

$^{95}\text{Y} \beta^-$ decay 1983Ni09,1973Ca26

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	S. K. Basu, G. Mukherjee, A. A. Sonzogni		NDS 111, 2555 (2010)	30-Jun-2009

Parent: ^{95}Y : $E=0.0$; $J^\pi=1/2^-$; $T_{1/2}=10.3$ min I ; $Q(\beta^-)=4450$ 7; $\% \beta^-$ decay=100.0

1973Ca26: measured γ 's and $\gamma(t)$ (Ge(Li)) and $\gamma\gamma$ -coin (NaI).

1983Ni09: measured γ 's (Ge(Li)) and $\%I\gamma(953\gamma)$ ($4\pi\beta$ -anthracene, Ge(Li)). Decay followed for $\approx 10 T_{1/2}$'s.

The decay scheme is a composite of those proposed by 1983Ni09 and 1973Ca26.

 ^{95}Zr Levels

E(level)	J^π †	$T_{1/2}$	Comments
0.0	$5/2^+$	64.032 d 6	$T_{1/2}$: from Adopted Levels. J^π : from first-forbidden unique shape of β -spectra from $1/2^-$ supported by shell model systematics.
953.86 12	$1/2^+$		
1323.75 12	$3/2^+, 5/2^+$		
1618.18 19	$(3/2)^+$		
1721.51 21	$(5/2)^+$		
1892.80 14			
1903.92 20	$1/2^{(+)}, 3/2, 5/2^+$		
1940.21 20	$1/2^{(+)}, 3/2, 5/2^+$		
1955.92 13	$5/2^{(+)}$		
2253.6 3	$(1/2^+, 3/2, 5/2^+)$		
2372.17 16	$3/2^+$		
3129.49 16	$1/2^-, 3/2^-$		
3249.15 17	$(3/2)^-$		
3451.05 20	$1/2^{(+)}, 3/2$		
3575.78 18	$(3/2)^-$		
3586.21 24	$1/2^-, 3/2^-$		
3684.83 22	$1/2^-, 3/2^-$		
3887.0 5	$1/2^{(+)}, 3/2$		
3926.1 20	$1/2^{(+)}, 3/2$		
4070.4 4	$(3/2)^-$		

† From the Adopted Levels.

 β^- radiations

$\langle E_\beta \rangle = 1.52$ MeV 7 (1982A101. Si(Li), Ge(Li)) is in fair agreement 1429 keV 8 from the present decay scheme.

See 1973Jo02 for β strength function deduced from total γ -ray absorption method.

E(decay)	E(level)	$I\beta^{-\ddagger}$	Log ft	Comments
(380 7)	4070.4	0.20 5	5.2 2	av $E\beta=104$ 4
(524 7)	3926.1	0.016 8	6.8 +3-2	av $E\beta=154$ 4
(563 7)	3887.0	0.022 12	6.7 +4-2	av $E\beta=169$ 4
(765 7)	3684.83	0.62 7	5.78 5	av $E\beta=246$ 4
(864 7)	3586.21	5.3 5	5.05 5	av $E\beta=286$ 4
(874 7)	3575.78	7.4 6	4.92 4	av $E\beta=290$ 4
(999 7)	3451.05	0.97 11	6.02 6	av $E\beta=341$ 5
(1201 7)	3249.15	3.54 24	5.77 4	av $E\beta=427$ 5
(1321 7)	3129.49	9.7 5	5.50 3	av $E\beta=478$ 5
(2078 7)	2372.17	3.79 22	6.70 3	av $E\beta=819$ 5

Continued on next page (footnotes at end of table)

$^{95}\text{Y} \beta^-$ decay **1983Ni09,1973Ca26 (continued)** β^- radiations (continued)

E(decay)	E(level)	$I\beta^{\ddagger}$	Log ft	Comments
(2196 [#] 7)	2253.6	0.47 9	7.71 [†] 9	av $E\beta=874$ 5
(2494 [#] 7)	1955.92	≤ 0.06	$\geq 8.8^{\dagger}$	av $E\beta=1013$ 5
(2510 7)	1940.21	0.48 24	7.9 [†] +3-1	av $E\beta=1020$ 5
(2546 7)	1903.92	0.18 10	8.4 [†] +4-2	av $E\beta=1037$ 5
(2557 [#] 7)	1892.80	0.05	$\geq 8.4^{\dagger}$	av $E\beta=1042$ 5
(2728 [#] 7)	1721.51	≤ 0.04	$\geq 9.2^{\dagger}$	av $E\beta=1122$ 5
(2832 7)	1618.18	0.96 13	7.87 [†] 6	av $E\beta=1171$ 5
(3126 7)	1323.75	0.9 3	8.1 [†] 2	av $E\beta=1310$ 5
(3496 7)	953.86	1.9 5	8.0 [†] 2	av $E\beta=1486$ 5
4445 5	0.0	64.0 17	8.61 ^{1u} 2	av $E\beta=1936$ 5

E(decay): from **1980De02**.Log ft : spectrum shape is first-forbidden unique (**1980De02**).[†] $\log f^{1u} \geq 8.5$.[‡] Absolute intensity per 100 decays.[#] Existence of this branch is questionable. $\gamma(^{95}\text{Zr})$ I γ normalization: From %I γ (954 γ)=15.8 7.Coincidence data are from **1973Ca26**.

E Adopted	TVUnweighted 1983Ni09	averages of the following E_{γ} 's, 1973Ca26	except Adopted	as noted: 1983Ni09	1973Ca26	Adopted
1983Ni09	197 3Ca26					
396.2 6	395.6 3	396.8 3	1293.6 4	1293.3 3	1294.0 5	1855.2 8
1854.4 3	1856.0 8					
432.0 4	431.7 3	432.4 2	1309.9 6	1309.3 3	1310.5 5	1904.0 5
1903.6 3	1904.5 8					
569.1 1	569.0 3	569.2 4	1324.0 3	1323.7 1	1324.3 3	1940.3 5
1940.0 3	1940.6 5					
580.3 3	580.0 3	580.5 4	1356.8 4	1356.4 3	1357.2 5	2175.6 4
2175.2 3	2176.0 5					
632.3 2	632.1 3	632.5 3	1408.2 13	1406.9 3	1409.5 8	2295.5 4
2295.1 3	2295.9 6					
954.0 2	953.8 1	954.2 2	1418.4 4	1418.1 3	1418.8 5	2372.5 8
2371.7 3	2373.3 8					
1002.1 1	1002.0 4	1002.2 3	1511.5 4	1511.1 3	1511.9 5	2632.4 7
2631.7 3	2633.0 8					
1048.4 2	1048.2 3	1048.5 4	1631.0 8	1630.3 3	1631.8 5	3451.4 7
3450.7 5	3452.0 12					
1173.8 3	1173.5 3	1174.0 4	1683.0 7	1682.3 3	1683.7 5	3926.0
20	3928.0 5	3924 2				
1213.9 4	1214.2 5	1213.5 5	1805.6 3	1805.3 3	1805.9 5	
E_{γ}	$I_{\gamma}^{\dagger a}$	$E_i(\text{level})$	J_i^{π}	E_f	J_f^{π}	Comments
396.2 ^c 6	1.82 26	1721.51	(5/2) ⁺	1323.75	3/2 ⁺ , 5/2 ⁺	Unplaced by 1983Ni09 . Placement from 1973Ca26 .
432.0 4	10.4 6	2372.17	3/2 ⁺	1940.21	1/2 ⁽⁺⁾ , 3/2 ⁺ , 5/2 ⁺	
555.5 [‡] 3	3.17 36	3684.83	1/2 ⁻ , 3/2 ⁻	3129.49	1/2 ⁻ , 3/2 ⁻	
569.1 1	1.26 38	1892.80		1323.75	3/2 ⁺ , 5/2 ⁺	
580.25 25	1.43 28	1903.92	1/2 ⁽⁺⁾ , 3/2 ⁺ , 5/2 ⁺	1323.75	3/2 ⁺ , 5/2 ⁺	
632.3 2	1.66 15	1955.92	5/2 ⁽⁺⁾	1323.75	3/2 ⁺ , 5/2 ⁺	

954.00	20	100	953.86	1/2 ⁺	0.0	5/2 ⁺	<i>%I_γ</i> : Taken as 15.9% 7 (Ge(Li)) assuming <i>%I_γ</i> (⁹⁵ Zr 757γ)=54.7 4 for current value of 54.46% 10. Others: 9% 2 (1967Va03. 4πγ, NaI), 13.0 10 (13.2% 10 (1973Ca26. Ge(Li),
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⁹⁵Y β⁻ decay **1983Ni09,1973Ca26 (continued)**

γ(⁹⁵Zr) (continued)

E _γ	I _γ ^{†a}	E _i (level)	J _i ^π	E _f	J _f ^π	Comments
						assuming %Iγ(⁹⁵ Zr 724γ)=44.7 7 (1969Fo01) revised using current value of 44.17% 9), 19% 2 (1975Ca12), and 11.1% 22 (1983Ni09).
1002.1 1	1.35 18	1955.92	5/2(+)	953.86	1/2+	
1048.35 15	5.80 35	2372.17	3/2+	1323.75	3/2+,5/2+	
1173.75 25	3.94 39	3129.49	1/2-,3/2-	1955.92	5/2(+)	
1213.85 35	0.27 10	3586.21	1/2-,3/2-	2372.17	3/2+	
1225.6 [‡] 3	0.56 18	3129.49	1/2-,3/2-	1903.92	1/2(+),3/2,5/2+	
^x 1272.8 3	0.9 4					
1293.6 4	1.55 32	3249.15	(3/2)-	1955.92	5/2(+)	
1309.9 6	0.85 31	3249.15	(3/2)-	1940.21	1/2(+),3/2,5/2+	
1324.0 3	31.1 14	1323.75	3/2+,5/2+	0.0	5/2+	
1356.8 4	3.28 36	3249.15	(3/2)-	1892.80		
1408.2 13	0.86 23	3129.49	1/2-,3/2-	1721.51	(5/2)+	
1418.4 4	2.81 28	2372.17	3/2+	953.86	1/2+	
^x 1507.6 3	1.77 7					
1511.5 4	1.77 8	3129.49	1/2-,3/2-	1618.18	(3/2)+	
1527.0 [‡] 3	0.33 8	3249.15	(3/2)-	1721.51	(5/2)+	
1617.9 [#] 3	9.3 7	1618.18	(3/2)+	0.0	5/2+	
1631.0 8	0.58 23	3586.21	1/2-,3/2-	1955.92	5/2(+)	Placed as deexciting the 3250 state by 1973Ca26. Alternate placement from 1983Ni09.
1635.4 [‡] 3	0.8 5	3575.78	(3/2)-	1940.21	1/2(+),3/2,5/2+	
1683.0 ^b 7	1.82 ^b 19	3575.78	(3/2)-	1892.80		
1683.0 ^b 7	1.82 ^b 19	3586.21	1/2-,3/2-	1903.92	1/2(+),3/2,5/2+	Placed only as deexciting the 3576 by 1973Ca26.
1721.4 [#] 3	2.00 28	1721.51	(5/2)+	0.0	5/2+	
1805.6 3	8.9 8	3129.49	1/2-,3/2-	1323.75	3/2+,5/2+	
^x 1813.5 8	1.1					
1832.6 [‡] 3	0.85 23	3451.05	1/2(+),3/2	1618.18	(3/2)+	
1855.2 8	1.4 7	3575.78	(3/2)-	1721.51	(5/2)+	
1892.5 [#] 3	4.13 54	1892.80		0.0	5/2+	
1904.0 5	2.06 48	1903.92	1/2(+),3/2,5/2+	0.0	5/2+	
1925.2 [#] 3	3.79 54	3249.15	(3/2)-	1323.75	3/2+,5/2+	
1940.3 3	15.1 12	1940.21	1/2(+),3/2,5/2+	0.0	5/2+	
1955.8 [#] 3	2.65 48	1955.92	5/2(+)	0.0	5/2+	
1967.9 [‡] 3	0.64 16	3586.21	1/2-,3/2-	1618.18	(3/2)+	
2127.4 [‡] 3	0.6 3	3451.05	1/2(+),3/2	1323.75	3/2+,5/2+	
2175.6 4	44.3 13	3129.49	1/2-,3/2-	953.86	1/2+	
2252.0 ^{#@} 3	0.84 28	3575.78	(3/2)-	1323.75	3/2+,5/2+	
2253.6 ^{#@&c} 3	2.96 54	2253.6	(1/2+,3/2,5/2+)	0.0	5/2+	
2295.5 4	6.78 66	3249.15	(3/2)-	953.86	1/2+	
^x 2364.8 3	0.59 15					
2372.5 8	5.08 47	2372.17	3/2+	0.0	5/2+	
2497.2 [#] 3	0.41 9	3451.05	1/2(+),3/2	953.86	1/2+	
2621.8 [‡] 3	1.46 28	3575.78	(3/2)-	953.86	1/2+	
2632.4 7	30.1 22	3586.21	1/2-,3/2-	953.86	1/2+	
2730.7 [‡] 3	0.59 18	3684.83	1/2-,3/2-	953.86	1/2+	
2747.0 [‡] 5	0.97 29	4070.4	(3/2)-	1323.75	3/2+,5/2+	
^x 2760.3 5	1.08 25					

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^{95}Y β^- decay **1983Ni09,1973Ca26 (continued)** $\gamma(^{95}\text{Zr})$ (continued)

E_γ	I_γ † ^a	$E_i(\text{level})$	J_i^π	E_f	J_f^π	E_γ	I_γ † ^a	$E_i(\text{level})$	J_i^π	E_f	J_f^π
3129.1 [#] 5	3.70 25	3129.49	1/2 ⁻ , 3/2 ⁻	0.0	5/2 ⁺	3684.9 [#] 5	0.16 8	3684.83	1/2 ⁻ , 3/2 ⁻	0.0	5/2 ⁺
3249.0 [#] 5	5.70 46	3249.15	(3/2) ⁻	0.0	5/2 ⁺	3886.9 [#] 5	0.14 7	3887.0	1/2 ⁽⁺⁾ , 3/2	0.0	5/2 ⁺
3451.4 7	4.22 48	3451.05	1/2 ⁽⁺⁾ , 3/2	0.0	5/2 ⁺	3926.0 20	0.10 5	3926.1	1/2 ⁽⁺⁾ , 3/2	0.0	5/2 ⁺
3576.0 [#] 5	40.4 29	3575.78	(3/2) ⁻	0.0	5/2 ⁺	4070.0 [#] 5	0.30 10	4070.4	(3/2) ⁻	0.0	5/2 ⁺

† From 1983Ni09, except as noted.

‡ From 1983Ni09. Not observed by 1973Ca26.

From 1983Ni09. Others: 1618.5 8, 1721.4 6, 1892.8 5, 1925.5 8, 1955.9 8, 2498.1 10, 2760.0 10, 3129.8 10, 3250.2 10, 3577.0 10, 3684.0 15, 3886.9 5, and 4068 3 from 1973Ca26.

@ Unresolved by 1973Ca26.

& Placement suggested by evaluator based on (n, γ) E=thermal.

^a For absolute intensity per 100 decays, multiply by 0.158 7.

^b Multiply placed with intensity suitably divided.

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

^x γ ray not placed in level scheme.

95Y β⁻ decay 1983Ni09,1973Ca26

Decay Scheme

Intensities: I_γ(γ+ce) per 100 parent decays
 @ Multiplied placed: intensity suitably divided

Legend

- I_γ < 2% × I_γ^{max}
- I_γ < 10% × I_γ^{max}
- I_γ > 10% × I_γ^{max}
- - - γ Decay (Uncertain)
- Coincidence

1/2⁻ 0.0 10.3 min T
 Q_{β⁻} = 4450.7 keV
 %β⁻ = 100
 95Y₅₆

