Adopted Levels

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 194,460 (2024)	31-Oct-2022

Q(β^-)=4063.1 *20*; S(n)=4903.4 *16*; S(p)=10582.6 *24*; Q(α)=−2279 *7* 2021Wa16
S(2n)=11279.8 *15*, S(2p)=20504 *7* (2021Wa16).

1998Ic02: ^{165}Gd produced by proton-induced fission of ^{238}U at E(p)=20 MeV followed by mass separation. The identification is based on the observation of Tb K-x rays in β-gated x ray/γ ray spectra for A=181 fraction corresponding to $^{165}Gd^{16}O^+$. The fission yield is estimated to be ≈7 μb (1998Ic02).

2017Wu04: ^{165}Gd nuclide was produced at the RIBF-RIKEN facility using the ^{9}Be(^{238}U,F) reaction at E=345 MeV/nucleon. 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-Bρ-ΔE method, followed by transportation of separated products through the ZeroDegree Spectrometer and implanted into the beta-counting system WAS3ABi surrounded by EURICA array of 84 HPGe detectors. Measured $T_{1/2}$ of decay of ^{165}Gd by (implanted ions)β^- and (implanted ions)$\beta^-\gamma$ correlated events.

Additional information 1.

2018Vi02: mass measurement.

2014Ha38, 2010Ha38, 2007Ha57: Q(β^-) value measured from total absorption gamma-ray spectrum.

Theoretical calculations: 2020Li53, 2019No05, 1985Bi05, 1983Sa22.

^{165}Gd Levels

E(level)	$T_{1/2}$	Comments
0	11.3 s *13*	%β^-=100 $T_{1/2}$: weighted average of 12.5 s *13* (2017Wu04, (implants)β^- correlated decay curve); and 10.3 s *16* (1998Ic02, from average of 11.2 s *23* from Tb K_α x rays and 9.3 s *23* from Tb K_β x rays+50.3γ). J^π: ν1/2[521] Nilsson orbital, based on systematics of known structures in neighboring, well-deformed nuclei (evaluators). Others: 1/2$^-$ (2021Ko07, syst); Ω_n=7/2$^+$ (2019Mo01, theory). From x-ray and γ-ray spectra, 1998Ic02 suggest that a 50.3 keV γ ray is associated with the β decay of ^{165}Gd to ^{165}Tb.