

Adopted Levels

Type	History		Literature Cutoff Date
	Author	Citation	
Full Evaluation	Filip G Kondev	ENSDF	20-Feb-2017

$Q(\beta^-)=5920$ SY; $S(n)=4260$ SY; $S(p)=11640$ SY; $Q(\alpha)=-3340$ SY [2012Wa38](#)

Estimated uncertainties ([2012Wa38](#)): $\Delta Q^- = 310$, $\Delta S(n) = 360$, $\Delta S(p) = 500$, $\Delta S(\alpha) = 500$.

$S(2n) = 10190$ 300, $S(2p) = 22710$ 590, $Q(\beta^-n) = -100$ 300 from [2012Wa38](#) (syst).

[2012Ku26](#): ¹⁶³Sm produced and identified in ⁹Be(²³⁸U,F), E=1 GeV/nucleon reaction using SIS-18 synchrotron facility at GSI.

Target=1.6 g/cm² ⁹Be placed at the entrance of projectile Fragment Separator (FRS). Particle identification was achieved by event-by-event in-flight analysis of time-of-flight, energy loss measurement, and magnetic rigidity (tof- $\Delta E'$ -B ρ). Time-of-flight measured using two plastic scintillation detectors, energy loss or deposit by ionization chambers (MUSIC), and magnetic rigidity by four time-projection chambers (TPC), which also provided energy deposit information. Isomer tagging method for known μ s isomers was used to verify event-by-event identification and in-flight separation of new isotopes. Gamma rays from the known isomers were recorded in coincidence with the incoming ions using either the RISING array of Ge detectors at GSI or only two Ge detectors, a stopper foil and a scintillator for veto signal. Measured production cross section. Comparison of measured σ with predictions from ABRABLA model and EPAX-3 model.

[2017Wu04](#): The ¹⁶³Sm nuclide was produced at the RIBF-RIKEN facility using the 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 p nA and 12 p nA, respectively. The 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 - ΔE method. The reaction products were transported through the ZeroDegree Spectrometer and implanted into the beta-counting system WAS3ABi that was surrounded by the EURICA array comprising of 84 HPGe detectors. The typical implantation rate was 100 ions/s. Measured: implanted ion- β^- -t, implanted ion- β^- - γ -t and implanted ions- γ -t correlations. Deduced: T_{1/2}.

¹⁶³Sm Levels

E(level)	J ^{π}	T _{1/2}	Comments
0.0	(1/2 ⁻)	1.23 s +51-47	$\% \beta^- = 100$; $\% \beta^- n = ?$ $\% \beta^-$: Only β^- decay mode is expected. J ^{π} : From systematics of known quasiparticle states in neighboring nuclei and the proposed configuration (by the evaluator). The assignment is tentative. T _{1/2} : From 2017Wu04 , using a fit to the implanted ion- β^- -t spectrum using the least-squares and maximum-likelihood methods. The data analysis included contributions from the parent, daughter and ground-daughter decays, as well as a constant background. configuration: $\nu 1/2[521]$ Nilsson orbital, based on systematics of known structures in neighboring, well-deformed nuclei (by the evaluator). The assignment is tentative. Production σ (at 1 GeV/nucleon)=134 nb // (2012Ku26).