

^{84}Y ε decay (4.6 s) [1976Ia01](#),[1981DeZD](#),[2000Do10](#)

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	B. Singh, A. Negret, and K. Zuber		NDS 110,2815 (2009)	30-Sep-2009

Parent: ^{84}Y : $E=67.0$ 2; $J^\pi=1^+$; $T_{1/2}=4.6$ s 2; $Q(\varepsilon)=6757$ 5; $\% \varepsilon + \% \beta^+$ decay=100.0

^{84}Y -E, J^π , $T_{1/2}$: From Adopted Levels for ^{84}Y .

^{84}Y -Q(ε): from [2009AuZZ](#). Other: 6490 90 ([2003Au03](#)).

[1976Ia01](#): ^{84}Y produced by $^{84}\text{Sr}(p,n)$ reaction. Measured E_γ , I_γ , $T_{1/2}$.

[1981Li12](#): measured $\beta\gamma$ coin, deduced Q value.

[1981DeZD](#): ^{84}Y produced by decay chain $^{84}\text{Mo} \rightarrow ^{84}\text{Nb} \rightarrow ^{84}\text{Zr} \rightarrow ^{84}\text{Y}$ produced in reaction $^{54}\text{Fe}(^{32}\text{S},2n)$. Measured γ and β^+ spectra in coincidence with mass. Deduced Q values and relative β feedings.

[1982De36](#) (same group as [1981DeZD](#)): ^{84}Y isotope obtained from the decay of ^{84}Zr produced in a $^{54}\text{Fe}+^{32}\text{S}$ reaction. Measured $\beta\gamma$ coin, deduced Q value.

[2000Do10](#): ^{84}Y produced by decay of ^{84}Zr produced in $^{58}\text{Ni}(^{32}\text{S},4p2n)$ reaction. Measured E_γ , I_γ , $\gamma\gamma$ using 5 HPGe detectors and a low energy photon spectrometer. The authors claim to have observed 50 γ rays from decay of 39.5-min and 4.6-s activities of ^{84}Y , but details of this study are not available either in the (conference) paper or according to an e-mail reply from the first author on May 24, 2003.

The decay scheme is considered by the evaluators as incomplete.

 ^{84}Sr Levels

E(level) [†]	J^π [‡]	$T_{1/2}$
0	0 ⁺	stable
793.0 3	2 ⁺	
1454	2 ⁺	
1504	0 ⁺	
2072	0 ⁺	

[†] From [2000Do10](#) above the first 2⁺ level.

[‡] From Adopted Levels.

 ε, β^+ radiations

E(decay)	E(level)	$I\beta^+$ [‡]	$I\varepsilon$ [‡]	Log ft	$I(\varepsilon + \beta^+)$ ^{†‡}	Comments
(6031 5)	793.0	30 10	0.42 14	4.6 2	30 10	av $E\beta=2317.9$ 25; $\varepsilon K=0.01236$ 4; $\varepsilon L=0.001442$ 5; $\varepsilon M+=0.0003142$ 1 $Q(\varepsilon)=6475$ 124 from $\beta(793\gamma)$ (1982De36); 6499 135 from (4684 135 β)(793 γ) coin (1981Li12). $Q(\varepsilon)=6015$ 100 from (4200 100 β)(793 γ) coin (1981FrZY) disagrees with measurements and adopted Q value from mass evaluation. $I(\varepsilon + \beta^+)$: Other: 35 10 (1976Ia01) from intensity of annihilation radiation.
(6824 5)	0	69 10	0.64 9	4.5 1	70 10	av $E\beta=2703.1$ 25; $\varepsilon K=0.008047$ 21; $\varepsilon L=0.0009381$ 2; $\varepsilon M+=0.0002044$ 6 $I(\varepsilon + \beta^+)$: other: 65 10 (1976Ia01) from intensity of annihilation radiation.

[†] From [1981DeZD](#).

[‡] Absolute intensity per 100 decays.

^{84}Y ε decay (4.6 s) 1976Ia01,1981DeZD,2000Do10 (continued) $\gamma(^{84}\text{Sr})$

I_γ normalization: From $I_\gamma(793.0)/I_\gamma(\gamma^\pm)$ (1976Ia01). Other: 0.30 *10* from analysis of β^+ spectra (1981DeZD).

$E_\gamma^\dagger$	$I_\gamma^\ddagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	$\alpha^\#$	Comments
617		2072	0^+	1454	2^+			
660		1454	2^+	793.0	2^+			
711		1504	0^+	793.0	2^+			
793.0 3	100	793.0	2^+	0	0^+	E2	0.0010	$\alpha(\text{K})=0.000899$ 13; $\alpha(\text{L})=9.91\times 10^{-5}$ 14; $\alpha(\text{M})=1.663\times 10^{-5}$ 24; $\alpha(\text{O})=1.327\times 10^{-7}$ 19; $\alpha(\text{N}+..)=2.21\times 10^{-6}$ E_γ : from 1976Ia01.
1279		2072	0^+	793.0	2^+			
1454		1454	2^+	0	0^+			

† From 2000Do10 unless otherwise mentioned.

‡ For absolute intensity per 100 decays, multiply by ≈ 0.30 .

$^\#$ Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ -ray energies, assigned multiplicities, and mixing ratios, unless otherwise specified.

 ^{84}Y ε decay (4.6 s) 1976Ia01,1981DeZD,2000Do10Decay Scheme

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

