

$^{89}\text{Zr}$   $\epsilon$  decay (4.161 min) 1969Ro02,1964Va03,1971Ar18

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 114, 1 (2013)	20-Oct-2012

Parent:  $^{89}\text{Zr}$ : E=587.83 9;  $J^\pi=1/2^-$ ;  $T_{1/2}=4.161$  min 10;  $Q(\epsilon)=2833.0$  28;  $\% \epsilon + \% \beta^+$  decay=6.23 12

$^{89}\text{Zr}$ -Q( $\epsilon$ ): From 2011AuZZ. Other: 2932.9 28 (2003Au03).

$^{89}\text{Zr}$ - $\% \epsilon + \% \beta^+$  decay: from  $I_\gamma(1507\gamma)/I_\gamma(588\gamma)$  in  $^{89}\text{Zr}=0.0675$  7 (1964Va03) and  $I_{\gamma\pm}/I(588\gamma)=0.0332$  20 (1964Va03),  $\alpha(588\gamma)$  in  $^{89}\text{Zr}=0.0476$  and  $I_\epsilon/I\beta^+(\text{theory})=0.145$  2 (for g.s.), 3.48 5 (for 1507 level).

1969Ro02, 1971Ar18: measured  $\gamma$ ,  $T_{1/2}$ .

1964Va03: measured  $\gamma$ ,  $\epsilon/\beta^+$ .

Others:

$T_{1/2}$  and assignment: 1992KaZM, 1953Sh48, 1953Ka11, 1940Du05.

$\beta^+, \gamma$ : 1953Sh48.

Energy balance: total decay energy of 214 keV 5 deduced (using RADLIST code) from proposed decay scheme is in agreement with the expected value of 213 keV 4, indicating that the decay scheme is complete.

 $^{89}\text{Y}$  Levels

E(level)	$J^\pi$ †
0	$1/2^-$
1507.4 5	$3/2^-$

† From Adopted Levels.

 $\epsilon, \beta^+$  radiations

E(decay)	E(level)	$I\beta^+$ †	$I\epsilon$ †	Log $ft$	$I(\epsilon + \beta^+)$ †	Comments
(1913 3)	1507.4	1.36 19	4.70 12	4.31 2	6.06 15	av $E\beta=391.0$ 11; $\epsilon K=0.6785$ 15; $\epsilon L=0.08067$ 18; $\epsilon M+=0.01788$ 4
(3421 3)	0	0.17 12	0.024 18	7.1 4	0.19 14	av $E\beta=1074.0$ 12; $\epsilon K=0.1110$ 3; $\epsilon L=0.01311$ 4; $\epsilon M+=0.002902$ 9

† Absolute intensity per 100 decays.

 $\gamma(^{89}\text{Y})$ 

$I_\gamma$  normalization: from  $I_\gamma(1507\gamma)/I_\gamma(588\gamma)$  in  $^{89}\text{Zr}=0.0675$  7 (1964Va03) and  $I_{\gamma\pm}/I(588\gamma)=0.0332$  20 (1964Va03),  $\alpha(588\gamma)$  in  $^{89}\text{Zr}=0.0476$  and  $I_\epsilon/I\beta^+(\text{theory})=0.145$  2 (for g.s.), 3.48 5 (for 1507 level).

$E_\gamma$	$I_\gamma$ †	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Comments
1507.4 5	6.75 7	1507.4	$3/2^-$	0	$1/2^-$	$E_\gamma$ : from 1969Ro02. $I_\gamma$ : from 1964Va03, relative to $I_\gamma(588\gamma)$ in $^{89}\text{Zr}=100$ . Others: 7.1 4 (1971Ar18), 7.2 8 (1969Ro02), 7.7 18 (1953Sh48).

† For absolute intensity per 100 decays, multiply by 0.90 3.

$^{89}\text{Zr}$   $\epsilon$  decay (4.161 min) 1969Ro02,1964Va03,1971Ar18Decay SchemeIntensities:  $I_{(\gamma+ce)}$  per 100 parent decays