Adopted Levels

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 156, 148 (2019)	31-Jan-2019

S(n)=7790 *CA*; S(p)=3070 *SY*; Q(α)=10800 *SY* 2017Wa10,1997Mo25

Estimated uncertainties (2017Wa10): ΔS(p)=930, ΔQ(α)=300.

S(p) and Q(α) from 2017Wa10, S(n) from 1997Mo25.

S(2p)=4630 *930*, Q(ε)=150 *900* (syst, 2017Wa10). S(2n)=14300 (theory,1997Mo25).

2015Ut02: ^{284}Fl identified in ^{239}Pu,^{240}Pu(^{48}Ca,4n), E=245,250 MeV at U400 cyclotron of FLNR-JINR facility. Targets=^{240}Pu enriched to 98.97% at ORNL facility, and 92% enriched at JINR facility, with average thickness of 0.39 mg/cm^2 *4* for mixed ORNL/JINR ^{240}Pu material. Evaporation residues (ERs) were separated from the incident beam ions, scattered particles, and transfer reaction products by the DGFRS based on magnetic rigidities. Recoils passed through a tof system of two multiwire proportional counters (MWPCs), and were implanted in the DSSD detector system (0.3-mm thick double-sided silicon strip detectors) placed at the final focus of the DGFRS. Events related to Z=114 were identified by detecting time and position correlated events corresponding to their implantation and subsequent SF decay; EVR-SF correlations. Five events were observed, four in ^{240}Pu(^{48}Ca,4n) reaction and one in ^{239}Pu(^{48}Ca,3n) reaction.

2015Ut02 discuss observation of three SF events with low energies and decay times of 16.3, 16.9 and 55.3 μs, which may correspond to SF isomers, but based on implantation energy and average decay half-life of 19 μs, authors conclude that these activities most likely originate from other nuclides.

2018Ut02: ^{240}Pu(^{48}Ca,4n),E=250 MeV at JINR-Dubna. Several SF decays with measured evaporation residue energy, decay time, and SF energy assigned to the decay of ^{284}Fl from three observed events, and other eight events with 1-ms activity could belong to ^{284}Fl or ^{282}Cn, the latter through α2n-channel.

Note that the ^{284}Fl nuclide is reported by only the Dubna group. An independent observation by another experimental group is needed for a confirmed existence of this nuclide.

For theoretical studies, consult Nuclear Science References (NSR) database at NNDC, BNL for 62 primary references dealing with the half-lives and other aspects of nuclear structure in this mass region.

^{284}Fl Levels

E(level)	J^π	$T_{1/2}$	Comments
0	0^+	2.5 ms *+18−8*	%SF=100 (2016Ho09); %α≤25 (2016Ho09) Only the SF decay mode has been observed. The α decay is less likely from theoretical half-life of 85 s for α decay (1997Mo25). 2016Ho09 review article gives %α≤25. E(level): it is assumed that the observed activity is associated with the g.s. Production σ=2.6 pb *+33−17* (2015Ut02) in ^{240}Pu(^{48}Ca,4n) reaction at 250 MeV; 0.23 pb *+59−20* in ^{239}Pu(^{48}Ca,3n) at 245 MeV. $T_{1/2}$: measured by 2015Ut02 from five EVR-SF correlated events leading to SF decay of ^{284}Fl. The same value is given in 2017Og01 review. Other: 2.0 ms *+27−7* (2016Ho09 review, half-life based on the analysis of three correlated events).