^{154}Sm(^{12}C,4nγ) 2020Kn03

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 195,1 (2024)	19-Sep-2023

2020Kn03 compiled for XUNDL database by B. Singh (McMaster).

2020Kn03: E(^{12}C)=62 MeV beam from 10 MV FN-tandem accelerator at the University of Cologne on 0.9 mg/cm^2 enriched ^{154}Sm target on 2.2 mg/cm^2 tantalum backing. Measured lifetimes by $\gamma\gamma$(t) using HORUS array (eight HPGe detectors and eight $LaBr_3$(Ce) detectors). Theoretical calculations with confined beta soft model and the interacting boson model.

^{162}Er Levels

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$	Comments
0.0	0$^+$		
102.00 *3*	2$^+$	1414[#] ps *21*	T$_{1/2}$: mean lifetime τ=2040 ps *30* (2020Kn03), from time distribution curve for $LaBr_3$(Ce) gates on the 227, 4$^+\rightarrow$2$^+$ and 102 2$^+\rightarrow$0$^+$ transitions. Additional information 1.
329.52 *4*	4$^+$	60.3[#] ps *42*	T$_{1/2}$: mean lifetime τ=87 ps *6* (2020Kn03) obtained from data for the 6$^+\rightarrow$4$^+\rightarrow$2$^+$ cascade, with additional HPGe gate on the 8$^+\rightarrow$6$^+$ transition in two arrangements: LaBr gate on 4$^+\rightarrow$2$^+$, HPGe gate on 8$^+\rightarrow$6$^+$; and LaBr gate on 6$^+\rightarrow$4$^+$, HPGe gate on 8$^+\rightarrow$6$^+$.
667.03 *18*	6$^+$	6.2[#] ps *42*	T$_{1/2}$: mean lifetime τ=9 ps *6* (2020Kn03) obtained from data for the 8$^+\rightarrow$6$^+\rightarrow$4$^+$ cascade, with additional HPGe gate on the 4$^+\rightarrow$2$^+$ transition in two arrangements: LaBr gate on 6$^+\rightarrow$4$^+$, HPGe gate on 4$^+\rightarrow$2$^+$; and LaBr gate on 8$^+\rightarrow$6$^+$, HPGe gate on 4$^+\rightarrow$2$^+$.
1097.1 *2*	8$^+$	<3.5 ps	T$_{1/2}$: mean lifetime τ<5 ps, estimated based on the uncertainty of the Prompt Response Difference (PRD) curve, where PRD is the difference between the centroids of the Prompt-Response-Function (PRF) for the delayed and anti-delayed time distribution.
1603.2 *3*	10$^+$		
2025.9 *3*	7$^{(-)}$	76 ns *4*	T$_{1/2}$: half-life of 76 ns *4* measured by 2020Kn03 from 1359γ(t). Additional information 2.
2165.5 *3*	12$^+$		
2746.1 *3*	14$^+$		

[†] From Eγ values.

[‡] From ^{162}Er Adopted Levels, Gammas, except that parity of the 2027 level is from 2012Sw01.

[#] From 2020Kn03, $\gamma\gamma$(t) with fast-timing technique; analysis with Generalized Centroid Difference method (GCD) for 4$^+$ and 6$^+$ states (based on time difference between the populating and the depopulating γ rays for a state).

γ(^{162}Er)

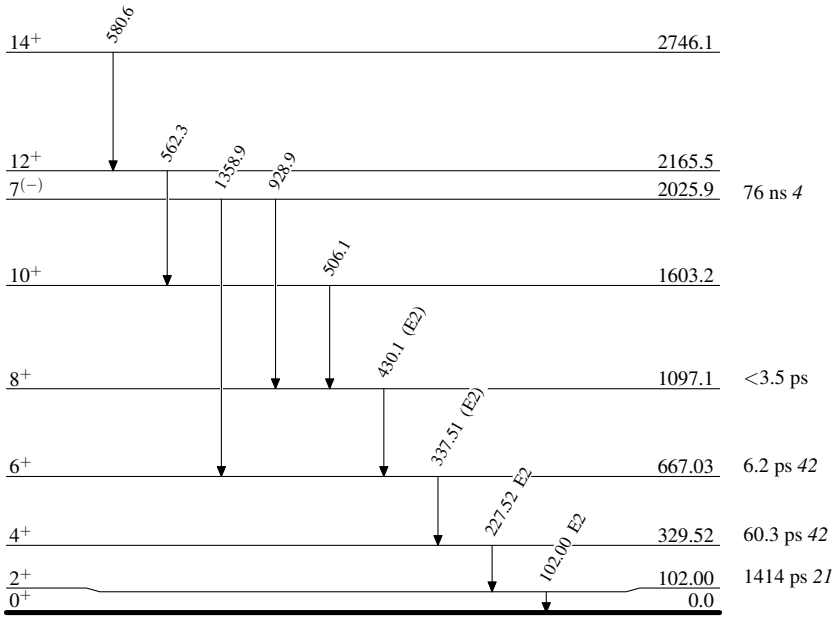
E$_\gamma$[†]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.[†]	α[‡]	Comments
102.00 *3*	102.00	2$^+$	0.0	0$^+$	E2	2.73	B(E2)(W.u.)=185 *3* (2020Kn03)
227.52 *3*	329.52	4$^+$	102.00	2$^+$	E2	0.1647	B(E2)(W.u.)=250 *+20−15* (2020Kn03)
337.51 *18*	667.03	6$^+$	329.52	4$^+$	(E2)	0.0486	B(E2)(W.u.)=340 *+420−140* (2020Kn03)
430.1 *1*	1097.1	8$^+$	667.03	6$^+$	(E2)	0.0246	B(E2)(W.u.)>206 (2020Kn03)
506.1 *2*	1603.2	10$^+$	1097.1	8$^+$			
562.3 *1*	2165.5	12$^+$	1603.2	10$^+$			
580.6 *1*	2746.1	14$^+$	2165.5	12$^+$			
928.9 *2*	2025.9	7$^{(-)}$	1097.1	8$^+$			
1358.9 *1*	2025.9	7$^{(-)}$	667.03	6$^+$			Hindrance factor f$_\nu$=32.0 *13* (2020Kn01) as compared to 33.1 *13* in 2012Sw01, ν=6.

[†] From ^{162}Er Adopted Levels, Gammas dataset.

[‡] 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.

^{154}Sm(^{12}C,4nγ) 2020Kn03

Level Scheme



$^{162}_{68}Er_{94}$