^{151}Sm β^- decay (90 y)   **1981Un02,1980La02,1975Fr01**

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 110, 1 (2009)	20-Nov-2008

Parent: ^{151}Sm: E=0.0; J$^\pi$=5/2$^-$; T$_{1/2}$=90 y *8*; Q(β^-)=76.6 *5*; %β^- decay=100.0

β: 1975Fr01, 1976BeWY, 1959Ac28. Others: 1952Fr31, 1952Wi25, 1950Ag01, 1949Ma05, 1949Ke05.

X-β coincidences: 1975Fr01, 1976BeWY.

$\beta^-\gamma$ coincidences: 1975Fr01.

K-shakeoff probability (measurement): 1981Un02, 1980La02, 1975Fr01, 1971Ca44. Other: 1976BeWY.

Additional information 1.

L-shakeoff probability (measurement): 1981Un02, 1975Fr01.

See 1983Ke07 and 1976Ba65 for some theoretical work on the β^- decay of ^{151}Sm.

γ ray: 1989Di05, 1981Un02, 1980La02, 1975Fr01, 1974HeYW, 1971Ca44. Others: 1976BeWY, 1959Ac28, 1952Wi25, 1950Sc07.

x-ray: 1981Un02, 1980La02, 1975Fr01, 1971Ca44. Other: 1976BeWY.

X-γ coincidences: 1981Un02.

ce: 1959Ac28.

T$_{1/2}$ (^{151}Sm): 1968Re04, 1965Fl02. Others: 1955Me52, 1952Ru10, 1952Ka26, 1950In01, 1949Ke05.

^{151}Eu Levels

E(level)	J$^{\pi\dagger}$
0.0	5/2$^+$
21.543 *3*	7/2$^+$

† See 'Adopted Levels'.

β^- radiations

E(decay)	E(level)	I$\beta^{-\dagger}$	Log ft	Comments
54.2 *7*	21.543	0.91 *6*	9.11 *5*	av Eβ=13.96 *16* E(decay): from 1959Ac28. Other: 1976BeWY. Iβ^-: av of 0.88 *6* (1975Fr01) and 0.94 *6* (1980La02). Other: 1959Ac28. L-shakeoff probability=31×10^{-4} *6* (1981Un02) (from x-γ coin).
75.9 *6*	0.0	99.09 *6*	7.51 *4*	av Eβ=19.68 *16* E(decay): from 1959Ac28. Others: 1952Fr31, 1952Wi25, 1950Ag01, 1949Ma05, 1949Ke05. Iβ^-: from Iβ(21.54 level)−0.91% *6* (1980La02,1975Fr01). K-shakeoff probability=1.59×10^{-6} *13* (1981Un02), 2.4×10^{-6} *3* (1980La02, 1975Fr01), 2.3×10^{-6} *3* (1971Ca44, revised by 1975Fr01 using branching of 0.88% to 21.54 level). L1-shakeoff probability=6.0×10^{-4} *6* (1981Un02). Other: 1975Fr01. L2-shakeoff probability=9.0×10^{-4} *9* (1981Un02). L3-shakeoff probability=15.0×10^{-4} *15* (1981Un02).

† Absolute intensity per 100 decays.

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$\gamma(^{151}$Eu)

Iγ normalization: From Iβ(21.54 level)=0.91% 6 (1980La02, 1975Fr01).

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ	$\alpha^{\ddagger}$	Comments
21.543 *3*	100	21.543	7/2$^+$	0.0	5/2$^+$	M1+E2	0.029 *1*	27.6	α(L)=21.6 *4*; α(M)=4.70 *7*; α(N+..)=1.257 *19*
									α(N)=1.073 *16*; α(O)=0.1678 *25*; α(P)=0.01552 *22*
									E_γ: from 1989Di05. Other: 21.540 *6* (1974HeYW).
									Others: 1959Ac28, 1952Wi25, 1950Sc07.
									Mult.,δ: from 'adopted gammas'.
									α(L)exp=20 *4*, (α(L)exp/(α(M)exp)+α(N)exp)=2.2 *4*,
									α(M)exp/α(N)exp=2.2 *2* (1959Ac28).
									I(K x ray-a)/I(21.54γ)=0.0058 *2* (1971Ca44),
									0.0040 *2* (1981Un02).
									I(K x ray-β)/I(21.54γ)=0.0010 *2* (1981Un02).
									See 1981Un02 for intensities of L-x rays relative to
									21.54γ.

[†] For absolute intensity per 100 decays, multiply by 0.000318 *22*.

[‡] 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

5/2$^-$ 0.0   90 y *8*

Q_{β^-}=76.6 *5*   %β^-=100

$^{151}_{62}$Sm$_{89}$

Iβ^- Log *ft*

0.91   9.11   7/2$^+$ 21.543

21.543 M1+E2 0.91

99.09   7.51   5/2$^+$ 0.0

$^{151}_{63}$Eu$_{88}$