^{130}Sb β^- decay (6.3 min) 1974Ke08

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 93, 33 (2001)	11-May-2001

Parent: ^{130}Sb: E=4.8 *2*; J^π=(4,5)$^+$; $T_{1/2}$=6.3 min *2*; Q(β^-)=4959 *25*; %β^- decay=100.0

^{130}Sb-E: from 1994WaZU.

1974Ke08 (1973Ke21, 1972Ke28): measured Eγ, Iγ, $\gamma\gamma$, ce, Eβ, $\gamma\gamma$(t).

1979Bo26: measured two Eγ's with a curved-crystal spectrometer.

Others:

γ, $\gamma\gamma$: 1974Kr20, 1974Er07 (also 1970ErZZ), 1971Ki22, 1971Ki15. Others: 1969Dz04, 1966To02, 1964BeZZ, 1963La15, 1962Ha16, 1962Dr01.

β, $\beta\gamma$: 1990St13, 1977Lu06, 1977Nu01.

β strength functions: 1973Jo02.

$T_{1/2}$(^{130}Sb), production, etc.: 1974Gr29, 1974Fo06, 1967Ha27, 1965Br34, 1963Br18.

^{130}Te Levels

E(level)†	J^π‡	Comments
0.0	0^+	
839.53 *6*	2^+	
1587.83 *25*	2^+	
1632.85 *14*	4^+	
1815.18 *14*	$(6)^+$	
1885.9 *5*	2^+	Level proposed by 1990St13.
1981.37 *22*	4^+	
2100.85 *25*	5^-	
2330.38 *22*	(4^+)	
2449.21 *23*	4^+	
2462.9? *10*		E(level): level proposed in 1990St13.
2575.1 *5*		E(level): level proposed in 1990St13.
2735.69 *24*	(4^+)	
2765.04 *25*	(4^+)	
2832.79 *21*	$(4,5,6)^+$	
3412.9 *4*	(4,5,6)	

† From least-squares adjustment to Eγ's.

‡ From Adopted Levels.

β^- radiations

E(decay)†	E(level)	Iβ^-‡	Log *ft*	Comments
1.83×10^3 *29*	3412.9	7.4 *6*	5.92 *5*	av Eβ=581 *11* E(decay): 1830 *290* from (1598γ)β coin (1977Lu06).
2.18×10^3 *11*	2832.79	35.5 *21*	5.79 *4*	av Eβ=841 *12* E(decay): 2230 *120* from (370γ)β coin (1990St13); 2120 *35* (1990St13), 2180 *110* (1977Lu06) from (1017γ)β coin; 2120 *60* from (1200γ)β coin (1990St13).
(2.20×10$^{3\#}$ *3*)	2765.04	≤1	≥7.4	av Eβ=871 *12* E(decay): 2070 *150* from (949γ)β coin. Eγ=749.1 in 1990St13 is probably a misprint.
(2.23×10^3 *3*)	2735.69	9.5 *7*	6.44 *4*	av Eβ=885 *12* E(decay): 2210 *100* from (921γ)β coin; 2210 *55* from (1103γ)β coin (1990St13).

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^{130}Sb β^- decay (6.3 min) 1974Ke08 (continued)

β^- radiations (continued)

E(decay)†	E(level)	Iβ⁻‡	Log *ft*	Comments
(2.39×10³ *3*)	2575.1			E(decay): 2500 *320* from (942γ)β coin (1990St13).
(2.50×10³ *3*)	2462.9?			E(decay): 2520 *150* from (648γ)β coin (1990St13).
2.54×10³ *35*	2449.21	12.4 *11*	6.54 *5*	av Eβ=1016 *12* E(decay): 2530 *60* from (816γ)β coin (1990St13); 2540 *350* from (816γ)β coin (1977Lu06).
(2.63×10³ *3*)	2330.38	3.3 *7*	7.20 *10*	av Eβ=1071 *12* E(decay): 2720 *110* from (697γ)β coin (1990St13).
(2.86×10³ *3*)	2100.85	3.1 *3*	7.38 *5*	av Eβ=1177 *12*
2.64×10³ *45*	1981.37	10.7 *8*	6.91 *4*	av Eβ=1233 *12* E(decay): 2780 *220* from (349γ)β coin (1990St13); 2640 *450* from (1142γ)β coin (1977Lu06).
(3.08×10³# *3*)	1885.9			E(decay): 3350 *450* from (1046γ)β coin (1990St13). β feeding is unlikely since it involves ΔJ=(2,3), Δπ=No.
(3.15×10³# *3*)	1815.18	≤4	≥7.3	av Eβ=1311 *12* Iβ⁻: from B(182γ) coin (1977Nu01). Intensity balance gives 12% 4.
(3.33×10³ *3*)	1632.85	≤5	≥7.4	av Eβ=1396 *12*

† From 1977Lu06.
‡ Absolute intensity per 100 decays.
# Existence of this branch is questionable.

γ(^{130}Te)

Iγ normalization: Iγ(839.4)=100.

E_γ	I_γ†&	E_i(level)	J_i^π	E_f	J_f^π	Mult.@	δ@	α[a]	Comments
182.330# *9*	41 *2*	1815.18	$(6)^+$	1632.85	4^+	E2		0.207	α(K)= 0.1649; α(L)= 0.0339; α(M)=0.00692; α(N+..)=0.00158
348.5 *2*	5.1 *5*	1981.37	4^+	1632.85	4^+	M1+E2	−0.12 *3*	0.023	
x370.0 *2*	2.0 *4*								
405.2 *2*	0.5 *2*	2735.69	(4^+)	2330.38	(4^+)				
468.0 *2*	3.1 *3*	2100.85	5^-	1632.85	4^+	E1(+M2)	+0.03 *2*		
x481.6 *2*	1.9 *4*								
502.6 *3*	1.9 *4*	2832.79	$(4,5,6)^+$	2330.38	(4^+)				
x627.1 *3*	5.1 *5*								
647.7[b]		2462.9?		1815.18	$(6)^+$				E_γ: from 1990St13. But note that a 647.7γ is also placed from 3412.8 level.
647.7 *3*	4.8 *5*	3412.9	(4,5,6)	2765.04	(4^+)				
x658.0 *3*	0.7 *2*								
697.4 *3*	4.4 *4*	2330.38	(4^+)	1632.85	4^+	(M1+E2)			
748.6 *3*	4.0 *4*	1587.83	2^+	839.53	2^+				
793.4 *1*	86 *4*	1632.85	4^+	839.53	2^+	E2			
816.3 *2*	12 *1*	2449.21	4^+	1632.85	4^+	M1+E2	−0.21 *2*		
839.52# *6*	100 *5*	839.53	2^+	0.0	0^+	E2			
861.6 *4*	0.4 *2*	2449.21	4^+	1587.83	2^+				
920.8 *4*	4.0 *4*	2735.69	(4^+)	1815.18	$(6)^+$				
942.2 *4*	2.8 *3*	2575.1		1632.85	4^+				E_γ: placement implied by βγ data of 1990St13. Unplaced in 1974Ke08.

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^{130}Sb β^- decay (6.3 min) 1974Ke08 (continued)

$\gamma(^{130}Te)$ (continued)

E_γ	I_γ[†][&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	Comments
949.8 *4*	1.0 *2*	2765.04	(4^+)	1815.18	$(6)^+$		
[x]985.4 *4*	1.6 *3*						
1017.5 *2*	30 *2*	2832.79	$(4,5,6)^+$	1815.18	$(6)^+$		
[x]1039.6 *4*	1.0 *2*						
1046.5 *4*	2.8 *3*	1885.9	2^+	839.53	2^+		E_γ: placement implied by $\beta\gamma$ data of 1990St13, γ unplaced in 1974Ke08.
[x]1071.7[‡] *4*	2.2 *2*						
1102.8 *4*	3.7 *4*	2735.69	(4^+)	1632.85	4^+		
1131.9 *4*	1.3 *3*	2765.04	(4^+)	1632.85	4^+		
1142.0 *4*	5.6 *6*	1981.37	4^+	839.53	2^+	E2	
1177.3 *4*	2.2 *2*	2765.04	(4^+)	1587.83	2^+		
1200.0 *4*	3.6 *4*	2832.79	$(4,5,6)^+$	1632.85	4^+		
[x]1232.3 *4*	1.3 *3*						
[x]1298.9 *5*	0.8 *2*						
[x]1323.1[‡] *5*	0.4 *2*						
1491.2 *5*	1.3 *3*	2330.38	(4^+)	839.53	2^+	(E2)	
1598.0 *5*	2.6 *3*	3412.9	(4,5,6)	1815.18	$(6)^+$		
1896.9 *8*	1.3 *3*	2735.69	(4^+)	839.53	2^+		
1925.7[‡][b] *8*	0.4 *2*	2765.04	(4^+)	839.53	2^+		
[x]1934.1[‡] *8*	0.4 *2*						
[x]2116.6[‡] *8*	1.0 *2*						
[x]2136.5[‡] *8*	0.5 *2*						
[x]2999.1[‡] *8*	0.3 *2*						

[†] $\Delta(I\gamma)$ are based on a general comment by 1972Ke28 that these are: 5% for $I\gamma>15$, 10% for $I\gamma=2$-15, 20% or 0.2 for $I\gamma\leq2$.
[‡] Uncertain assignment to ^{130}Sb β^- decay.
[#] From curved-crystal measurement (1979Bo26).
[@] From adopted gammas.
[&] Absolute intensity per 100 decays.
[a] 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.
[b] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

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Decay Scheme

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