

¹¹⁵Te ε decay (5.8 min)

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 113, 2391 (2012)	1-Sep-2012

Parent: ¹¹⁵Te: E=0.0; J^π=7/2⁺; T_{1/2}=5.8 min 2; Q(ε)=4940 30; %ε+%β⁺ decay=100.0

γ spectra are for mass-separated ¹¹⁵Te(5.8-min + 6.7-min) mixtures. Isomer assignments are from T_{1/2}(γ), γγ-coin,

(γ)(γ[±])-coin (1975WiZX).

See drawings for partial level scheme and preliminary intensity balance.

1974Ch51 analyzed dependence of I_γ(6.7-min 770γ)/I_γ(5.8-min 1380γ) ratio on E_α via ¹¹²Sn(α,n) E=12-29 MeV; high J for 1380γ parent deduced.

¹¹⁵Sb Levels

E(level)	J ^π	T _{1/2}	Comments
0.0	5/2 ⁺	32.1 min 3	J ^π : odd-mass ¹¹¹ Sb- ¹²¹ Sb g.s. are classified as 5/2 ⁺ ; L=2 (³ He,d).
723.6	7/2 ⁺		
1071.7	3/2 ⁺		
1098.6	7/2 ⁺		
1300.3	11/2 ⁻	6.2 ns 3	Branching: I _γ (577γ)/I _γ (1300γ)=0.068 21 (1975WiZX), 0.073 6 (1972Sh37).
1326.9	9/2 ⁺	<5 ps	Branching: I _γ (228γ)/I _γ (603γ)/I _γ (1327γ)=3.4 5/19.4 14/100 (1975WiZX), 2.7 4/16.1 8/100 (1974Ch51), ≤2.4/22.3 11/100 (1972Sh37).
1380.6	9/2 ⁺	<5 ps	Branching: I _γ (282γ)/I _γ (657γ)/I _γ (1380γ)=4.3 5/29.6 19/100 (1975WiZX), 4.0 6/26.5 12/100 (1974Ch51), ≤4/30.0 24/100 (1972Sh37).
1736.0?	(5/2 ⁺)		
1755.0	11/2 ⁺		Branching: I _γ (428γ)/I _γ (374γ)=0.34 5 (1975WiZX), 0.31 3 (1974Ch51), 0.39 6 (1972Sh37).
1937.2?			
2323.4	(9/2) ⁺		
2389.1	(7/2) ⁺		
2688.3	(5/2 ⁺ , 7/2 ⁺)		

ε, β⁺ radiations

E(β⁺)=3400 100 (1976KiZL).

E(β⁺)=2760 70 (1976KiZL), 2680 50 (1974Ch51), 2850 50 (1965Kh05). Other: 1965Re01.

E(decay)	E(level)	Iβ ⁺ †	Iε †	Log ft	I(ε+β ⁺) †	Comments
(2.25×10 ³ 3)	2688.3	≈0.2	≈0.8	≈5.8	≈1.0	av Eβ=550 14; εK=0.688 12; εL=0.0902 15; εM+=0.0235 4
(2.55×10 ³ 3)	2389.1	≈3.4	≈6.6	≈5.0	≈10.0	av Eβ=684 14; εK=0.571 12; εL=0.0746 16; εM+=0.0194 5
(2.62×10 ³ 3)	2323.4	≈4	≈6	≈5.1	≈10.0	av Eβ=713 14; εK=0.545 12; εL=0.0711 16; εM+=0.0185 5
(3.56×10 ³ 3)	1380.6	≈18	≈7.4	≈5.3	≈25.4	av Eβ=1144 14; εK=0.249 7; εL=0.0323 9; εM+=0.00840 22
(3.61×10 ³ 3)	1326.9	≈18	≈6.9	≈5.3	≈24.9	av Eβ=1169 14; εK=0.238 7; εL=0.0309 8; εM+=0.00802 21
(3.64×10 ³ 3)	1300.3	≈0.5	≈0.5	≈8.1 ^{1u}	≈1.0	av Eβ=1191 14; εK=0.431 9; εL=0.0568 12; εM+=0.0148 3
(3.84×10 ³ 3)	1098.6	≈6	≈2	≈5.9	≈8.0	av Eβ=1275 14; εK=0.196 5; εL=0.0255 7; εM+=0.00662 17
(4.22×10 ³ 3)	723.6	≈13	≈2.6	≈5.9	≈15.6	av Eβ=1450 14; εK=0.145 4; εL=0.0188 5; εM+=0.00489 12 Av E(β ⁺)=2760 70 (1976KiZL), 2680 50 (1974Ch51), 2850 50 (1965Kh05). Other: 1965Re01.
(4.94×10 ³ 3)	0.0	≈3.6	≈0.40	≈6.8	≈4.0	av Eβ=1791 15; εK=0.0856 18; εL=0.01108 23; εM+=0.00288 6 E(β ⁺)=3400 100 (1976KiZL).

† Absolute intensity per 100 decays.

¹¹⁵Te ε decay (5.8 min) (continued)

$\gamma(^{115}\text{Sb})$

I_γ normalization: for Σ I(γ+ce) to g.s.≈96, if %ε+%β⁺≈4 to g.s. (1976KiZL).

α(K)exp=ce(K)/I_γ normalized to α(K)(657γ)=0.0039 (M1+0.5% E2); see also I(ce(K)) measured by 1969GoZU; quoted by 1972Sh37, 1974Ch51.

E _γ	I _γ ^{†&}	E _i (level)	J _i ^π	E _f	J _f ^π	Mult.	δ [@]	α ^b	I _(γ+ce) ^a	Comments
228.22 10	2.4 3	1326.9	9/2 ⁺	1098.6	7/2 ⁺	[M1,E2]		0.078	14	ce(K)/(γ+ce)=0.061 9; ce(L)/(γ+ce)=0.009 3; ce(M)/(γ+ce)=0.0019 6; ce(N+)/(γ+ce)=0.00039 12
281.96 3	3.1 3	1380.6	9/2 ⁺	1098.6	7/2 ⁺	[M1,E2]		0.041	5	ce(N)/(γ+ce)=0.00036 11; ce(O)/(γ+ce)=3.2×10 ⁻⁵ 8 ce(K)/(γ+ce)=0.033 3; ce(L)/(γ+ce)=0.0048 10; ce(M)/(γ+ce)=0.00096 21; ce(N+)/(γ+ce)=0.00020 4
374.48 6	9.9 7	1755.0	11/2 ⁺	1380.6	9/2 ⁺	M1+E2	+0.24 2	0.0179		ce(N)/(γ+ce)=0.00018 4; ce(O)/(γ+ce)=1.7×10 ⁻⁵ 3 α(K)=0.01537 22; α(L)=0.00193 3; α(M)=0.000381 6; α(N+..)=8.07×10 ⁻⁵ 12 α(N)=7.35×10 ⁻⁵ 11; α(O)=7.26×10 ⁻⁶ 11
^x 386.3 [#] 3	0.7 2									
428.22 8	3.4 4	1755.0	11/2 ⁺	1326.9	9/2 ⁺	M1+E2	+0.28 7	0.0127		α(K)=0.01094 16; α(L)=0.001365 20; α(M)=0.000270 4; α(N+..)=5.72×10 ⁻⁵ 9 α(N)=5.20×10 ⁻⁵ 8; α(O)=5.14×10 ⁻⁶ 8 E _γ : other: 428.0 2 (1975WiZX).
568.39 6	8.7 10	2323.4	(9/2) ⁺	1755.0	11/2 ⁺	M1				α(K)=0.00554; α(L)=0.00068
576.8 [‡] 4	0.52 15	1300.3	11/2 ⁻	723.6	7/2 ⁺	M2		0.0190		α(K)=0.01614; α(L)=0.00212 I _γ : from I _γ (577γ)/I _γ (1300γ)=0.087 3 (1978Su05, ¹¹⁵ Sb IT decay).
603.27 5	13.8 4	1326.9	9/2 ⁺	723.6	7/2 ⁺	M1				α(K)=0.00480; α(L)=0.00058
634.06 15	2.9 3	2389.1	(7/2) ⁺	1755.0	11/2 ⁺	(E2)				α(K)=0.00351; α(L)=0.00046
657.01 5	21.3 6	1380.6	9/2 ⁺	723.6	7/2 ⁺	M1+E2	-0.07 4			α(K)=0.00391; α(L)=0.00048
723.57 4	94	723.6	7/2 ⁺	0.0	5/2 ⁺	M1(+E2)				I _γ : from I _γ (723γ)=100 (¹¹⁵ Te isomer + g.s. decays) - I _γ (isomer)=6.
^x 804.0 [#] 4	0.7 2									
^x 921.3 [#] 3	1.3 3									E _γ : other: 920.4 3 (1974Ch51).
942.87 12	5.7 4	2323.4	(9/2) ⁺	1380.6	9/2 ⁺					
996.61 15	3.5 4	2323.4	(9/2) ⁺	1326.9	9/2 ⁺					
1012.3 ^c 4	5.2 4	1736.0?	(5/2) ⁺	723.6	7/2 ⁺	(M1+E2)				α(K)=0.0060
1022.8 3	2.3 3	2323.4	(9/2) ⁺	1300.3	11/2 ⁻					
^x 1051.4 [#] 5	1.0 3									
1061.6 [‡] 4	1.9 3	2389.1	(7/2) ⁺	1326.9	9/2 ⁺					
1071.7 [‡] 3	0.75 CA	1071.7	3/2 ⁺	0.0	5/2 ⁺					I _γ : calc for I(γ+ce) balance at 1072 level.
1088.4 3	2.5 4	2389.1	(7/2) ⁺	1300.3	11/2 ⁻					E _γ : other: 1088.9 2 (1975WiZX).
1098.62 5	51 3	1098.6	7/2 ⁺	0.0	5/2 ⁺	M1(+E2)				I _γ : from I _γ (1098γ)=54 (¹¹⁵ Te isomer + g.s. decays) - I _γ (isomer)=3.

^{115}Te ε decay (5.8 min) (continued) $\gamma(^{115}\text{Sb})$ (continued)

E_γ	I_γ †&	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	Comments
1213.6 ^c 3	1.9 3	1937.2?		723.6	7/2 ⁺		
1224.5 [‡] 2	2.4 3	2323.4	(9/2) ⁺	1098.6	7/2 ⁺		E_γ : other: 1223.7 4 (1974Ch51).
1290.50 12	18.4 11	2389.1	(7/2) ⁺	1098.6	7/2 ⁺		
1300.3 [‡] 2	7.6 6	1300.3	11/2 ⁻	0.0	5/2 ⁺	E3	$\alpha(\text{K})=0.00130$; $\alpha(\text{L})=0.00017$
1315.5 [‡] 8	0.4 2	2389.1	(7/2) ⁺	1071.7	3/2 ⁺		
1326.84 6	71 4	1326.9	9/2 ⁺	0.0	5/2 ⁺	E2	$\alpha(\text{K})=0.00065$
^x 1369.1 [#] 4	0.5 2						
1380.58 6	72 4	1380.6	9/2 ⁺	0.0	5/2 ⁺	E2	$\alpha(\text{K})=0.00060$
^x 1437.3 [#] 3	1.2 2						
^x 1446.7 [#] 4	0.8 2						
1589.5 [‡] 3	0.65 10	2688.3	(5/2 ⁺ , 7/2 ⁺)	1098.6	7/2 ⁺		
1599.90 8	8.2 7	2323.4	(9/2) ⁺	723.6	7/2 ⁺		
1617.1 5	0.35 10	2688.3	(5/2 ⁺ , 7/2 ⁺)	1071.7	3/2 ⁺		
1665.4 2	2.9 3	2389.1	(7/2) ⁺	723.6	7/2 ⁺		
^x 1685.5 [#] 3	1.4 3						
^x 1743.5 [#] 5	0.5 2						
^x 1837.3 [#] 3	1.6 3						
^x 1953.8 [#] 2	1.3 2						
^x 2019.5 [#] 9	0.4 2						
^x 2118.6 [#] 7	0.39 10						
^x 2130.8 [#] 4	1.6 2						
2389.1 4	0.74 15	2389.1	(7/2) ⁺	0.0	5/2 ⁺		
^x 2459.3 [#] 10	0.38 8						
^x 2467.5 [#] 10	0.24 14						
^x 2481.6 [#] 5	1.0 3						
^x 2503.2 [#] 9	0.34 9						
^x 2511.2 [#] 10	0.48 10						
2688.2 2	2.5 3	2688.3	(5/2 ⁺ , 7/2 ⁺)	0.0	5/2 ⁺		
^x 2717.8 [#] 6	0.39 8						
^x 2746.2 [#] 8	0.39 8						
^x 3411.6 [#] 12	0.15 7						
^x 3447.9 [#] 7	0.17 8						
^x 3529.4 [#] 10	0.14 7						
^x 3559.6 [#] 8	0.19 4						

¹¹⁵Te ε decay (5.8 min) (continued)

$\gamma(^{115}\text{Sb})$ (continued)

[†] I(γ^\pm)=405 25 (1975WiZX,1976Wi10), 490 80 (1972Sh37), 455 (1965Re01) mixed 5.8-min + 6.7-min ¹¹⁵Te decays.

[‡] From 1975WiZX, otherwise from 1974Ch51.

[#] Associated with 5.8-min and/or 6.7-min ¹¹⁵Te decays (1975WiZX).

[@] From adopted gammas.

[&] For absolute intensity per 100 decays, multiply by ≈ 0.32 .

^a Absolute intensity per 100 decays.

^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.

^c Placement of transition in the level scheme is uncertain.

^x γ ray not placed in level scheme.

^{115}Te ϵ decay (5.8 min)

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

Decay Scheme

Intensities: I_γ per 100 parent decays

