^{145}Sm ε decay   **1977Ro29,1983Vo10**

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 110, 507 (2009)	1-Oct-2008

Parent: ^{145}Sm: E=0.0; J^π=7/2$^-$; T$_{1/2}$=340 d *3*; Q(ε)=620 *3*; %ε decay=100.0
Others: 1970Be65, 1981BeYJ, 1988Ta03.

^{145}Pm Levels

E(level)	J^π	T$_{1/2}$	Comments
0.0	5/2$^+$		
61.22 *2*	7/2$^+$	2.64 ns *6*	T$_{1/2}$: weighted average of 2.69 ns *9* (1967Ba22), 2.61 ns *10* (1967My01), 2.6 ns *2* (1959Br65), 2.7 ns *2* (1962Be31).
492.55 *7*	3/2$^+$		

ε radiations

For internal bremsstrahlung spectra see 1959Br65, 1977Ro29.
I(K x ray)=133.3% 19 (1991Pl01). Other: 134% *4* (1991ChZZ).
I(ce)=81.1% *21* (1991ChZZ).

E(decay)	E(level)	I$\varepsilon^{\dagger\ddagger}$	Log ft	Comments
(127 *3*)	492.55	0.0033 *2*	9.45^{1u} *5*	εK=0.332 *17*; εL=0.491 *12*; εM+=0.177 *5* Iε: εK(exp)=0.27 *3* (1971My01); ε(L+M+N)/εK(exp)=0.6 *1* (1959Br65).
(559 *3*)	61.22	91.4 *8*	7.79 *1*	εK=0.8281; εL=0.1331; εM+=0.03881 Iε: εK(exp)=0.828 *20*, εL(exp)/εK(exp)=0.162 *18* (1981BeYJ); ε(L+M+N)/εK(exp)=0.20 *2* (1959Br65).
(620 *3*)	0.0	8.6 *8*	8.91 *4*	εK=0.8302; εL=0.1315; εM+=0.03827

† εK(exp)(61)=0.828 *20*, εK(exp)(61)/εL(exp)(61)=0.162 *18* (1981BeYJ); εK(exp)(g.s.)/εK(exp)(61)=0.08 *2*,
ε(L+M+N)(61)/εK(exp)(61)=0.20 *2*, ε(L+M+N)(493)/εK(exp)(493)=0.6 *1* (1959Br65); εK(exp)(493)/εK(exp)(61)=0.428 *29*
(1983Vo10); see also 1991Pl01.
‡ Absolute intensity per 100 decays.

$\gamma(^{145}$Pm)

Iγ normalization: I(61.1γ)=12.15% *10* (1991Pl01).
Measured KLL Auger spectrum (2000KoZR), see reference for KLL component energy, intensities. KL$_1$L$_2$ Auger transition
intensity ratio (^{3}P$_0$/^{1}P$_1$)=0.45 *1* (2000KoZQ) agrees well with theoretical value (2000KoZQ). Deduced K atomic level width from
61.2γ ce line (2000KoZO).

E$_\gamma^{\#}$	I$_\gamma^{\ddagger@}$	E$_i$(level)	J_i^π	E$_f$	J_f^π	Mult.	δ	$\alpha^\dagger$	Comments
61.2265 *17*	100	61.22	7/2$^+$	0.0	5/2$^+$	M1+(E2)	<0.045	6.39	α(K)=5.40 *8*; α(L)=0.774 *14*; α(M)=0.165 *3*; α(N+..)=0.0432 *8* α(N)=0.0372 *7*; α(O)=0.00560 *9*; α(P)=0.000349 *5* α(K)=5.5225 *17*; α(L)=0.786 *9*; α(M)=0.1674 *19*; α(N+..)=0.0472 *5* B(M1)(W.u.)>0.0048; B(E2)(W.u.)<1.5

^{145}Sm ε decay   1977Ro29,1983Vo10 (continued)

$\gamma(^{145}$Pm) (continued)

E_γ[#]	I_γ[‡@]	E_i(level)	J_i^π	E_f	J_f^π	Comments
						E_γ: Measured E(ce(K))(2000KOZU).
						I_γ: Iγ=12.15% 10 (1991Pl01). Other: 12.2% 2 (1991ChZZ).
						Mult.: α(K)exp=5.3 1, K/L=6.5 4, L/M=5.1 3 (1959Br65); K/L=8.1 8, L/M=4.0 8 (1959Dz06); L1/L2=11.1 12, L1/L3=39 6, L2/L3=3.5 6 (1967Ba22).
431.4 5	0.00043 3	492.55	3/2$^+$	61.22	7/2$^+$	I_γ: I(431γ)/I(492γ)=0.016 1 (1977Ro29). Other:<0.022 (1983Vo10).
492.55 7	0.027 1	492.55	3/2$^+$	0.0	5/2$^+$	E_γ: other: 492.31 15 (1971My01).

   [†] Additional information 1.
   [‡] From 1983Vo10; 1977Ro29 did not observe the 120.8γ reported by 1970Be65.
   [#] From 1983Vo10 except 431γ which is from 1977Ro29.
   [@] For absolute intensity per 100 decays, multiply by 0.1215 10.

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Decay Scheme

Legend

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

I$_\gamma$ < 2%×I$_\gamma^{max}$
I$_\gamma$ < 10%×I$_\gamma^{max}$
I$_\gamma$ > 10%×I$_\gamma^{max}$

%ε=100

7/2$^-$　　　0.0　　340 d *3*

Q$_\varepsilon$=620 *3*

$^{145}_{62}$Sm$_{83}$

Iε　　Log *ft*

492.55 0.00340

431.4 0.000052

3/2$^+$　　　492.55　　　　0.0033　9.45^{1u}

61.2265 M1+(E2) 89.8

7/2$^+$　　　61.22　　2.64 ns *6*　91.4　7.79
5/2$^+$　　　0.0　　　　　　　　8.6　8.91

$^{145}_{61}$Pm$_{84}$