.000553 *8*; α(M)=0.0001100 *16*; α(N+..)=2.42×10^{-5} *4* α(N)=2.18×10^{-5} *3*; α(O)=2.37×10^{-6} *4* α(K)exp=0.00428 *17*, K/L=7.9 *4*, L1:L2:L3=100:12.8:7.1.
652.8[&] *4*	0.009[&] *3*	652.90	(5/2)	0.0	1/2$^+$				
671.441[#] *6*	6.049 *19*	671.443	5/2$^+$	0.0	1/2$^+$	E2		0.00371 *6*	α=0.00371 *6*; α(K)=0.00318 *5*; α(L)=0.000421 *6*; α(M)=8.41×10^{-5} *12*; α(N+..)=1.83×10^{-5} *3* α(N)=1.652×10^{-5} *24*; α(O)=1.748×10^{-6} *25* α(K)exp=0.00333 *16*, K/L=8.8 *9*.
693.3[bh] *5*	<0.00031	728.8	3/2$^+$	35.491	3/2$^+$				I_γ: From 1976Wa13. Other: 0.0015 *6* (1983Si14).

† Additional information 1.
‡ From 1990He05.
# Values recommended by 2000He14.
@ Given in table 7 of 2000He14 but not in their table of recommended values.
& Seen only by 1998Sa55.
a From 1990Me15.
b From 1983Si14. Uncertainty is not given by author. 0.5 keV uncertainty is assumed by evaluator.
c Weighted av from 1990Lo03, 1990He05, 1990Me15, 1992Sm02, 1993Fa02 and 1998Sa55, unless otherwise noted.
d From α(exp) and $\gamma\gamma(\theta)$, unless otherwise noted.
e From adopted gammas, unless otherwise indicated.
f α(K)exp and K/L from weighted av of Ice′s (1966Ma49, 1991Go22 and 1998Sa55) and the adopted I(γ′s) if α(K)(463.4γ)=0.008610(E2), unless otherwise

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

noted. L1:L2:L3 values are from 1966Ma49.

[g] For absolute intensity per 100 decays, multiply by 0.296 *3*.

[h] Placement of transition in the level scheme is uncertain.

[x] γ ray not placed in level scheme.

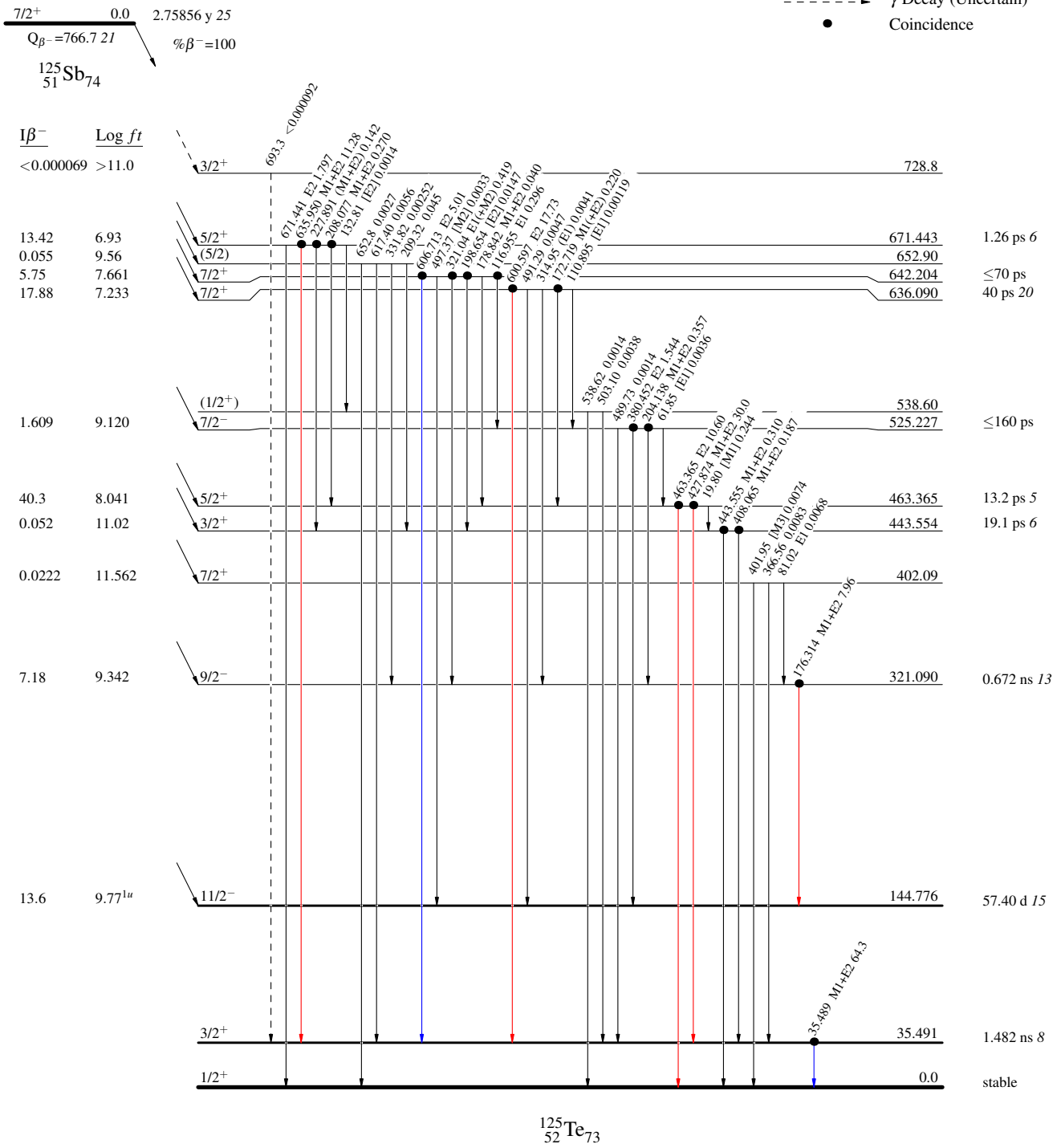
$^{125}_{52}Te_{73}$-7

^{125}Sb β^- decay 1998Sa55,1976Wa13,1990Me15

Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

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



$^{125}_{52}Te_{73}$