## Adopted Levels

| History | | | |
|---|---|---|---|
| Type | Author | Citation | Literature Cutoff Date |
| Full Evaluation | Balraj Singh, Jagdish K. Tuli, and Edgardo Browne | NDS 185, 560 (2022) | 31-Aug-2022 |

Q($\beta^-$)=−2680 *60*; S(n)=7680 *80*; S(p)=3280 *50*; Q($\alpha$)=6370 *50* 2021Wa16
S(2n)=14320 *110*, S(2p)=8850 *50*, Q($\varepsilon$)=1820 *50* (2021Wa16).

1950Ma14: $^{231}$Np produced and identified in $^{235}$U(d,6n),E=45-100 MeV at Berkeley, followed by chemical separation. From observation of $\alpha$ spectra from $^{231}$Np decay, parent-daughter correlation of $^{231}$Np and $^{227}$Pa was established. Measured half-life of the decay of $^{231}$Np.

1973We08: $^{231}$Np produced in $^{233}$U(d,4n). Measured E$\gamma$, I$\gamma$, half-life of the decay of $^{231}$Np.

Theoretical calculations: consult the NSR database (www.nndc.bnl.gov/nsr/) for 23 primary references for the decay characteristics of $^{231}$Np, and two for nuclear structure. These references are listed in 'document' records, which can be accessed through on-line ENSDF database at www.nndc.bnl.gov/ensdf/.

Additional information 1.

### $^{231}$Np Levels

Cross Reference (XREF) Flags

A $^{235}$Am $\alpha$ decay (10.3 min)

| E(level) | J$^\pi$ | T$_{1/2}$ | XREF | Comments |
|---|---|---|---|---|
| 0 | (5/2$^-$) | 48.8 min *2* | A | %$\alpha$≈2; %$\varepsilon$+%$\beta^+$≈98<br>%$\alpha$=2.0 if $\alpha$ to g.s. of $^{227}$Pa is favored. Measurements of 1950Ma14 established the $\alpha$-decay mode, but only %$\varepsilon$/%$\alpha$<100 (implying %$\alpha$>1%) could be determined in their experiment. Systematics suggest %$\alpha$<10. Theoretical calculations of T$_{1/2}$($\beta$)>100 s and T$_{1/2}$($\alpha$)=7.4×10$^5$s (2019Mo01) suggest dominant $\varepsilon$+$\beta^+$ decay mode.<br>E(level): in $^{235}$Am $\alpha$ decay, this level may be the ground state. However, 2004As12 set an upper limit of 15 keV for this level energy based upon detection efficiency for low-energy $\gamma$-rays and internal conversion coefficient of a corresponding E1 $\gamma$-ray transitions.<br>J$^\pi$: favored alpha decay from $^{235}$Am ($J^\pi$=5/2$^-$), assuming that this alpha transition feeds the ground state. Likely configuration is $\pi$5/2[523] (2004As12,2004Sa05). See $^{235}$Am $\alpha$ decay. Other: 5/2$^+$ from systematics (2021Ko07).<br>T$_{1/2}$: from decay curves for 370.9- and 348.4-keV $\gamma$ rays (1973We08). Other: 50 min *3* (1950Ma14) from $\alpha$ decay is in agreement. |