^{147}Pm β^- decay (2.6234 y)

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	N. Nica and B. Singh	NDS 181, 1 (2022)	9-Mar-2022

Parent: ^{147}Pm: E=0.0; $J^\pi=7/2^+$; $T_{1/2}$=2.6234 y *4*; Q(β^-)=224.06 *29*; %β^- decay=100.0

^{147}Pm-E,J^π,$T_{1/2}$: From ^{147}Pm Adopted Levels.

^{147}Pm-Q(β^-): From 2021Wa16.

Measured internal ionization in K-shell per 100 β's: 0.0087 *7* (1977Sc04), 0.0081 *9* (1974Ha12), 0.0098 *8* (1972Ca27), 0.0076 *11* (1971Is05), 0.0093 *14* (1967St36).

^{147}Sm Levels

E(level)[†]	J^π[‡]	$T_{1/2}$[‡]	Comments
0.0	$7/2^-$	1.073×10^{11} y *10*	%α=100
121.223 *12*	$5/2^-$	0.798 ns *17*	
197.298 *11*	$3/2^-$	1.25 ns *4*	

[†] From least-squares fit to Eγ's.
[‡] From Adopted Levels.

β^- radiations

β longitudinal pol studied: 1962Ku07, 1966Va06.

E(decay)	E(level)	Iβ^-[†]	Log *ft*	Comments
(26.8 *3*)	197.298	4.8×10^{-7} *8*	12.01[1u] *8*	av Eβ=6.939 *82*
(102.8 *3*)	121.223	0.00569 *23*	10.599 *18*	av Eβ=26.934 *80* Iβ^-: from 1977Sc04 via β(121γ)-coin. Iγ(121γ)=0.00284 *35* is deduced from %β^- branch=0.0057 *7* in agreement with absolute Iγ(121γ).
224.5 *4*	0.0	99.99	7.4	av Eβ=61.777 *88* av Eβ=60.51 *12* (1965Wh04) calorimeter. Others: 1962Ho07, 1965Po02. E(decay): 224.5 *4* (1966Hs01), 224.3 *13* (1958Ha32), 223.2 *5* (1950La04) spectrometer. Other Eβ endpoint: 227.5 *10* (1977Sc04) shape factor plotted. See also 1949Li23, 1950Ag01, 1956Na21, 1958Mi88, 1963La15, 1964Ho27. Additional information 2.

[†] Absolute intensity per 100 decays.

γ(^{147}Sm)

Iγ normalization: From Iγ(121γ per 100 β^- decays)=0.0000285 *11*, weighted av of 0.0000273 *18* (1970Mo02) and 0.0000293 *14* (1971Mc09).

All γ-ray properties other than Iγ are taken from adopted gammas.

L x-ray intensity=0.039 *4*/100 β's (1972Ca27).

Internal bremsstrahlung intensity=0.015 *3* photons/100 β's (1973HaXY).

Internal bremsstrahlung shape measured: 1971Si02, 1974Ba96.

Continued on next page (footnotes at end of table)

^{147}Pm β^- decay (2.6234 y) (continued)

$\gamma(^{147}Sm)$ (continued)

E_γ[#]	I_γ[@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[‡#]	α[†]	Comments
(76.073 *10*)	4.1×10^{-4} *7*	197.298	3/2$^-$	121.223	5/2$^-$	M1+E2	+0.655 *34*	4.53 *9*	%Iγ=1.17×10^{-8} *20* α(K)=2.91 *5*; α(L)=1.26 *7*; α(M)=0.288 *15* α(N)=0.064 *4*; α(O)=0.0083 *4*; α(P)=0.000170 *4* I_γ: from Iγ(197)=1.2×10^{-2} and Iγ(76γ)/Iγ(197γ)=0.0344 *11* in ^{147}Eu ε decay.
121.220 *17*	100	121.223	5/2$^-$	0.0	7/2$^-$	M1+E2	−0.33 *3*	0.996 *15*	%Iγ=0.00285 *11* α(K)=0.814 *12*; α(L)=0.143 *5*; α(M)=0.0312 *12* α(N)=0.00702 *25*; α(O)=0.00101 *3*; α(P)=5.06×10^{-5} *8* Iγ/100 β′s (semi)=0.00273 *18* (1970Mo02), 0.00293 *14* (1971Mc09), 0.0030 *3* (1973HaXY). Others: 1956La17, 1957St05, 1966Pr11.
197.299 *12*	1.2×10^{-2} *2*	197.298	3/2$^-$	0.0	7/2$^-$	E2		0.218 *3*	%Iγ=3.4×10^{-7} *6* α(K)=0.1565 *22*; α(L)=0.0482 *7*; α(M)=0.01092 *16* α(N)=0.00241 *4*; α(O)=0.000320 *5*; α(P)=7.73×10^{-6} *11* I_γ: from Iγ(197γ)/Iγ(121γ)= 0.00012 *2* (1969Ba33) semi.

† Additional information 3.
‡ Additional information 4.
# From Adopted Gammas.
@ For absolute intensity per 100 decays, multiply by 0.0000285 *11*.

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Decay Scheme

Intensities: I_γ per 100 parent decays