

Adopted Levels

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Yu. Khazov, I. Mitropolsky, A. Rodionov		NDS 107, 2715 (2006)	17-Jul-2022

$S(n)=1.40\times 10^4$ SY; $S(p)=-947$ 5; $Q(\alpha)=3.4\times 10^3$ SY [2021Wa16](#)

[1998Da03](#): $^{96}\text{Ru}(^{40}\text{Ca},1p4n)$, $E=222$ MeV, $\sigma=90$ nb; measured proton radioactivity, $T_{1/2}$, first observation of ^{131}Eu deduced J^π , high value of ground-state deformation of ^{131}Eu . Recoil mass-separator, analyzer with a position-sensitive counter and silicon detector having 48strips coupled to GAMMASPHERE.

[1999So17](#), [2000SeZX](#) (also [2001Se05](#)): $^{58}\text{Ni}(^{78}\text{Kr},1p4n)$, $E=402$ MeV, $\sigma\approx 70$ nb; measured proton delayed spectra, $p\gamma$ coin, $T_{1/2}$. First observation of fine structure in proton spectra, reported two proton peaks and proton partial $T_{1/2}$ for ^{131}Eu g.s decay to g.s. and 2^+ states of ^{130}Sm , branching ratio to ^{130}Sm 2^+ state; γ -ray spectra are correlated with proton decays. Similar setup to [1998Da03](#).

[2002So02](#): ^{131}Eu ; compiled, evaluated structure data, proton-decay data.

Others: [1976Li30](#), [1995Ab38](#), [1995Mo29](#), [1997Mo25](#), [2001Go20](#), [2002Ry05](#), [2005Ba04](#), [2002Fe03](#), [2002Du16](#).

^{131}Eu ground-state deformation (from the analysis of the proton radioactivity data) $\beta\approx 0.35$ was deduced ([1998Da03](#),[1999So17](#),[2000Bb02](#),[2000Da11](#),[2000Ka19](#),[2000Kr07](#),[2000Ma18](#),[2001Es01](#),[2005Fe08](#)).

 ^{131}Eu Levels

E(level)	J^π	$T_{1/2}$	Comments
0	$3/2^+$	17.8 ms 19	$\%p=89$ 9; $\%\epsilon+\%\beta^+=11$ 9 $T_{1/2}$: from 1999So17. J^π: from 1999So17. It was shown that a proton configuration=$[411]3/2^+$ accounts for the measured $T_{1/2}$ and proton branching ratio of 0.24 5 to the ^{130}Sm 2^+ level. $\%p$ calculated by evaluators from $T_{1/2}=17.8$ ms 19 assuming that partial $\epsilon+\beta^+$ $T_{1/2}=147.4$ ms (1997Mo25); $\Delta\%p=0.13$ in 2002So02 is incorrect as $\Delta T_{1/2}(p)/T_{1/2}(p)=11\%$. Proton decay to ^{130}Sm g.s. ($E=0$, $J^\pi=0^+$): $E(p)=932$ 7 (1999So17) and 950 8 (1998Da03), $B(p)=0.68$ 11, $J^\pi(p)=3/2^+$, $T_{1/2}=26.6$ ms 37 (1999So17) and 32 ms 9 (1998Da03). Proton decay to ^{130}Sm ($E=121$ 3, $J^\pi=2^+$): $E(p)=811$ 7, $B(p)=0.21$ 5, $T_{1/2}=84$ ms 20 (1999So17).