^{97}Y β^- decay (3.75 s) 1976MoZC

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 111, 525 (2010)	19-Nov-2009

Parent: ^{97}Y: E=0.0; J^π=(1/2$^-$); $T_{1/2}$=3.75 s *3*; Q(β^-)=6689 *11*; %β^- decay=100.0

^{97}Y-ADOPTED values for ^{97}Y.

1976MoZC: measured Eγ, Iγ, ce, prompt and delayed $\gamma\gamma$ and $\beta\gamma$ coincidences. Ge(Li), FWHM 2.0 keV at 1332 keV, surface barrier detector for the fissions.

Others: 1996Lh03,1996Lh05,1976SaYV ($\gamma\gamma$, Eγ, Iγ), 1990Bu01 ($\beta\gamma\gamma$, $T_{1/2}$(levels)), 1984BlZN,1978St02 (Eβ), 1979Bo26 (Eγ, curved-crystal spectrometer).

^{97}Zr Levels

E(level)[†]	J^π[‡]	$T_{1/2}$	Comments
0.0	1/2$^+$	16.749 h *8*	%β^-=100 $T_{1/2}$,%β^-: from Adopted Levels.
1103.09 *13*	3/2$^+$		
1264.42 *19*	7/2$^+$	102.8 ns *24*	$T_{1/2}$: from Adopted Levels.
1399.98 *13*	(3/2$^+$,5/2$^+$)		
1806.9 *11*	(7/2$^-$)		
1859.08 *20*	(3/2$^+$,5/2$^+$)	<8.9[#] ps	
1996.53 *24*	(5/2$^+$)	<2[#] ps	
2057.3 *4*	(5/2$^+$)		
2742.97 *24*	(1/2,3/2)		
3287.65 *20*	(3/2$^-$)		
3401.4 *4*	(3/2$^-$)	<6.2[#] ps	
3549.6 *4*	(1/2,3/2)		

[†] From a least squares fit to Eγ.

[‡] From Adopted Levels.

[#] From 1990Bu01 (fig.2), by centroid shift method. $T_{1/2}$(3288-keV level) set equal to 0 in calculating the centroid shift correction.

β^- radiations

E(decay)	E(level)	Iβ^-[†‡]	Log *ft*	Comments
(3139 *11*)	3549.6	3.1 *4*	5.35 *6*	av Eβ=1330.8 *53* E(decay): Eβ^-=3300 *180* in coin with 3401γ (1978St02).
(3288 *11*)	3401.4	15.0 *17*	4.76 *5*	av Eβ=1401.2 *53*
(3401 *11*)	3287.65	27 *3*	4.56 *5*	av Eβ=1455.3 *53* E(decay): Eβ^-=3315 *115* in coin with 1291γ, 1997γ, 3288γ (1978St02).
(3946 *11*)	2742.97	6.4 *10*	5.47 *7*	av Eβ=1715.2 *53*
(4632 *11*)	2057.3			Iβ^-: GTOL upper limit (method 1): 0.7.
(4692 *11*)	1996.53	1.9 *7*	6.33 *16*	av Eβ=2073.1 *53*
(4830 *11*)	1859.08	0.7 *6*	6.8 *4*	av Eβ=2139.1 *53* Iβ^-: GTOL upper limit (method 1): 1.5.
(5289 *11*)	1399.98	3.9 *7*	6.25 *8*	av Eβ=2359.8 *53*
(5425 *11*)	1264.42			Iβ^-: GTOL upper limit (method 1): 0.6.
(5586 *11*)	1103.09	1.4 *7*	6.80 *22*	av Eβ=2502.6 *53*
(6689 *11*)	0.0	40 *10*	5.70 *11*	av Eβ=3033.6 *53* E(decay): 6702 *25* (1984BlZN); 6650 *120*, feeds mainly g.s. (1978St02). Iβ^-: from 1976MoZC. log *ft* slightly lower that the expected≥5.9.

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^{97}Y β^- decay (3.75 s) 1976MoZC (continued)

β^- radiations (continued)

† Deduced from Iγ intensity balance with Iβ^-(g.s.)=40% 10.
‡ Absolute intensity per 100 decays.

γ(^{97}Zr)

Iγ normalization: from Σ Iγ to g.s.=60 *10*. Iβ^- to g.s.=40% 10 deduced by 1976MoZC from a filiation measurement.
All data are from 1976MoZC, unless otherwise noted. The level scheme is deduced from coincidence data (from mass separated fission products). The level scheme is confirmed by 1996Lh03.

E_γ †	I_γ †@	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡	α&	Comments
161.4 *2*	2 *1*	1264.42	7/2$^+$	1103.09	3/2$^+$	[E2]	0.195	α(K)=0.1661 *25*; α(L)=0.0237 *4*; α(M)=0.00413 *7*; α(N+..)=0.000586 *9* α(N)=0.000558 *9*; α(O)=2.85×10^{-5} *5*
189.6	1.6 *8*	1996.53	(5/2$^+$)	1806.9	(7/2$^-$)	D		γ observed by 1996Lh03 only (In coin with 1291γ); I(189.6γ) from 4 % 2 depopulation branching of 1997 level.
296.88# *3*	7 *2*	1399.98	(3/2$^+$,5/2$^+$)	1103.09	3/2$^+$			
544.8 *5*	5 *2*	3287.65	(3/2$^-$)	2742.97	(1/2,3/2)			
594.7 *2*	2 *1*	1859.08	(3/2$^+$,5/2$^+$)	1264.42	7/2$^+$	D,E2		
756.0 *2*	6 *2*	1859.08	(3/2$^+$,5/2$^+$)	1103.09	3/2$^+$	D,E2		
1103.0 *2*	28 *2*	1103.09	3/2$^+$	0.0	1/2$^+$			
1264.2 *5*	<1	1264.42	7/2$^+$	0.0	1/2$^+$	[M3]	1.72×10^{-3}	α(K)=0.001509 *22*; α(L)=0.0001724 *25*; α(M)=3.00×10^{-5} *5*; α(N+..)=5.54×10^{-6} *8* α(N)=4.26×10^{-6} *6*; α(O)=3.00×10^{-7} *5*; α(IPF)=9.78×10^{-7} *16*
1291.2 *3*	32 *3*	3287.65	(3/2$^-$)	1996.53	(5/2$^+$)			
1344.0 *5*	5 *2*	3401.4	(3/2$^-$)	2057.3	(5/2$^+$)	(E1)	3.04×10^{-4}	α(K)=0.0001490 *21*; α(L)=1.611×10^{-5} *23*; α(M)=2.79×10^{-6} *4*; α(N+..)=0.0001358 *20* α(N)=3.96×10^{-7} *6*; α(O)=2.83×10^{-8} *4*; α(IPF)=0.0001353 *20*
1400.0 *2*	25 *2*	1399.98	(3/2$^+$,5/2$^+$)	0.0	1/2$^+$			
1428.9 *5*	4 *2*	3287.65	(3/2$^-$)	1859.08	(3/2$^+$,5/2$^+$)			
1639.8 *3*	4.6 *8*	2742.97	(1/2,3/2)	1103.09	3/2$^+$			
1887.4 *3*	10.3 *9*	3287.65	(3/2$^-$)	1399.98	(3/2$^+$,5/2$^+$)			
1996.6 *3*	41 *2*	1996.53	(5/2$^+$)	0.0	1/2$^+$	(E2)	4.68×10^{-4}	α(K)=0.0001442 *21*; α(L)=1.565×10^{-5} *22*; α(M)=2.71×10^{-6} *4*; α(N+..)=0.000306 *5* α(N)=3.86×10^{-7} *6*; α(O)=2.76×10^{-8} *4*; α(IPF)=0.000305 *5*
2057.3 *5*	5.2 *9*	2057.3	(5/2$^+$)	0.0	1/2$^+$			
2743.1 *4*	36 *3*	2742.97	(1/2,3/2)	0.0	1/2$^+$			

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^{97}Y β^- decay (3.75 s) 1976MoZC (continued)

$\gamma(^{97}Zr)$ (continued)

E_γ[†]	I_γ[†@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[&]	Comments
3287.6 *4*	100 *3*	3287.65	(3/2$^-$)	0.0	1/2$^+$	[E1]	1.41×10^{-3}	α(K)=3.86×10^{-5} *6*; α(L)=4.13×10^{-6} *6*; α(M)=7.14×10^{-7} *10*; α(N+..)=0.001364 *20* α(N)=1.017×10^{-7} *15*; α(O)=7.32×10^{-9} *11*; α(IPF)=0.001364 *20*
3401.3 *4*	78 *4*	3401.4	(3/2$^-$)	0.0	1/2$^+$	[E1]	1.46×10^{-3}	α(K)=3.69×10^{-5} *6*; α(L)=3.94×10^{-6} *6*; α(M)=6.82×10^{-7} *10*; α(N+..)=0.001421 *20* α(N)=9.72×10^{-8} *14*; α(O)=6.99×10^{-9} *10*; α(IPF)=0.001421 *20*
3549.5 *4*	17.2 *10*	3549.6	(1/2,3/2)	0.0	1/2$^+$			

[†] ΔE and $\Delta I\gamma$ are from 1976SaYV where available, otherwise estimated by evaluator based on uncertainties given by 1976SaYV for similar energies and intensities (one exception, 189.6γ, is documented In comments).
[‡] From Adopted Gammas.
[#] From 1979Bo26.
[@] For absolute intensity per 100 decays, multiply by 0.181 *18*.
[&] 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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Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 decays through this branch