

Adopted Levels, Gammas

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

Q(β^-)=4344 4; S(n)=5778 8; S(p)=11581 10; Q(α)=-2969 4 [2021Wa16](#)

S(2n)=10289 4, S(2p)=22230 50, Q(β^-n)=-659 11 ([2021Wa16](#)).

[2022Ki23](#) compiled by B. Singh (McMaster).

[2017Wu04](#) compiled for XUNDL database by F.G. Kondev (ANL) (including *Supplemental Material* table of 94 measured β^- -decay half-lives).

[2000IcZZ](#), [2001AsZY](#), [2005Ic02](#) (all from same group): Produced via 15.5-MeV proton bombardment of a stack of ²³⁸U targets.

Reaction products transported using a He-jet gas-flow system to an on-line isotope separator. Isotopic identification provided by observation of Eu K x-rays. Nuclide identification (first two studies). [2000IcZZ](#) report nuclide identification but no other data, [2001AsZY](#) report T_{1/2} only, [2005Ic02](#) reports 3 γ 's associated with the decay and T_{1/2} value.

[2017Wu04](#): ¹⁶²Sm nuclide produced at RIBF-RIKEN facility using ⁹Be(²³⁸U,F) reaction at E=345 MeV/nucleon. Two experiments, optimized for the transmission of ¹⁵⁸Nd and ¹⁷⁰Dy ions, were carried out with average beam intensities of 7 pA and 12 pA, respectively. Identification of the nuclide of interest was made in the BigRIPS separator by determining the atomic number and the mass-to-charge ratio of the ion using the tof-B ρ - Δ E method. Reaction products were transported through the ZeroDegree Spectrometer and implanted into the beta-counting system WAS3ABi that was surrounded by EURICA array comprising of 84 HPGe detectors. Typical implantation rate about 100 ions/s. Measured: implanted ion- β^- -t, implanted ion- β^- - γ -t and implanted ions- γ -t correlations. Deduced: T_{1/2}.

[2022Ki23](#): ¹⁶²Pm nuclide produced in ⁹Be(²³⁸U,F),E(²³⁸U)=345 MeV/nucleon reaction at RIBF-RIKEN. Used energy loss (Δ E), magnetic rigidity (B ρ) and time-of-flight (tof) with BigRIPS separator, multisampling ionization chambers (MUSIC), parallel-plate avalanche counters (PPACs) and plastic scintillators for separating fission fragments. Radioactive ions implanted in Advanced Implantation Detector Array (AIDA) (a stack of six double-sided silicon strip detectors (DSSSDs)), centered in the BRIKEN neutron detector (140 ³He-filled proportional counters embedded in large polyethylene moderator matrix). Measured γ , n γ -coin, (implanted ions)(β^-) correlations, and (implanted ions)(β^-)(neutron) correlations. Deduced T_{1/2}.

Unless mentioned otherwise all data are from ¹⁶²Sm IT DECAY dataset.

¹⁶²Sm Levels

Cross Reference (XREF) Flags

A ¹⁶²Sm IT decay (1.78 μ s)

E(level)	J π	T _{1/2}	XREF	Comments
0.0 [†]	0 ⁺	3.15 s +26-30	A	% β^- =100 % β^- : Assumed by the evaluator. T _{1/2} : weighted average of 2.4 s 5 (2005Ic02 , 2001AsZY), 3.0 s 5 (2017Wu04) and 3.37 s +20-30 (2022Ki23).
71.4 [†] 4	(2 ⁺)		A	
235.9 [†] 5	(4 ⁺)		A	
1010.7 [‡] 6	(4 ⁻)	1.78 μ s 7	A	Proposed configuration= $\nu 7/2[633] \otimes \nu 1/2[521]$, K π =4 ⁻ from comparison with deformed Hartree-Fock with angular momentum projection model, and projection shell model (2017Yo01 ; same configuration proposed by 2017Pa25). T _{1/2} : From 2017Yo01 from likelihood fitting of time spectrum between the ¹⁶² Sm beam implantation and subsequent summed 71 γ +165 γ +775 γ -ray spectrum. Other value: 1.7 μ s 2 from 2017Pa25 , weighted average from 165 γ (t) and 775 γ (t).

[†] Band(A): K π =0⁺, g.s. band.

[‡] Band(B): K π =(4⁻), 2-qp state ([2017Pa25](#)).

Adopted Levels, Gammas (continued)

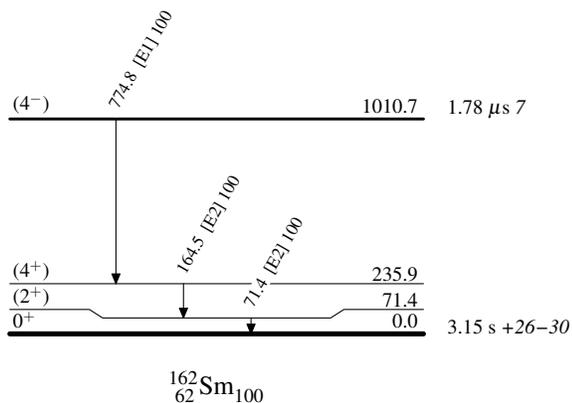
								$\gamma(^{162}\text{Sm})$	
$E_i(\text{level})$	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	α^\dagger	Comments	
71.4	(2 ⁺)	71.4 4	100	0.0	0 ⁺	[E2]	8.21 21	$\alpha(\text{K})=2.71\ 5$; $\alpha(\text{L})=4.26\ 13$; $\alpha(\text{M})=0.992\ 30$ $\alpha(\text{N})=0.217\ 7$; $\alpha(\text{O})=0.0269\ 8$; $\alpha(\text{P})=0.0001145\ 22$ $\alpha(\text{K})=0.274\ 4$; $\alpha(\text{L})=0.1016\ 16$; $\alpha(\text{M})=0.0232\ 4$ $\alpha(\text{N})=0.00511\ 8$; $\alpha(\text{O})=0.000668\ 11$; $\alpha(\text{P})=1.299\times 10^{-5}\ 19$ $\text{B}(\text{E}1)(\text{W.u.})=2.74\times 10^{-10}\ 11$ $\alpha(\text{K})=0.001453\ 20$; $\alpha(\text{L})=0.0001888\ 26$; $\alpha(\text{M})=4.01\times 10^{-5}\ 6$ $\alpha(\text{N})=9.07\times 10^{-6}\ 13$; $\alpha(\text{O})=1.355\times 10^{-6}\ 19$; $\alpha(\text{P})=8.37\times 10^{-8}\ 12$ Additional information 1.	
235.9	(4 ⁺)	164.5 3	100	71.4	(2 ⁺)	[E2]	0.405 6		
1010.7	(4 ⁻)	774.8 3	100	235.9	(4 ⁺)	[E1]	$1.69\times 10^{-3}\ 2$		

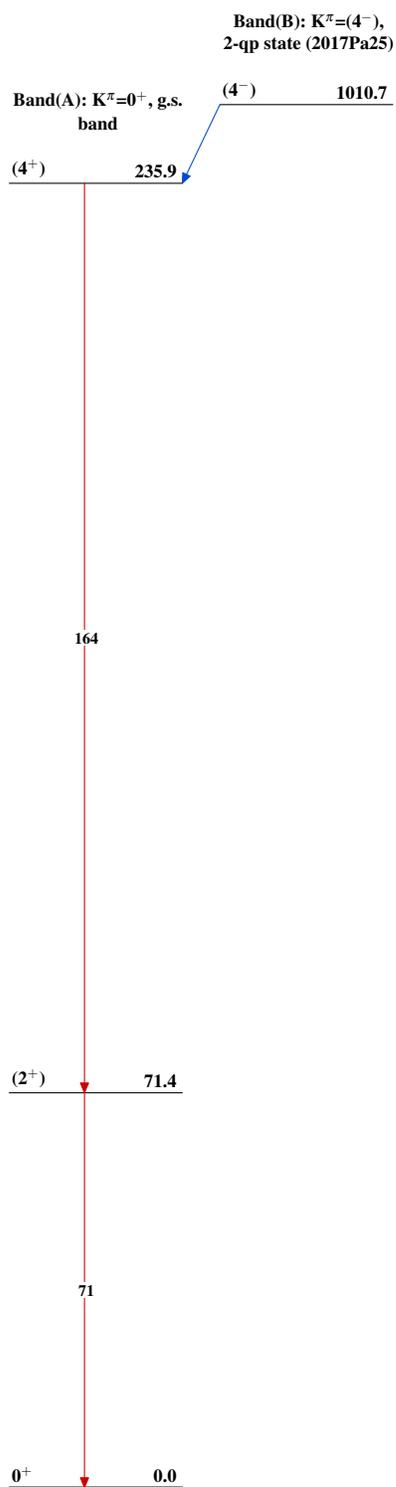
[†] [Additional information 2.](#)

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



Adopted Levels, Gammas $^{162}_{62}\text{Sm}_{100}$