^{80}Y ε decay (4.8 s) 1999Do01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 105, 223 (2005)	22-Jun-2005

Parent: ^{80}Y: E=228.5 *1*; J^π=(1$^-$); $T_{1/2}$=4.8 s *3*; Q(ε)=9.09×10^3 *18*; %ε+%β^+ decay=19 *2*

1999Do01 (also 2000Do10): ^{80}Y source produced by ^{24}Mg(^{58}Ni,pn) at 190 MeV and separated by Argonne fragment mass analyzer (FMA). Measured Eγ, Iγ, $\gamma\gamma$, $\beta\gamma$, time-γ and β-gated time-γ using three Compton-suppressed HPGe detectors, a low-energy photon (LEPS) spectrometer. Positrons emitted in the decay of ^{80}Y were detected with thin plastic scintillators placed in front of Ge detectors.

2001No07: Measured T1/2 for neutral and fully-ionized ^{80}Y.

^{80}Sr Levels

E(level)	J^π †	Comments
0.0	0$^+$	
385.85 *4*	2$^+$	
980.7?	4$^+$	E(level): population in this decay is uncertain.
1142.39 *9*	(2$^+$)	
2492.53 *13*	(0,1,2)	J^π: (1,2)$^-$ (1999Do01).

† From Adopted Levels.

ε,β^+ radiations

E(decay)	E(level)	Iβ^+ ‡	Iε‡	Log *ft*	I(ε+β^+)†‡	Comments
(6.83×10^3# *18*)	2492.53	0.8		6.4	0.8	av Eβ=2704 *88*; εK=0.0080 *8*; εL=0.00094 *9*; εM+=0.000204 *20* I(ε+β^+): assumed that this level is fed in the decay of 4.8-s isomer only.
(8.18×10^3# *18*)	1142.39	0.4		7.2	0.4	av Eβ=3364 *89*; εK=0.0044 *4*; εL=0.00051 *4*; εM+=0.000110 *9*
(8.93×10^3# *18*)	385.85	<12	<0.04	>5.9	<12	av Eβ=3735 *89*; εK=0.00324 *23*; εL=0.00038 *3*; εM+=8.2×10^{-5} *6*
(9.32×10^3# *18*)	0.0	<15	<0.05	>5.9	<15	av Eβ=3925 *89*; εK=0.00282 *19*; εL=0.000328 *22*; εM+=7.1×10^{-5} *5*

† Total feeding to all the states should be 19% 2. Upper limits of feedings to g.s. and 385.8 level are from log *ft*>5.9 for first-forbidden β transitions. The actual feedings to both these states are expected to be much lower.

‡ For absolute intensity per 100 decays, multiply by 1.01 *11*.

Existence of this branch is questionable.

γ(^{80}Sr)

Iγ normalization: I(γ+ce)(386γ)=19 *2* per 100 decays of 4.8-s isomer of ^{80}Y.

Eγ	Iγ‡	E$_i$(level)	J_i^π	E$_f$	J_f^π	Comments
385.9 *1*	≈20	385.85	2$^+$	0.0	0$^+$	Iγ: assuming≈80 units belong to the decay of 30.5-s activity (evaluator).
x428.4	≈1†					Eγ: this weak γ ray is different from 428.9γ in the decay of 30.1-s activity.
594.8 *1*	≈1†	980.7?	4$^+$	385.85	2$^+$	Iγ: weak in this decay.

Continued on next page (footnotes at end of table)

^{80}Y ε decay (4.8 s) 1999Do01 (continued)

$\gamma(^{80}Sr)$ (continued)

E_γ	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π
756.2 *1*	≈2[†]	1142.39	(2^+)	385.85	2^+
1142.1 *1*	≈1[†]	1142.39	(2^+)	0.0	0^+
1350.4 *1*	1.2 *1*	2492.53	(0,1,2)	1142.39	(2^+)

[†] Estimated (evaluator) from figure 5 of 1999Do01.
[‡] For absolute intensity per 100 decays, multiply by 1.01 *11*.
[x] γ ray not placed in level scheme.

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Decay Scheme

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

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$