^{139}Sm ε decay (10.7 s) 1983Al06,1975Va14

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	P. K. Joshi, B. Singh, S. Singh, A. K. Jain	NDS 138, 1 (2016)	15-Oct-2016

Parent: ^{139}Sm: E=457.38 *23*; J^π=11/2$^-$; $T_{1/2}$=10.7 s *6*; Q(ε)=5120 *17*; %ε+%$β^+$ decay=6.3 *5*
^{139}Sm-Q(ε): From 2012Wa38.
^{139}Sm-%ε+%$β^+$ decay: from Iγ(190.1γ(^{139}Sm)+188.7γ)=100 and Iγ(188.7γ)/Iγ(190.1γ)=0.068 *5* (1975Va14).
1975Va14 (also 1973VaYZ): measured Eγ and γ(t), βγ-coincidences (scin,Ge(Li)), and ce.
Other: 1987BrZQ.
All data are from 1975Va14, except as noted.

^{139}Pm Levels

E(level)	J^π †	$T_{1/2}$ †	Comments
0.0	(5/2)$^+$	4.15 min *5*	%ε+%$β^+$=100
188.7 *3*	(11/2)$^-$	180 ms *20*	%IT=100; %ε+%$β^+$<0.05

† From Adopted Levels.

ε,$β^+$ radiations

E(decay)	E(level)	Iβ$^+$ †	Iε†	Log *ft*	I(ε+β$^+$)†	Comments
(5389 *17*)	188.7	5.3 *4*	1.0 *1*	5.32 *6*	6.3 *5*	av Eβ=1997.3 *81*; εK=0.1388 *14*; εL=0.01963 *19*; εM+=0.00562 *6* av Eβ=1998.2 *95*; εK=0.1386 *16*; εL=0.01960 *23*; εM+=0.00561 *7* E(decay): 5760 *180* from $E_{β^+}$=4740 *+180−130* (1983Al06. Ge(HP), Ge(Li)). I(ε+β$^+$): estimated from observation that no γ′s other than the 189γ were observed. Feeding of 189 level by possible unknown higher levels estimated to be less than one-half of the β-decay of 10.7-s ε decay because no other γ′s than 189γ observed in 10.7-s ε decay.

† Absolute intensity per 100 decays.

γ(^{139}Pm)

Eγ	Iγ †	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α‡	I(γ+ce) †	Comments
188.7 *3*	40.1	188.7	(11/2)$^-$	0.0	(5/2)$^+$	E3	1.494 *24*	100	ce(K)/(γ+ce)=0.268 *4*; ce(L)/(γ+ce)=0.256 *4*; ce(M)/(γ+ce)=0.0603 *11* ce(N)/(γ+ce)=0.01319 *25*; ce(O)/(γ+ce)=0.00168 *4*; ce(P)/(γ+ce)=1.351×10^{-5} *24* α(K)=0.668 *10*; α(L)=0.638 *11*; α(M)=0.1503 *25*; α(N)=0.0329 *6*; α(O)=0.00420 *7* Iγ: from I(γ+ce)=100 and α=1.494. Mult.: from K/L=1.02 *7*.

† For absolute intensity per 100 decays, multiply by 0.063 *5*.
‡ 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 parent decays