^{106}Tc β^- decay (35.6 s) 1980Su01,1984St04

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	D. De Frenne and A. Negret	NDS 109, 943 (2008)	1-May-2007

Parent: ^{106}Tc: E=0.0; J^π=(1,2); $T_{1/2}$=35.6 s *6*; Q(β^-)=6547 *11*; %β^- decay=100.0

1980Su01: activity from ^{239}Pu(n,F) E=th; on-line fast technetium chem. Measured: Eγ, Iγ, $\gamma\gamma$. Deduced: ^{106}Ru levels, J^π, log *ft*. Ge(Li) detectors.

1984St04: activity from ^{239}Pu(n,F) E=th; on-line fast technetium chem. Ge(Li) detectors.Measured: $\gamma\gamma$, $\gamma\gamma(\theta)$. Deduced: Q/D mixing ratios, J^π.

Others: 1965FeZZ, 1969ZiZZ, 1969WiZX, 1970HeZH, 1971KaZI, 1972Ho08, 1972Tr08, 1973Ka22, 1976KaYO.

^{106}Ru Levels

For calculated level energies (<1.5 MeV) based on collective model of Gneuss and Greiner see 1980Su01.

E(level)	J^π†	$T_{1/2}$	E(level)	J^π†	E(level)	J^π†
0.0‡	0^+	371.8 d *18*	1688.41 *21*		3047.13 *15*	(1)
270.07‡ *4*	2^+		1774.37 *8*	(2^+)	3059.53 *10*	(1)
714.69‡ *10*	(4^+)		1885.61 *9*	(2^+)	3186.43 *15*	(1)
792.31# *4*	2^+		2239.40 *7*	(1)	3259.43 *15*	(1)
990.62@ *5*	0^+		2632.82 *9*	(0^+)	3364.13 *9*	(1)
1091.55# *7*	(3^+)		2701.43 *8*	(1)	3550.98 *16*	(1)
1392.21@ *7*	2^+		2945.94 *15*	(1,2)	3930.4 *3*	(1,2)

† From Adopted Levels.
‡ Band(A): ground-state band up to 4^+.
# Band(B): possible γ-vibrational band.
@ Band(C): possible β-vibrational band.

β^- radiations

log *ft* and normalization calculated with the assumption of no β feeding of the g.s.

E(decay)	E(level)	Iβ^-†	Log *ft*	Comments
(2617 *11*)	3930.4	0.72 *8*	6.70 *5*	av Eβ=1077.3 *52*
(2996 *11*)	3550.98	2.67 *17*	6.38 *3*	av Eβ=1255.4 *52*
(3183 *11*)	3364.13	3.46 *22*	6.38 *3*	av Eβ=1343.5 *52*
(3288 *11*)	3259.43	3.3 *3*	6.46 *5*	av Eβ=1393.0 *52*
(3361 *11*)	3186.43	8.3 *6*	6.10 *4*	av Eβ=1427.6 *52*
(3487 *11*)	3059.53	10.4 *8*	6.07 *4*	av Eβ=1487.7 *53*
(3500 *11*)	3047.13	5.2 *4*	6.38 *4*	av Eβ=1493.6 *53*
(3601 *11*)	2945.94	3.7 *3*	6.58 *4*	av Eβ=1541.6 *53*
(3846 *11*)	2701.43	8.6 *7*	6.34 *4*	av Eβ=1657.8 *53*
(3914 *11*)	2632.82	1.25 *12*	7.21 *5*	av Eβ=1690.5 *53*
(4308 *11*)	2239.40	23.4 *17*	6.12 *4*	av Eβ=1878.0 *53*
(4661 *11*)	1885.61	0.84 *22*	7.71 *12*	av Eβ=2047.0 *53*
(4773 *11*)	1774.37	1.28 *17*	7.57 *6*	av Eβ=2100.1 *53*
(4859 *11*)	1688.41	0.61 *11*	7.93 *8*	av Eβ=2141.2 *53*
(5155 *11*)	1392.21	2.18 *22*	7.49 *5*	av Eβ=2282.9 *53*
(5455 *11*)	1091.55	0.89 *17*	7.99 *9*	av Eβ=2426.8 *53*

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^{106}Tc β^- decay (35.6 s) 1980Su01,1984St04 (continued)

β^- radiations (continued)

E(decay)	E(level)	Iβ^-[†]	Log *ft*	Comments
(5556 *11*)	990.62	2.4 *5*	7.59 *10*	av Eβ=2475.1 *53*
(5755 *11*)	792.31	7.2 *8*	7.19 *5*	av Eβ=2570.1 *53*
(5832 *11*)	714.69	0.17 *22*	8.8 *6*	av Eβ=2607.2 *53*
(6277 *11*)	270.07	13.4 *17*	7.09 *6*	av Eβ=2820.1 *53*

[†] Absolute intensity per 100 decays.

$\gamma(^{106}Ru)$

For A_2 and A_4 coef from $\gamma\gamma(\theta)$ see 1984St04.

E$_\gamma$[†]	I$_\gamma$[#]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.	δ[‡]	α[@]	Comments
270.096 *9*	100	270.07	2$^+$	0.0	0$^+$	[E2]		0.008 *21*	α(K)=0.033; α(L)=0.005 Mult.: $\Delta\pi$=no from decay scheme. E$_\gamma$: from 1979Bo26. Others: 270.3 *2* (1970HeZH), 269.8 *4* (1969WiZX).
299.2 *1*	0.3 *1*	1091.55	(3$^+$)	792.31	2$^+$				
353.7 *2*	0.7 *2*	2239.40	(1)	1885.61	(2$^+$)				
376.9 *2*	0.2 *1*	1091.55	(3$^+$)	714.69	(4$^+$)				
401.5 *2*	0.2 *1*	1392.21	2$^+$	990.62	0$^+$				
444.6 *2*	1.2 *3*	714.69	(4$^+$)	270.07	2$^+$	Q		0.0076	Mult.: mult=Q from $\gamma\gamma(\theta)$.
522.22 *5*	13.4 *9*	792.31	2$^+$	270.07	2$^+$	M1+E2	7.1 *+16−11*	0.0045	E$_\gamma$: others: 522.4 *2* (1970HeZH), 522.6 *4* (1969WiZX) (K x ray)(γ). Mult.: $\Delta\pi$=no from decay scheme.
677.5 *1*	0.7 *1*	1392.21	2$^+$	714.69	(4$^+$)				
682.8 *1*	0.7 *1*	1774.37	(2$^+$)	1091.55	(3$^+$)				
720.55 *5*	6.9 *7*	990.62	0$^+$	270.07	2$^+$	Q		0.0024	Mult.: mult=Q from $\gamma\gamma(\theta)$.
792.31 *5*	9.3 *7*	792.31	2$^+$	0.0	0$^+$			0.0016	
821.5 *1*	1.8 *2*	1091.55	(3$^+$)	270.07	2$^+$	D+Q	−3.8 *+9−16*		δ: δ=−0.5 also consistent with $\gamma\gamma(\theta)$.
896.1 *2*	1.1 *2*	1688.41		792.31	2$^+$				
1122.2 *1*	3.0 *3*	1392.21	2$^+$	270.07	2$^+$	M1+E2	0.24 *+13−12*		Mult.: $\Delta\pi$=no from decay scheme.
1240.5 *2*	0.15 *3*	2632.82	(0$^+$)	1392.21	2$^+$				
1248.8 *1*	1.0 *2*	2239.40	(1)	990.62	0$^+$				
1392.2 *1*	0.7 *1*	1392.21	2$^+$	0.0	0$^+$				
1478.5 *1*	0.8 *1*	3364.13	(1)	1885.61	(2$^+$)				
1504.3 *1*	2.1 *2*	1774.37	(2$^+$)	270.07	2$^+$				
1589.7 *2*	0.5 *2*	3364.13	(1)	1774.37	(2$^+$)				
1615.5 *1*	3.0 *3*	1885.61	(2$^+$)	270.07	2$^+$				
[x]1643.1 *2*	1.3 *2*								
1667.5 *2*	0.5 *2*	3059.53	(1)	1392.21	2$^+$				
1710.8 *1*	1.0 *1*	2701.43	(1)	990.62	0$^+$				
1840.5 *1*	1.7 *2*	2632.82	(0$^+$)	792.31	2$^+$				
1969.4 *1*	15.9 *17*	2239.40	(1)	270.07	2$^+$	D+Q	0.29 *7*		
2068.9 *2*	0.4 *1*	3059.53	(1)	990.62	0$^+$				
2153.6 *2*	0.6 *1*	2945.94	(1,2)	792.31	2$^+$				

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^{106}Tc β^- decay (35.6 s) 1980Su01,1984St04 (continued)

$\gamma(^{106}Ru)$ (continued)

E_γ[†]	I_γ[#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ[‡]
2239.3 *1*	24.4 *21*	2239.40	(1)	0.0	0^+		
2267.2 *2*	2.5 *5*	3059.53	(1)	792.31	2^+		
2362.8 *2*	0.4 *1*	2632.82	(0^+)	270.07	2^+		
2431.3 *2*	4.5 *5*	2701.43	(1)	270.07	2^+	D+Q	−0.003 *91*
2571.9 *2*	2.0 *2*	3364.13	(1)	792.31	2^+		
2701.4 *1*	10.0 *10*	2701.43	(1)	0.0	0^+		
2758.5 *2*	1.7 *2*	3550.98	(1)	792.31	2^+		
2777.0 *2*	4.3 *3*	3047.13	(1)	270.07	2^+	D+Q	0.15 *5*
2789.3 *2*	14.1 *11*	3059.53	(1)	270.07	2^+	D+Q	−0.5 *6*
2916.3 *2*	5.8 *5*	3186.43	(1)	270.07	2^+	D+Q	0.03 *8*
2945.9 *2*	6.1 *5*	2945.94	(1,2)	0.0	0^+		
2989.2 *2*	1.1 *1*	3259.43	(1)	270.07	2^+	D+Q	0.14 *14*
[x]3031.5 *2*	0.9 *1*						
3047.1 *2*	5.0 *5*	3047.13	(1)	0.0	0^+		
3059.4 *2*	1.1 *1*	3059.53	(1)	0.0	0^+		
3093.9 *2*	1.1 *1*	3364.13	(1)	270.07	2^+	D+Q	0.20 *+15−14*
3186.4 *2*	9.0 *9*	3186.43	(1)	0.0	0^+		
3259.5 *2*	4.9 *5*	3259.43	(1)	0.0	0^+		
3281.1 *3*	0.9 *1*	3550.98	(1)	270.07	2^+	D+Q	0.25 *+13−12*
3364.2 *3*	1.8 *2*	3364.13	(1)	0.0	0^+		
3551.0 *4*	2.2 *2*	3550.98	(1)	0.0	0^+		
3660.4 *4*	0.7 *1*	3930.4	(1,2)	270.07	2^+		
3930.2 *4*	0.6 *1*	3930.4	(1,2)	0.0	0^+		

[†] From 1980Su01.
[‡] Calculated from $\gamma\gamma(\theta)$ data (1984St04). For all the measured $\gamma\gamma(\theta)$ correlations the second transition was always chosen to be the 270γ (2^+ to 0^+) transition.
[#] For absolute intensity per 100 decays, multiply by 0.558 *17*.
[@] 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.
[x] γ ray not placed in level scheme.

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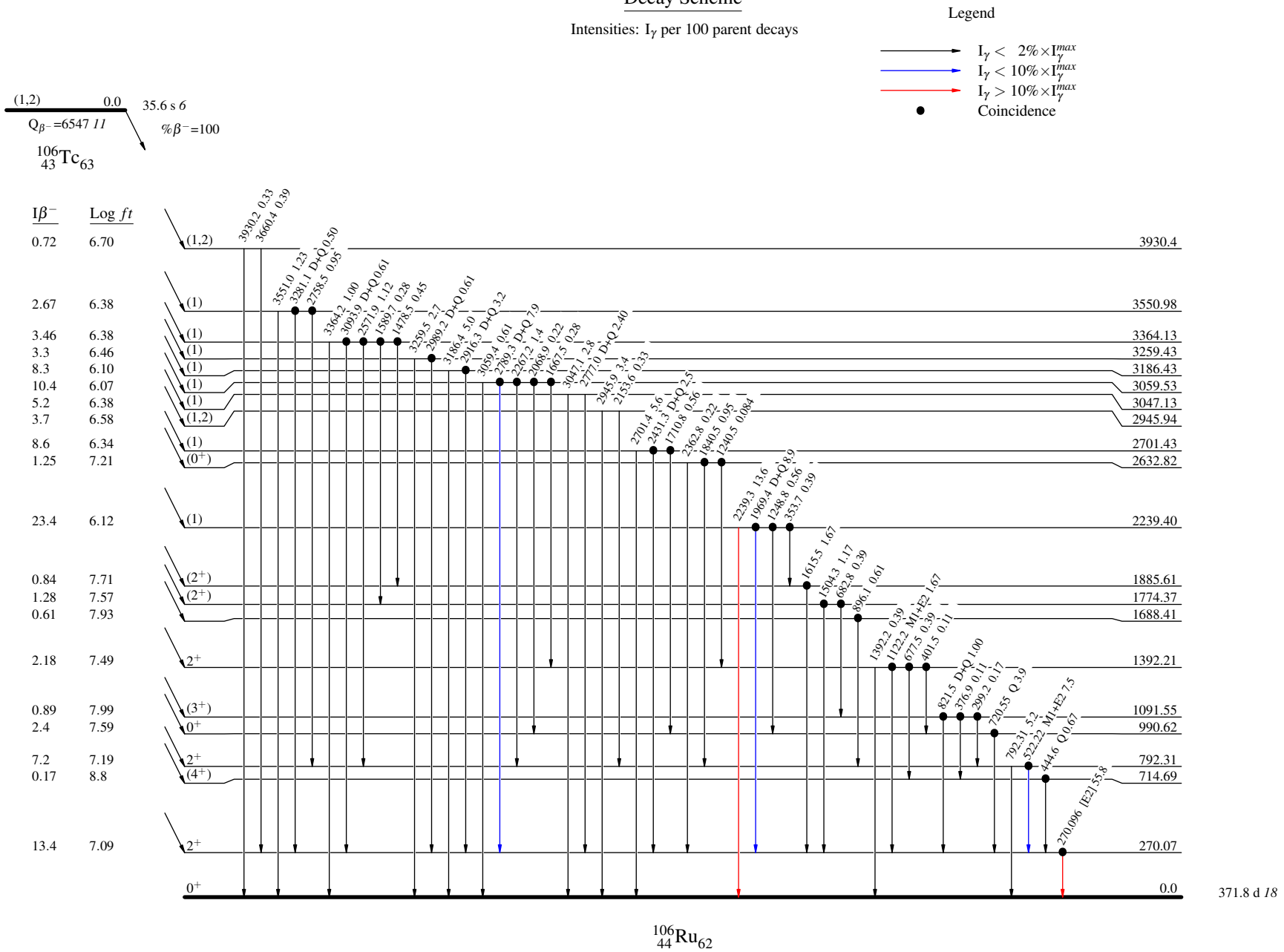
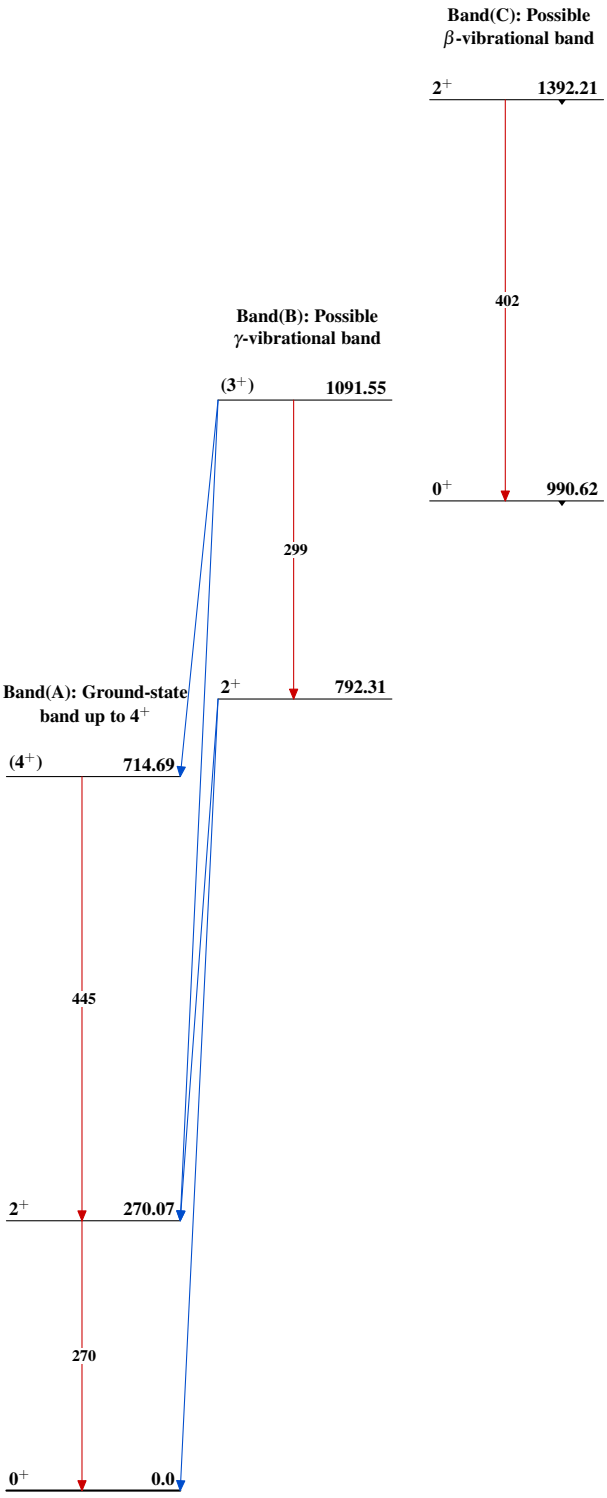
Decay Scheme

Intensities: I_γ per 100 parent decays



$^{106}_{44}Ru_{62}$-4

^{106}Tc β^- decay (35.6 s) 1980Su01,1984St04



$^{106}_{44}Ru_{62}$