

²⁵⁵Rf α decay 2006He27

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. Morse	NDS 189,111 (2023)	23-Sep-2022

Parent: ²⁵⁵Rf: E=0; J ^{π} =(9/2⁻); T_{1/2}=1.63 s 6; Q(α)=9055 4; % α decay=49 2

²⁵⁵Rf-T_{1/2}: Weighted average of 1.4 s 2 (1985He06), 1.64 s 11 (2001He35), 1.68 s 9 (2006He27), and 1.54 s 19 (2015An05).

²⁵⁵Rf-Q(α): From 2021Wa16.

²⁵⁵Rf-% α decay: Weighted average of 48 7 (1985He06), 55 6 (1997He29), 48 6 (2001He35), and 48 3 (2015An05). NB: 1985He06, 1997He29, and 2001He35 give %SF, in which case it was assumed % α +%SF=100.

2006He27: ²⁵⁵Rf produced by the ²⁰⁷Pb(⁵⁰Ti,2n) reaction at E=4.85 MeV/nucleon. Reaction products were separated from the primary beam by the SHIP velocity filter at GSI facility and implanted into a position-sensitive 16-strip PIPS detector. Measured E _{γ} , I _{γ} , $\gamma\gamma$, α - γ coincidence, conversion electrons, lifetimes with a clover HPGe detector.

See also 2001He35.

α : Additional information 1.

²⁵¹No Levels

E(level)	J ^{π}	T _{1/2}	Comments
0 [†]	(7/2 ⁺)	0.80 s 1	% α =91 +9-22; %SF=0.0014 +31-12 configuration=7/2 ⁺ [624] (2006He27) T _{1/2} : From 2006He27. %SF: Estimated by 2006He27 from detection of one fission event following α decay of ²⁵⁵ Rf. % α : From 2001He35.
60.3 [†] 3	(9/2 ⁺)		
203.6 2	(9/2 ⁻)		configuration=9/2 ⁻ [734] (2006He27)

[†] Band(A): 7/2⁺[624].

α radiations

E α [†]	E(level)	I α [#]	HF [‡]	Comments
8575 16		1.0 5	80	
8646 16		1.5 5	90	
8678 17		3 1	56	
8906 17		2.5 10	1344	HF: 2006He27 note that the hindrance factor for this transition is anomalously low compared to other N=151 isotones, and suggest that the observed transition is partially due to summing of the 8716-keV transition with conversion electrons.
8716 16	203.6	92 5	2.4	

[†] According to 2006He27, there is a systematic uncertainty of 15 keV on the α -decay energies, which the evaluator has added in quadrature to the reported statistical uncertainties.

[‡] From 2006He27.

[#] For absolute intensity per 100 decays, multiply by 0.49 2.

γ (²⁵¹No)

E _{γ}	I _{γ}	E _i (level)	J _i ^{π}	E _f	J _f ^{π}	Mult.	α	Comments
(60.3 3)		60.3	(9/2 ⁺)	0	(7/2 ⁺)			
143.3 2	51 6	203.6	(9/2 ⁻)	60.3	(9/2 ⁺)	E1	0.0669	α (L)exp + α (M)exp<0.25 (2006He27) α (L)=0.0499 8; α (M)=0.01248 18; α (N)=0.00348 5; α (O)=0.000905 13; α (P)=0.0001546 23 α (Q)=5.14×10 ⁻⁶ 8

Continued on next page (footnotes at end of table)

^{255}Rf α decay [2006He27](#) (continued) $\gamma(^{251}\text{No})$ (continued)

E_γ	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	α	Comments
203.6 2	49 6	203.6	(9/2 ⁻)	0	(7/2 ⁺)	E1	0.1143	$\alpha(\text{K})\text{exp}<0.1$ (2006He27); $\alpha(\text{L})\text{exp} + \alpha(\text{M})\text{exp}<0.1$ (2006He27) $\alpha(\text{K})=0.0857$ 13; $\alpha(\text{L})=0.0213$ 3; $\alpha(\text{M})=0.00530$ 8; $\alpha(\text{N})=0.001482$ 21; $\alpha(\text{O})=0.000388$ 6 $\alpha(\text{P})=6.84\times 10^{-5}$ 10; $\alpha(\text{Q})=2.52\times 10^{-6}$ 4

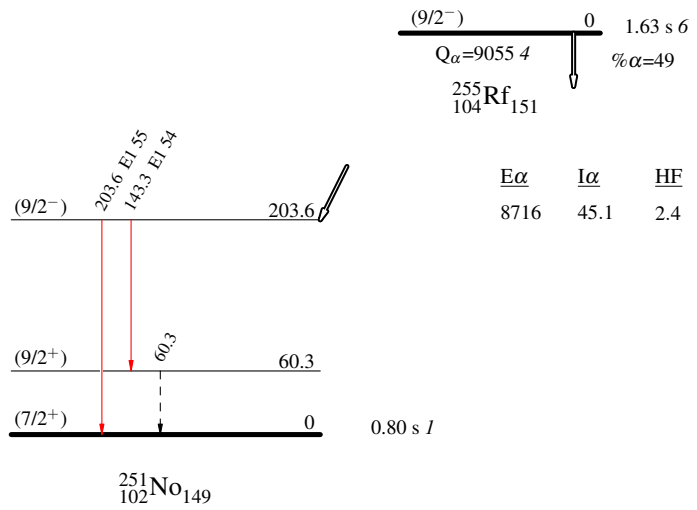
^{255}Rf α decay $^{2006}\text{He}27$

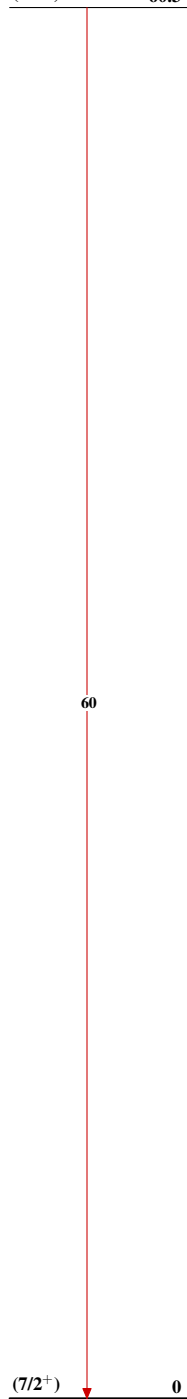
Decay Scheme

Intensities: Relative $I_{(\gamma+ce)}$

Legend

- $I_{\gamma} < 2\% \times I_{\gamma}^{max}$
- $I_{\gamma} < 10\% \times I_{\gamma}^{max}$
- $I_{\gamma} > 10\% \times I_{\gamma}^{max}$
- - - - -→ γ Decay (Uncertain)



${}^{255}\text{Rf}$ α decay ${}^{2006}\text{He}27$ Band(A): $7/2^+$ [624] $(9/2^+)$ 60.3 ${}_{102}^{251}\text{No}_{149}$