

Adopted Levels

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. D. Nesaraja	NDS 146, 387 (2017)	31-Aug-2017

$Q(\beta^-)=3.4\times 10^3$ SY; $S(n)=4.75\times 10^3$ SY; $S(p)=6.45\times 10^3$ SY; $Q(\alpha)=3.870\times 10^3$ SY [2017Wa10](#)

$\Delta Q(\beta^-)=300$, $\Delta S(n)=300$, $\Delta S(p)=420$, $\Delta Q(\alpha)=360$ (syst, [2017Wa10](#)).

$S(2n)=10360$ syst 360 ([2017Wa10](#)).

Identification:

[1987Mo29](#): ^{244}Np produced from $^{244}\text{Pu}(^{136}\text{Xe},X)$ reaction with $E(^{136}\text{Xe})=835$ MeV followed by chemical separation at the UNILAC accelerator at GSI, Darmstadt. Cross section for the production of ^{244}Np is 1.4 mb.

Theoretical calculations:

[2015GoZV](#): Energy levels <190 keV calculated using the 3-step Two Quasiparticle-Rotor-Model (TQRM).

[2009Mo18](#): Calculated fission barrier heights.

[1995Mo29](#): Calculated deformation parameters.

 ^{244}Np Levels

E(level)	J^π	$T_{1/2}$	Comments
0.0	(7 ⁻)	2.29 min 16	<p>$\% \beta^- = 100$ Only β^- decay has been observed. $T_{1/2}$: Measured by 1987Mo29 from gamma intensities as a function of time delay between detectors. J^π: The 151st. neutron is probably in the 9/2[734] state. An extrapolation from the $^{235,237,239,241}\text{Np}$ isotopes suggests that the 93rd. proton is in the 5/2[642] state. However, 2015GoZV on the basis of a three-step Two-Quasiparticle-Rotor-Model (TQRM), suggest that the 5/2[523] Nilsson orbital drops below the 5/2[642] orbital at N=150. In addition, the authors in 2015GoZV have also confirmed the possible proton 5/2[523] configuration for ^{243}Np (2014Ne14). These configurations, 9/2⁻[734]↑⊗5/2⁺[642]↑ or 9/2⁻[734]↑⊗5/2⁻[523]↓ from the Gallagher-Moszkowski coupling rules, give $J^\pi=7^-$ or $J^\pi=2^+$ for the g.s., respectively. Additionally, the observed beta decay (1987Mo29) to states in the daughter (^{244}Pu) with high spins suggests that the 2.29 min activity corresponds to a 7⁻ state. However, if the 2⁺ g.s. state is correct, then the observed β decay to high spin states suggests that the 7⁻ is instead an isomer with 2.29 min half-life. The authors in 1987Mo29 have also indicated that the existence of a short-lived isomer in their ^{244}Np β^- decay studies cannot be ruled out.</p>