U(n,F) E=thermal 1993Ru01,2004Fo06

History

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

1981En05: measured β's, n's; Si, shielded BF_3, SOLIS.
1986Wa17, 1986ReZU: measured β's, n's, β^-n coin, β(t), n(t); Si, shielded ^{3}He, TRISTAN.
1980Lu04, 1976Lu02: measured β's, n's; Si, shielded ^{3}He, OSIRIS.
1984Fo19, 1984Fo03: measured β's, $\beta\gamma$ coin, γ's, γ(t), $\gamma\gamma$(t), and $\gamma\gamma$ coin; HPGe, Ge(Li), plastic scin, OSIRIS.
1988Fo05: measured β's and $\beta\gamma$ coin; HPGe, Ge(Li), OSIRIS.
1993Ru01: measured n's, β's, β(t), n(t); shielded BF_3, scin., OSIRIS.
1995Me16, 1999Fo01: measured β^- decay energy, $\beta\gamma$ coin, Si(Li), HPGe, OSIRIS.
2004Fo06: ^{131}In isotopes produced continuously by fission in the combined target and ion source of OSIRIS mass spectrometer. Measured Eγ, Iγ, $\gamma\gamma$, Eβ, Iβ, $\beta\gamma$ coin using two HPGe spectrometers of 80% and 30% relative efficiencies, and an HPGe diode used as β spectrometer.

^{131}In Levels

E(level)[#]	J$^\pi$	$T_{1/2}$[†]	Comments
0.0	$(9/2^+)$[‡]	0.28 s *3*	%β^-=100; %β^-n≤2.0 *3* %β^-n: unweighted average of 1.72 *23* (1980Lu04), 1.55 *7* (1986Wa17), and 2.64 *13* (1993Ru01). Other: 5.5 *19* (1981En05). Similarity in $T_{1/2}$'s does not allow decomposition of the decay curves. From the measured fission yield ratios of E(302):E(3764):g.s.=0.82/0.014/0.16 (1993Ru01) in ^{235}U(n,F) reaction, the evaluators estimate ≈0.3% for g.s., ≈1.6% for $(1/2^-)$ isomer and ≈0.03 for $(21/2^-)$ isomer. This branching between the g.s. and the first isomer is consistent with that in ^{127}In and ^{129}In. J$^\pi$: $J^\pi=9/2^+$ is most probable from the depopulation ratios to ^{131}Sn levels. $T_{1/2}$: from 1984Fo19 (2434γ(t),3990γ(t)). Others: 0.276 s *3* (1986Wa17), 0.287 s *4* (1993Ru01). The more precise, but discrepant, values from 1986Wa17 and 1993Ru01 were not used since the experimental techniques would not distinguish between contributions from the three isomers.
302 *32*	$(1/2^-)$[‡]	0.35 s *5*	%β^-≥99.982; %β^-n≤2.0 *3*; %IT≤0.018 %β^-n: see comment for g.s. %IT: estimated by the evaluators assuming M4 γ to g.s., no states of intermediate J^π between g.s. and 302 state (syst of odd-A In), and RUL(M4)=30; J$^\pi$: $J^\pi=1/2^-$ is most probable from the depopulation ratios to ^{131}Sn levels (2004Fo06). $T_{1/2}$: from 1984Fo19 (332γ(t)).
3764 *88*	$(19/2$ to $23/2)^{(+)}$	0.32 s *6*	%β^->99; %IT<1 (1984Fo19); %β^-n≈0.03 %β^-n: see comment for g.s. %IT: no isomeric transitions observed. J$^\pi$: $J^\pi\geq19/2^+$; excitation energy and angular momentum restricts the configuration within the shell model to $(\pi\ g_{9/2})^{-1}(\nu\ h_{11/2})^{-1}(\nu\ f_{7/2})$ implying π=+; $J^\pi=21/2^+$ is most probable from lack of isomeric transition (2004Fo06). $T_{1/2}$: from 1984Fo19 (173γ(t), 4273γ(t)).

[†] Similarity in $T_{1/2}$'s does not allow decomposition of the decay curves.
[‡] From the shell model and systematics of $g_{9/2}$-$p_{1/2}$ In isomers.
[#] From differences in Q(β^-) (2004Fo06).