^{124}Sb β^- decay (60.20 d) 1993Go10,2006Pa16,1988Yo05

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. Katakura, Z. D. Wu	NDS 109, 1655 (2008)	1-Apr-2008

Parent: ^{124}Sb: E=0.0; $J^\pi=3^-$; $T_{1/2}$=60.20 d *3*; Q(β^-)=2904.3 *15*; %β^- decay=100.0

1993Go10: Eγ, Iγ, $\gamma\gamma$ coin, $\gamma\gamma(\theta)$; deduced mixing ratio, decay scheme.

2006Pa16: ^{123}Sb(n,γ); Eγ, Iγ, $\gamma\gamma$ coin; HPGe and Si(Li); deduced decay scheme.

1988Yo05: Eγ, Iγ, $\gamma\gamma$ coin, deduced decay scheme.

1969Au01: Eγ, Iγ, $\gamma\gamma$ coin; deduced levels.

1969BeZE: measured E(ce) and Ice.

1969Me04: ^{123}Sb(n,γ); Eγ, Iγ; $\gamma\gamma$ coin Compton-suppressed Ge spectrometer.

1978LeZA: Eγ, Iγ listed in appendices as reported by R. A. Meyer.

1979Gr01: precise Eγ values in reference with ^{198}Au 411.8-keV γ.

1974Jo03: Eγ, Iγ, Eβ, ce; $\beta\gamma$ coin, $\gamma\gamma$ coin; deduced decay scheme.

1983Ro13: oriented nuclei; $\gamma(\theta)$; deduced J^π. Also ^{123}Te (n,γ) $\gamma\gamma(\theta)$.

1984Ma13: Eγ, Iγ, $\gamma\gamma$ coin; IBM model.

1984Iw03: Eγ, Iγ.

1990Su10: Eγ, Iγ, $\gamma\gamma$ coin, $\gamma\gamma(\theta)$; deduced mixing ratio, decay scheme.

The decay scheme is those proposed by 1993Go10 and 2006Pa16 on the basis of Eγ sums and previously established cascade relations. The 2039 keV level has doublet structure according to 2000Do11. 2006Pa16 reported 14 new gamma-rays and 5 additional levels based on the new gamma-rays. However, the proposed levels at 2020, 2490, 2747, 2835 and 2859 keV are based on only weak new gamma-rays and Ritz combination. Further confirmation would be needed.

The new gamma-rays in 2006Pa16 are following: 592.73 *5* (0.014 *2*), 743.20 *8* (0.0058*11*), 795.310 *15* (0.0368 *11*), 1418.60 *12* (0.0052), 1509.63 *15* (0.008 *1*), 2145.06 *3* (0.000683), 2204.260 *13* (0.0310 *6*), 2232.41 *5* (0.0013), 2256.49 *12* (0.0006 *2*), 2373.8 *6* (0.00093), 2386.1 *16* (0.00024 *2*), 2490.60 *20* (0.002*1*), 2515.2 *32* (0.00049 *1*), 2746.18 *25* (0.001*1*), 1814.4 *4* (0.0035 *2*).

^{124}Te Levels

E(level)†	J^π#	E(level)†	J^π#	E(level)†	J^π#
0.0	0^+	2293.712@ *4*	3^-	2693.679 *5*	3^-
602.7278 *21*	2^+	2323.41 *3*	2^+	2701.622 *9*	2^-
1248.582 *3*	4^+	2335.26 *5*	5^-	2711.012 *21*	4^+
1325.512 *3*	2^+	2454.96 *7*	2^+	2775.070 *17*	3^-,4^-
1656.6 *3*	0^+	2483.277 *18*	4^+	2807.55 *24*	2^+
1957.915 *16*	4^+	2512.04 *7*	4	2814.56 *7*	2^+ to 5^+
2039.288‡ *4*	2^+ & 3^+	2521.48 *6*	2^+	2865.72& *5*	3^-
2091.680 *21*	2^+	2549.73 *9*	(4)	2886.37 *6*	3^-
2182.39 *3*	2^+	2619.09 *6*	(3)		
2224.839 *25*	4^+	2682.50 *13*	2^+		

† E(levels) are based on a least-squares fit to the Eγ's (evaluators).

‡ Doublet.

From Adopted Levels.

@ $T_{1/2}$=100 ps *5* from β-γ(centroid shift) (1971BeWP), but inconsistent with 0.17 ps *6* from Coulomb excitation.

& Placement by evaluators considering unplaced γ's of 530 and 572 keV in 2006Pa16, 1993Go10 and 1988Yo05. Intensity ratio of these γ's is consistent with that of (n,γ).

^{124}Sb β^- decay (60.20 d) 1993Go10,2006Pa16,1988Yo05 (continued)

β^- radiations

The sign of circular polarization was found to be positive between $\theta(\beta\text{-}\gamma)$=90° and 180°. However, 1961Al01 reported that the R polarization becomes negative at 150°.

β-γ circular polarization:
1) 615β-1691.02γ: 1965Bh03, 1965Ma06, 1965Ti04, 1970Be16, 1970Pi03.
2) 2305β-602.72γ: 1960Ha07, 1961Al01, 1965Ca08, 1973Sm07, 1978Pr06.

E(decay)	E(level)	Iβ^-[†]	Log *ft*	Comments
(17.9 *15*)	2886.37	0.0080 *12*	6.73 *14*	av Eβ=4.51 *39*
(38.6 *15*)	2865.72	0.0611 *24*	6.86 *6*	av Eβ=9.81 *39*
(89.7 *15*)	2814.56	0.023 *4*	8.40 *8*	av Eβ=23.41 *41*
(96.8 *15*)	2807.55	0.00147 *20*	9.69 *7*	av Eβ=25.32 *42*
(129.2 *15*)	2775.070	0.572 *9*	7.491 *18*	av Eβ=34.35 *43*
(193.3 *15*)	2711.012	0.106 *4*	8.771 *20*	av Eβ=52.90 *45*
(202.7 *15*)	2701.622	0.558 *7*	8.115 *12*	av Eβ=55.70 *45*
202 *15*	2693.679	8.75 *4*	6.972 *10*	av Eβ=58.07 *48* Eβ, Iβ: 240, 14% (1953La35); 250, 9% (1954Mo83); 280, 12% (1955Az29); 202 *15*, 9%, F-K plot linear (1956Zo06).
(221.8 *15*)	2682.50	0.022 *4*	9.64 *8*	av Eβ=61.47 *46*
(285.2 *15*)	2619.09	0.095 *5*	9.359 *24*	av Eβ=81.16 *48*
(354.6 *15*)	2549.73	0.0343 *10*	10.110 *14*	av Eβ=103.64 *50*
378.4 *18*	2521.48	0.0545 *16*	10.019 *14*	av Eβ=113.06 *51*
(392.3 *15*)	2512.04	0.0413 *18*	10.174 *20*	av Eβ=116.24 *51*
(421.0 *15*)	2483.277	0.326 *5*	9.380 *9*	av Eβ=126.02 *52*
(449.3 *15*)	2454.96	0.0079 *14*	11.09 *8*	av Eβ=135.79 *53*
(580.9 *15*)	2323.41	0.059 *6*	10.60 *5*	av Eβ=182.79 *55*
608 *10*	2293.712	51.24 *19*	7.733 *4*	av Eβ=193.75 *56* Eβ, Iβ: 610 *20*, 49% (1953La35); 615 *10*, 53% (1954Mo83); 630, 56% (1955Az29); 608 *10*, 49%, F-K plot linear (1956Zo06).
(679.5 *15*)	2224.839	0.091 *4*	10.646 *20*	av Eβ=219.55 *57*
(721.9 *15*)	2182.39	0.45 *5*	10.04 *5*	av Eβ=235.76 *58*
(812.6 *15*)	2091.680	0.685 *6*	10.045 *5*	av Eβ=271.02 *59*
(865.0 *15*)	2039.288	3.994 *23*	9.377 *4*	av Eβ=291.77 *60*
930 *15*	1957.915	2.144 *20*	9.790 *5*	av Eβ=324.46 *61* Eβ, Iβ: 966 *10*, 9% (1953La35); 940 *20*, 9% (1954Mo83); 1070, 4% (1955Az29); 930 *15*, 4% assumed F-K plot linear (1956Zo06).
(1247.7[‡] *15*)	1656.6	0.0057 *20*	12.81 *16*	av Eβ=449.71 *65*
1590 *10*	1325.512	4.88 *5*	10.273 *5*	av Eβ=593.08 *66* Eβ, Iβ: 1602 *10*, 7% (1953La35); 1600 *20*, 7% (1954Mo83); 1680, 6% (1955Az29); 1590 *10*, 10%, F-K plot linear (1956Zo06).
(1655.7 *15*)	1248.582	2.57 *13*	10.633 *22*	av Eβ=627.02 *67*
2301 *4*	602.7278	23.2 *3*	10.251 *6*	av Eβ=918.30 *69* Eβ, Iβ: 2270 *10* (1952Hu48); 2317 *5*, 21%, 1-yes shape (1953La35); 2305 *10*, 22%, 1-yes shape (1954Mo83); 2390, 22%, 1-yes shape (1955Az29); 2311 *6*, 28%, 1-yes shape (1956Zo06); 2305 *5*, 1-yes shape (1965Hs02); 2301 *4*, 1-yes shape (1966Ca10); 2302, 1-yes shape (1969Na05).

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

$\gamma(^{124}Te)$

Iγ normalization: From level scheme.
Nuclear orientation: 1983Ro13: 445γ, 709γ, 714γ, 723γ, 968γ, 1045γ, 1370γ, 1445γ, 1489γ, 1528γ, 2092γ.
γγ-linear polarization: 1952Kl39, 1976Be03.
Nuclear alignment: 1970Si17.

$\gamma\gamma(\theta)$ in ^{124}Sb β^- decay (60.20 d):

cascade	A_2	A_4	references
646-603	0.099 *5*	0.007 *8*	1971Gr14
	0.121 *25*	0.01 *3*	1971Gr14
	0.095 *11*	0.003 *11*	1972Ba38
	0.100 *5*	0.005 *10*	1976Be03
	0.110 *5*	0.019 *7*	1993Go10
723-603	0.130 *15*	0.295 *20*	1971Gr14
	0.152 *8*	0.304 *12*	1971Gr14
	0.136 *9*	0.270 *15*	1972Ba38
	0.101 *5*	0.283 *7*	1979Sh08
	0.114 *5*	0.285 *8*	1990Su10
	0.128 *6*	0.245 *9*	1993Go10
709-(646)-603	0.23 *6*	0.04 *8*	1993Go10
709-646	0.187 *17*	0.01 *3*	1971Gr14
	0.19 *2*	-0.02 *3*	1976Be03
	0.21 *12*	-0.01 *14*	1993Go10
1356-603	0.08 *13*	0.03 *17*	1993Go10
714-(723)-603	0.094 *25*	-0.04 *3*	1993Go10
714-723	0.220 *15*	-0.03 *3*	1971Gr14
	0.220 *19*	0.00 *3*	1972Ba38
	0.143 *14*	0.042 *17*	1979Sh08
	0.201 *15*	0.040 *19*	1990Su10
791-(646)-603	0.31 *7*	-0.11 *9*	1979Sh08
	0.10 *6*	-0.12 *8*	1993Go10
791-645	0.28 *3*	-0.19 *4*	1993Go10
1437-603	-0.24 *6*	0.34 *10*	1972Ba38
	-0.11 *6*	-0.21 *9*	1993Go10
1489-603	0.15 *8*	0.23 *11*	1972Ba38
968-(723)-603	0.07 *4*	-0.06 *5*	1979Sh08
968-723	0.06 *3*	-0.02 *3*	1972Ba38
	0.043 *12*	-0.015 *15*	1979Sh08
	0.045 *11*	-0.015 *16*	1990Su10
	0.028 *2*	-0.030 *2*	1993Go10
1691-603	-0.064 *20*	-0.005 *25*	1971Gr14
	-0.060 *6*	0.000 *8*	1971Gr14
	-0.068 *5*	-0.011 *11*	1972Ba38
	-0.061 *7*	0.009 *16*	1979Sh08
	-0.062 *11*	0.010 *13*	1990Su10

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	-0.065 *11*	-0.009 *14*	1993Go10
1045-(646)-603	-0.17 *3*	-0.05 *5*	1972Ba38
	-0.11 *4*	-0.06 *6*	1979Sh08
	-0.135 *20*	0.04 *3*	1993Go10
1045-646	-0.10 *3*	-0.04 *4*	1993Go10
1376-723	-0.03 *6*	-0.06 *7*	1993Go10
1368-(723)-603	-0.01 *8*	0.04 *11*	1993Go10
1368-723	0.08 *5*	0.02 *6*	1972Ba38
	0.073 *18*	-0.025 *21*	1979Sh08
	0.075 *18*	-0.028 *20*	1990Su10
1445-646	-0.16 *7*	0.02 *9*	1993Go10
1526-646	0.22 *5*	-0.02 *7*	1993Go10
2091-603	-0.069 *15*	0.004 *20*	1971Gr14
	-0.067 *12*	-0.038 *18*	1972Ba38
	-0.062 *11*	0.015 *17*	1990Su10
	-0.047 *5*	0.009 *16*	1993Go10

E_γ[‡]	I_γ[†a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	α[b]	Comments
148.21 *10*	0.0040 *8*	2483.277	4^+	2335.26	5^-			
189.61 *19*	0.0065 *11*	2483.277	4^+	2293.712	3^-			
209.86 *7*	0.0056 *9*	2693.679	3^-	2483.277	4^+			
254.49 *4*	0.0165 *10*	2293.712	3^-	2039.288	2^+ & 3^+	E1	0.01464	α(K)=0.01268 *18*; α(L)=0.001573 *22*; α(M)=0.000312 *5*; α(N+..)=6.78×10^{-5} *10* α(N)=6.13×10^{-5} *9*; α(O)=6.51×10^{-6} *10* α(K)exp=0.025 *21*.
291.828 *12*	0.0089 *8*	2775.070	3^-,4^-	2483.277	4^+			
336.21 *4*	0.076 *3*	2293.712	3^-	1957.915	4^+	E1	0.00704	α(K)=0.00611 *9*; α(L)=0.000751 *11*; α(M)=0.0001490 *21*; α(N+..)=3.24×10^{-5} *5* α(N)=2.93×10^{-5} *5*; α(O)=3.14×10^{-6} *5* α(K)exp=0.007 *5*.
371.00 *11*	0.039 *5*	2693.679	3^-	2323.41	2^+			α(K)exp=0.012 *10*.
400.30 *6*	0.142 *7*	2693.679	3^-	2293.712	3^-	E2	0.01562	α(K)=0.01319 *19*; α(L)=0.00195 *3*; α(M)=0.000393 *6*; α(N+..)=8.43×10^{-5} *12* α(N)=7.65×10^{-5} *11*; α(O)=7.78×10^{-6} *11* α(K)exp=0.015 *3*.
444.09 *3*	0.1932 *20*	2483.277	4^+	2039.288	2^+ & 3^+	M1+E2	0.0120 *6*	α(K)=0.0103 *7*; α(L)=0.00138 *3*; α(M)=0.000276 *7*; α(N+..)=6.00×10^{-5} *10* α(N)=5.43×10^{-5} *10*; α(O)=5.74×10^{-6} *14* α(K)exp=0.008 *3*. δ: +0.06 *8* or −6.2 *24* (nuclear orientation) (1983Ro13).
469.06 *7*	0.051 *3*	2693.679	3^-	2224.839	4^+	E1	0.00309	α(K)=0.00268 *4*; α(L)=0.000327 *5*; α(M)=6.47×10^{-5} *9*; α(N+..)=1.414×10^{-5} *20* α(N)=1.276×10^{-5} *18*; α(O)=1.375×10^{-6} *20* α(K)exp<0.013.
481.42 *4*	0.0242 *19*	2775.070	3^-,4^-	2293.712	3^-			α(K)exp<0.013.

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^{124}Sb β^- decay (60.20 d) 1993Go10,2006Pa16,1988Yo05 (continued)

$\gamma(^{124}Te)$ (continued)

E_γ ‡	I_γ †a	E_i(level)	J_i^π	E_f	J_f^π	Mult. @	δ &	α b	Comments
525.50 *21*	0.141 *4*	2483.277	4^+	1957.915	4^+	M1+E2		0.0077 *7*	α(K)=0.0066 *6*; α(L)=0.00087 *3*; α(M)=0.000173 *6*; α(N+..)=3.77×10^{-5} *15* α(N)=3.41×10^{-5} *13*; α(O)=3.64×10^{-6} *22* α(K)exp=0.0042 *24*. Mult.: from α(K)exp and γ(θ) in (n,n′γ).
530.45 *3*	0.0431 *20*	2865.72	3^-	2335.26	5^-				
572.06 *6*	0.0194 *13*	2865.72	3^-	2293.712	3^-				
602.7260# *23*	100.00 *23*	602.7278	2^+	0.0	0^+	E2		0.00490	α(K)=0.00420 *6*; α(L)=0.000566 *8*; α(M)=0.0001132 *16*; α(N+..)=2.45×10^{-5} *4* α(N)=2.22×10^{-5} *4*; α(O)=2.33×10^{-6} *4*
632.489 *19*	0.107 *1*	1957.915	4^+	1325.512	2^+				
645.8520# *19*	7.588 *24*	1248.582	4^+	602.7278	2^+	E2		0.00409	α(K)=0.00351 *5*; α(L)=0.000467 *7*; α(M)=9.35×10^{-5} *13*; α(N+..)=2.03×10^{-5} *3* α(N)=1.84×10^{-5} *3*; α(O)=1.94×10^{-6} *3* α(K)exp=0.0035 *5*. δ: +0.003 *6* for E2+M3 from averaged A_2 and A_4 values of γγ(θ). others: +0.013 *9* (1993Go10), +0.000 *1* (1972Ba38,1976Be03).
662.42 *3*	0.030 *4*	2701.622	2^-	2039.288	2^+ & 3^+				
709.34 *5*	1.384 *12*	1957.915	4^+	1248.582	4^+	M1+E2(+E0)	−0.18 *5*	0.00402	α(K)=0.00349 *5*; α(L)=0.000429 *7*; α(M)=8.53×10^{-5} *13*; α(N+..)=1.87×10^{-5} *3* α(N)=1.689×10^{-5} *25*; α(O)=1.85×10^{-6} *3* α(K)exp=0.0038 *3*. δ: others: −0.8 *+3−4* (1993Go10; 709-646-603 cascade), −1.0 *+6−8* (1993Go10; 709-646 cascade), +0.04 *+3−5* (1971Gr14), +0.02 *+6−7* (1976Be03).
713.776# *4*	2.327 *17*	2039.288	2^+ & 3^+	1325.512	2^+				α(K)exp=0.0030 *4*. Mult.,δ: nuclear orientation and α(K)exp give M1+E2 and +1.5 *7*, but this transition is doublet from 2000Do11. others: +1.5 *+6−3*

$^{124}_{52}Te_{72}$-5

^{124}Sb β^- decay (60.20 d) 1993Go10,2006Pa16,1988Yo05 (continued)

$\gamma(^{124}Te)$ (continued)

E_γ[‡]	I_γ[†a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ[&]	α[b]	Comments
									(1972Ba38), +1.5 +5−2 (1971Gr14), −0.7 +4−5 (1993Go10), M1+E2(56% +7−11) (1979Sh08), M1+E2(57% 7) (1990Su11).
722.782[#] 3	11.00 4	1325.512	2+	602.7278	2+	M1+E2(+E0)	−3.4 3	0.00314	α(K)=0.00271 4; α(L)=0.000352 5; α(M)=7.02×10−5 10; α(N+..)=1.529×10−5 22 α(N)=1.382×10−5 20; α(O)=1.471×10−6 22 α(K)exp=0.00246 16. δ: others: +3.74 12 (1993Go10) (the sign seems to be mistyped), −3.3 2 (1972Ba38), −3.4 1 (1971Gr14), M1+E2(93% 5) (1979Sh08), M1+E2(93.5% 6) (1990Su11).
735.7 7	0.057 6	2775.070	3−,4−	2039.288	2+ & 3+				Eγ: From 1988Yo05. Iγ: From 1988Yo05.
735.9 7	0.073 7	2693.679	3−	1957.915	4+	E1		1.13×10−3	α(K)=0.000982 14; α(L)=0.0001179 17; α(M)=2.34×10−5 4; α(N+..)=5.12×10−6 8 α(N)=4.62×10−6 7; α(O)=5.01×10−7 7 α(K)exp=0.0013 7. Eγ: From 1988Yo05. Iγ: From 1988Yo05.
766.32 4	0.0124 2	2091.680	2+	1325.512	2+	E0+E2,M1		0.0030 4	α(K)=0.0026 4; α(L)=0.00033 3; α(M)=6.5×10−5 6; α(N+..)=1.43×10−5 14 α(N)=1.29×10−5 13; α(O)=1.40×10−6 15 α(K)exp=0.016 5.
775.27 7	0.0096 17	2814.56	2+ to 5+	2039.288	2+ & 3+				
790.706[#] 7	0.756 5	2039.288	2+ & 3+	1248.582	4+				α(K)exp=0.00246 17. Mult.,δ: nuclear orientation and α(K)exp give E2(+M3) and −0.3 +2−3, but this transition is doublet from 2000Do11. others: −0.15 +5−2 (1993Go10; 791-646 cascade), −0.32 +52−14 (1993Go10; 791-646-603 cascade).
816.82 25	0.0745 18	2775.070	3−,4−	1957.915	4+				
856.68 4	0.0243 10	2182.39	2+	1325.512	2+	M1,E2		0.0023 3	α(K)=0.00202 25; α(L)=0.00025 3; α(M)=5.0×10−5 5;

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^{124}Sb β^- decay (60.20 d) 1993Go10,2006Pa16,1988Yo05 (continued)

$\gamma(^{124}Te)$ (continued)

E_γ[‡]	I_γ[†a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ[&]	α[b]	Comments
									α(N+..)=1.09×10^{-5} *12* α(N)=9.9×10^{-6} *10*; α(O)=1.07×10^{-6} *12* Mult.: from α(K)exp in (n,γ).
899.23 *3*	0.0176 *14*	2224.839	4$^+$	1325.512	2$^+$				
968.195[#] *4*	1.925 *9*	2293.712	3$^-$	1325.512	2$^+$	E1(+M2)	−0.02 *2*	6.53×10^{-4} *11*	α(K)=0.000569 *9*; α(L)=6.78×10^{-5} *11*; α(M)=1.343×10^{-5} *22*; α(N+..)=2.94×10^{-6} *5* α(N)=2.65×10^{-6} *5*; α(O)=2.89×10^{-7} *5* α(K)exp=0.00070 *7*. δ: others: −0.03 *+6−5* (1972Ba38), +0.038 *3* (1993Go10), E1+M2(10% *3*) (1979Sh08), E1+M2(11% *2*) (1990Su11).
976.62 *5*	0.0851 *16*	2224.839	4$^+$	1248.582	4$^+$	M1+E2	+0.68 *6*	0.00180	α(K)=0.00156 *3*; α(L)=0.000192 *3*; α(M)=3.81×10^{-5} *6*; α(N+..)=8.36×10^{-6} *14* α(N)=7.54×10^{-6} *12*; α(O)=8.22×10^{-7} *14* Mult.,δ: from α(K)exp in (n,γ) and $\gamma(\theta)$ in (n,n$'\gamma$).
1045.125[#] *4*	1.874 *11*	2293.712	3$^-$	1248.582	4$^+$	E1(+M2)	−0.03 *2*	5.67×10^{-4} *10*	α(K)=0.000494 *9*; α(L)=5.87×10^{-5} *11*; α(M)=1.163×10^{-5} *21*; α(N+..)=2.55×10^{-6} *5* α(N)=2.30×10^{-6} *4*; α(O)=2.51×10^{-7} *5* α(K)exp=0.00054 *7*. δ: others: −0.05 *4* (1993Go10; 1045-646 cascade), −0.14 *+3−4* (1993Go10; 1045-646-603 cascade), +0.04 *+5−4* (1972Ba38), E1+M2(1.5% *15*) (1979Sh08).
1053.8 *3*	0.005 *2*	1656.6	0$^+$	602.7278	2$^+$	E2		1.29×10^{-3}	α(K)=0.001117 *16*; α(L)=0.0001394 *20*; α(M)=2.77×10^{-5} *4*; α(N+..)=6.06×10^{-6} *9* α(N)=5.47×10^{-6} *8*; α(O)=5.90×10^{-7} *9* Mult.: from α(K)exp and $\gamma\gamma(\theta)$ in (n,γ).
1086.70 *8*	0.0387 *18*	2335.26	5$^-$	1248.582	4$^+$	E1			Mult.: from adopted gammas.
1263.45 *7*	0.0422 *18*	2512.04	4	1248.582	4$^+$				
1301.14 *9*	0.0351 *10*	2549.73	(4)	1248.582	4$^+$				
1325.504[#] *4*	1.616 *15*	1325.512	2$^+$	0.0	0$^+$	E2		8.27×10^{-4}	α(K)=0.000693 *10*; α(L)=8.48×10^{-5} *12*; α(M)=1.685×10^{-5} *24*; α(N+..)=3.16×10^{-5} *5* α(N)=3.33×10^{-6} *5*; α(O)=3.62×10^{-7} *5*; α(IPF)=2.79×10^{-5} *4* α(K)exp=0.00078 *8*.
1355.20 *5*	1.061 *13*	1957.915	4$^+$	602.7278	2$^+$	E2(+M3)	−0.32 *+25−18*	0.0011 *4*	α(K)=0.0009 *3*; α(L)=0.00011 *4*; α(M)=2.3×10^{-5} *8*; α(N+..)=3.72×10^{-5} *19* α(N)=4.5×10^{-6} *16*; α(O)=4.9×10^{-7} *17*; α(IPF)=3.2×10^{-5} *4* α(K)exp=0.00080 *8*. δ: from $\gamma\gamma(\theta)$ in 1993Go10.
1368.157[#] *5*	2.683 *13*	2693.679	3$^-$	1325.512	2$^+$	E1(+M2)	−0.02 *1*	4.78×10^{-4}	α(K)=0.000303 *5*; α(L)=3.58×10^{-5} *6*;

$^{124}_{52}Te_{72}$-7

^{124}Sb β^- decay (60.20 d) 1993Go10,2006Pa16,1988Yo05 (continued)

$\gamma(^{124}Te)$ (continued)

E_γ[‡]	I_γ[†a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ[&]	α[b]	Comments
									α(M)=7.09×10^{-6} *10*; α(N+..)=0.0001314 *19* α(N)=1.403×10^{-6} *20*; α(O)=1.534×10^{-7} *22*; α(IPF)=0.0001298 *19* α(K)exp=0.00032 *6*. δ: others: −0.05 *9* (1972Ba38), E1+M2(10.5% *15*) (1979Sh08), E1+M2(7.2% *12*) (1990Su11), >−0.50 (1993Go10).
1376.090 *9*	0.494 *5*	2701.622	2$^-$	1325.512	2$^+$	E1(+M2)	−0.01 *3*	4.79×10^{-4}	α(K)=0.000300 *5*; α(L)=3.54×10^{-5} *6*; α(M)=7.01×10^{-6} *12*; α(N+..)=0.0001370 *20* α(N)=1.387×10^{-6} *23*; α(O)=1.517×10^{-7} *25*; α(IPF)=0.0001355 *19* α(K)exp=0.0003 *3*. δ: others: +0.26 *11* (J(2702)=2) or δ<0.29 (J(2702)=3) (1993Go10).
1385.33 *4*	0.064 *3*	2711.012	4$^+$	1325.512	2$^+$				
1436.554[#] *7*	1.244 *8*	2039.288	2$^+$ & 3$^+$	602.7278	2$^+$				α(K)exp=0.00060 *10*. Mult.,δ: nuclear orientation and α(K)exp give M1+E2 and +1.5 *8*, but this transition is doublet from 2000Do11. others: +0.51 *+13−11* (1993Go10), +3.7 *+27−20* (1972Ba38), M1+E2(5.5% *20*) (1979Sh08).
1445.11 *4*	0.337 *4*	2693.679	3$^-$	1248.582	4$^+$	E1(+M2)	+0.10 *9*	0.00052 *4*	α(K)=0.00029 *4*; α(L)=3.4×10^{-5} *4*; α(M)=6.7×10^{-6} *8*; α(N+..)=0.000186 *5* α(N)=1.34×10^{-6} *16*; α(O)=1.46×10^{-7} *18*; α(IPF)=0.000184 *5* Mult.: from adopted gammas. δ: other: +0.02 *8* (1993Go10).
1488.887 *24*	0.687 *6*	2091.680	2$^+$	602.7278	2$^+$	M1+E2	+0.10 *23*	8.29×10^{-4} *16*	α(K)=0.000659 *14*; α(L)=7.92×10^{-5} *16*; α(M)=1.57×10^{-5} *3*; α(N+..)=7.51×10^{-5} *12* α(N)=3.11×10^{-6} *7*; α(O)=3.42×10^{-7} *7*; α(IPF)=7.17×10^{-5} *11* α(K)exp=0.00079 *12*. δ: others: −3.4 *+9−15* (1972Ba38), +0.11 *8* (1990Ro17).
1526.317 *24*	0.418 *5*	2775.070	3$^-$,4$^-$	1248.582	4$^+$	E1		5.35×10^{-4}	α(K)=0.000252 *4*; α(L)=2.96×10^{-5} *5*; α(M)=5.86×10^{-6} *9*; α(N+..)=0.000248 *4* α(N)=1.160×10^{-6} *17*; α(O)=1.270×10^{-7} *18*; α(IPF)=0.000247 *4* α(K)exp=0.0004 *3*. δ: 1983Ro13 deduced δ from nuclear orientation assuming that J^π of 2775-keV level is 3$^+$ or 4$^+$; +0.43 *6* or +5.7 *13* (J^π(2775)=3$^+$), −0.12 *8* or +1.2 (J^π(2775)=4$^+$).

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^{124}Sb β^- decay (60.20 d) 1993Go10,2006Pa16,1988Yo05 (continued)

$\gamma(^{124}Te)$ (continued)

E_γ[‡]	I_γ[†a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ[&]	α[b]	$I_{(\gamma+ce)}$[a]	Comments
1565.7 *5*	0.014 *3*	2814.56	2^+ to 5^+	1248.582	4^+					
1579.82 *5*	0.39 *5*	2182.39	2^+	602.7278	2^+	M1+E2(+E0)	−0.17 *7*	7.71×10^{-4}		α(K)=0.000579 *9*; α(L)=6.95×10^{-5} *11*; α(M)=1.378×10^{-5} *20*; α(N+..)=0.0001079 *16* α(N)=2.73×10^{-6} *4*; α(O)=3.00×10^{-7} *5*; α(IPF)=0.0001049 *15* Mult.,δ: from α(K)exp and $\gamma\gamma(\theta)$ in (n,γ).
1622.4 *4*	0.0418 *10*	2224.839	4^+	602.7278	2^+	E2		6.64×10^{-4}		α(K)=0.000467 *7*; α(L)=5.64×10^{-5} *8*; α(M)=1.118×10^{-5} *16*; α(N+..)=0.0001294 *19* α(N)=2.21×10^{-6} *3*; α(O)=2.41×10^{-7} *4*; α(IPF)=0.0001269 *18* Mult.: from adopted gammas.
1657		1656.6	0^+	0.0	0^+	E0			0.0008 *4*	$I_{(\gamma+ce)}$: from Ice(K)/Ice(602K)=0.2/100 (1974Jo03).
1690.971[#] *4*	48.64 *15*	2293.712	3^-	602.7278	2^+	E1+M2	+0.010 *+3−4*	6.15×10^{-4}		α(K)=0.000213 *3*; α(L)=2.50×10^{-5} *4*; α(M)=4.94×10^{-6} *7*; α(N+..)=0.000372 *6* α(N)=9.78×10^{-7} *14*; α(O)=1.071×10^{-7} *15*; α(IPF)=0.000371 *6* α(K)exp=0.000213 *17*. δ: from averaged A_2 and A_4 values of $\gamma\gamma(\theta)$ others: −0.009 *22* (1993Go10), −0.02 *1* (1972Ba38), E1+M2(0.30% *15*) (1979Sh08), E1+M2(0.30% *12*) (1990Su11).
1720.72 *3*	0.0972 *17*	2323.41	2^+	602.7278	2^+	M1(+E2)	+0.18 *20*	7.18×10^{-4} *13*		α(K)=0.000483 *10*; α(L)=5.79×10^{-5} *11*; α(M)=1.148×10^{-5} *22*; α(N+..)=0.0001650 *24* α(N)=2.28×10^{-6} *5*; α(O)=2.50×10^{-7} *5*; α(IPF)=0.0001624 *24*

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^{124}Sb β^- decay (60.20 d) 1993Go10,2006Pa16,1988Yo05 (continued)

$\gamma(^{124}Te)$ (continued)

E_γ[‡]	I_γ[†a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ[&]	α[b]	Comments
1852.14 *8*	0.0066 *13*	2454.96	2^+	602.7278	2^+	M1+E2	+0.039 *1*	0.00067 *3*	Mult.,δ: from α(K)exp and $\gamma\gamma(\theta)$ in (n,γ). α(K)=0.00039 *3*; α(L)=4.7×10^{-5} *4*; α(M)=9.3×10^{-6} *7*; α(N+..)=0.000227 *5* α(N)=1.83×10^{-6} *13*; α(O)=2.01×10^{-7} *15*; α(IPF)=0.000225 *5*
1918.74 *6*	0.0557 *16*	2521.48	2^+	602.7278	2^+	M1(+E2)	−0.02 *3*	6.98×10^{-4}	Mult.,δ: from adopted gammas. α(K)=0.000387 *6*; α(L)=4.62×10^{-5} *7*; α(M)=9.15×10^{-6} *13*; α(N+..)=0.000256 *4* α(N)=1.82×10^{-6} *3*; α(O)=1.99×10^{-7} *3*; α(IPF)=0.000254 *4*
2016.34 *6*	0.097 *5*	2619.09	(3)	602.7278	2^+				Mult.,δ: from α(K)exp in (n,γ) and $\gamma(\theta)$ in (n,n$'\gamma$).
2039.55 *15*	0.0656 *19*	2039.288	2^+ & 3^+	0.0	0^+	E2		6.67×10^{-4}	α(K)=0.000305 *5*; α(L)=3.64×10^{-5} *5*; α(M)=7.21×10^{-6} *10*; α(N+..)=0.000319 *5* α(N)=1.427×10^{-6} *20*; α(O)=1.561×10^{-7} *22*; α(IPF)=0.000317 *5*
2079.88 *14*	0.021 *4*	2682.50	2^+	602.7278	2^+	M1+E2	−0.14 *3*	7.07×10^{-4}	Mult.: from α(K)exp in (n,γ). α(K)=0.000327 *5*; α(L)=3.90×10^{-5} *6*; α(M)=7.72×10^{-6} *11*; α(N+..)=0.000334 *5* α(N)=1.531×10^{-6} *22*; α(O)=1.683×10^{-7} *24*; α(IPF)=0.000332 *5*
2090.930[#] *7*	5.61 *3*	2693.679	3^-	602.7278	2^+	E1(+M2)	+0.03 *2*	8.38×10^{-4}	Mult.,δ: from α(K)exp in ^{124}I ε decay and $\gamma(\theta)$ in (n,n$'\gamma$). α(K)=0.0001522 *23*; α(L)=1.78×10^{-5} *3*; α(M)=3.52×10^{-6} *6*; α(N+..)=0.000664 *10* α(N)=6.97×10^{-7} *11*; α(O)=7.65×10^{-8} *12*; α(IPF)=0.000664 *10* α(K)exp=0.000154 *22*. δ: others: +0.00 *+2−3* (1972Ba38), +0.031 *6* (1993Go10), E1+M2(0.1% *1*) (1990Su11).
2099.25 *10*	0.0467 *9*	2701.622	2^-	602.7278	2^+				
2108.323 *24*	0.0443 *13*	2711.012	4^+	602.7278	2^+				
2172.1 *5*	0.0021 *4*	2775.070	3^-,4^-	602.7278	2^+				
2182.58 *6*	0.0434 *10*	2182.39	2^+	0.0	0^+				
2283.62 *6*	0.0082 *12*	2886.37	3^-	602.7278	2^+	E1+M2	+0.06 *2*	9.45×10^{-4}	α(K)=0.0001341 *22*; α(L)=1.57×10^{-5} *3*; α(M)=3.10×10^{-6} *6*; α(N+..)=0.000792 *12* α(N)=6.14×10^{-7} *11*; α(O)=6.74×10^{-8} *12*; α(IPF)=0.000792 *12* Mult.,δ: from α(K)exp in ^{124}I ε decay and $\gamma(\theta)$ in (n,n$'\gamma$).
2294.02 *12*	0.0327 *10*	2293.712	3^-	0.0	0^+				

$\gamma(^{124}Te)$ (continued)

E_γ ‡	I_γ †[a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	α[b]	Comments
2323.45 *8*	0.00249 *16*	2323.41	2^+	0.0	0^+			
2455.21 *15*	0.0015 *4*	2454.96	2^+	0.0	0^+	E2	7.68×10^{-4}	α(K)=0.000218 *3*; α(L)=2.59×10^{-5} *4*; α(M)=5.13×10^{-6} *8*; α(N+..)=0.000518 *8* α(N)=1.016×10^{-6} *15*; α(O)=1.114×10^{-7} *16*; α(IPF)=0.000517 *8* Mult.: from adopted gammas.
2681.9 *3*	0.00169 *17*	2682.50	2^+	0.0	0^+			
2693.57 *6*	0.0031 *5*	2693.679	3^-	0.0	0^+			
2807.52 *24*	0.0015 *2*	2807.55	2^+	0.0	0^+	E2	8.78×10^{-4}	α(K)=0.0001730 *25*; α(L)=2.04×10^{-5} *3*; α(M)=4.04×10^{-6} *6*; α(N+..)=0.000680 *10* α(N)=8.01×10^{-7} *12*; α(O)=8.80×10^{-8} *13*; α(IPF)=0.000679 *10* Mult.: From adopted gammas.

† Average from 2006Pa16, 1993Go10, 1988Yo05, 1984Iw03, 1984Ma13 and 1990Me15.
‡ Average from 2006Pa16, 1993Go10, 1988Yo05 and 1990Me15 (or 1969Me04).
# From 2000He14.
@ From α(K)exp and $\gamma\gamma(\theta)$, unless otherwise noted; α(K)exp′s are calculated using weighted mean values of Ice(K)′s of 1968Gr24 and 1974Jo03 and Iγ′s of 1993Go10 normalizing so that α(K)exp(602.72γ)=0.00420 (E2 theory); α′s in table are α theory from 1968Ha53.
& From nuclear orientation (1983Ro13), unless otherwise noted.
[a] For absolute intensity per 100 decays, multiply by 0.9779 *22*.
[b] 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.

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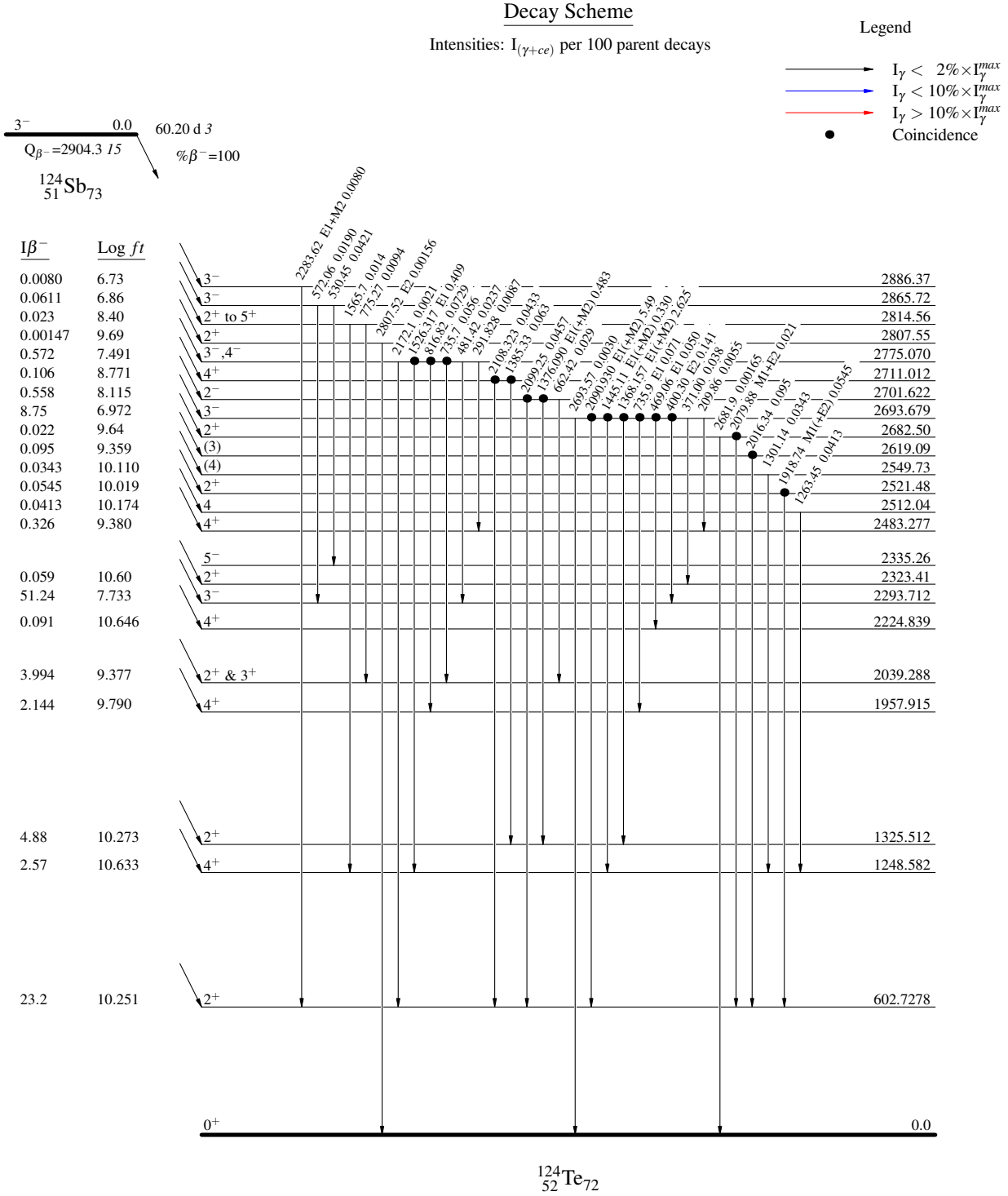
^{124}Sb β^- decay (60.20 d) 1993Go10,2006Pa16,1988Yo05

Decay Scheme

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



^{124}Sb β^- decay (60.20 d) 1993Go10,2006Pa16,1988Yo05

Decay Scheme (continued)

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