Adopted Levels

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	P. K. Joshi, B. Singh, S. Singh, A. K. Jain	NDS 138, 1 (2016)	15-Oct-2016

Q(β^-)=10420 *SY*; S(n)=3320 *SY*; S(p)=12220 *SY*; Q(α)=−5690 *SY* 2012Wa38
Estimated uncertainties (2012Wa38): ΔQ(β^-)=400, ΔS(n)=500, ΔS(p)=720, ΔQ(α)=570 (2012Wa38).
S(2n)=5900 *500*, Q(β^-n)=7840 *400* (syst,2012Wa38). S(2p)=28230 (theory,1997Mo25).
1994Be24: ^{139}Sb produced and identified in Pb(^{238}U,X) reaction at E=750 MeV/nucleon at GSI facility. Target thickness=1.25 g/cm^2. Measured projectile fission fragment yields, mass, charge, and velocity distributions, and production σ. Fragment separator, energy-loss, tof techniques.
1998Do08: Pb(^{238}U,X) E=750 MeV/nucleon at GSI, measured fractional independent yield of the low-energy fission component. This work is from the same lab as 1994Be24.
2011Ar18: ^{139}Sb produced by bombardment of UC_x target with 1 GeV protons followed by selective ionization with the Resonance Ionization Laser Ion Source (RILIS) and high-resolution mass separator at ISOLDE-CERN facility. Measured delayed neutrons to deduce half-life and P_n (delayed neutron emission probability). Comparison with calculations for spherical and nonspherical shapes.
2015Le14: decay of ^{139}Sb to ^{138}Te through β^-n decay mode studied by γ-ray spectroscopy.

^{139}Sb Levels

E(level)	J^π	$T_{1/2}$	Comments
0	(7/2$^+$)	93 ms *13*	%β^-=100; %β^-n=90 *10* (2011Ar18); %β^-2n=?; %β^-3n=? Theoretical $T_{1/2}$=503 ms, %β^-n=76.9, %β^-2n=9.96, %β^-3n=0.02 (2003Mo09). Theoretical $T_{1/2}$=52.7 ms, %β^-n=44.7, %β^-2n=0.2, %β^-3n=0.1 (2016Ma12). E(level): observed activity of 93 ms is assumed to belong to the g.s. J^π: 7/2$^+$ proposed in calculations (2007Ji14) and in systematics (2012Au07); 1/2$^+$ (theoretical prediction,1997Mo25). $T_{1/2}$: measured by 2011Ar18 from decay curve for delayed neutrons and five-component fit to the decay curve, which included daughters 1.4-s ^{138}Te and 1.6-s ^{139}Te; and grand-daughters, 6.3-s ^{138}I and 2.28-s ^{139}I. In Table I, 2011Ar18 quote half-life with somewhat different uncertainty: 93 ms *+14−3*. 1994Be24 assigned 8 counts to ^{139}Sb activity with an estimated σ=3 μb. Measured yield of the low-energy fission component=0.0002 *2* (1998Do08).