Adopted Levels

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Khalifeh Abusaleem	NDS 116, 163 (2014)	31-Dec-2012

Q(β^-)=6441 *SY*; S(n)=3870 *SY*; S(p)=7885 *SY*; Q(α)=2493 *SY* 2012Wa38

Estimated uncertainties in 2012Wa38: 401 for Q(β^-), 499 for S(n), 566 for S(p) and Q(α).

Q(β^-n)=727 syst *500* (2012Wa38).

2010Al24: ^{228}At nuclide identified in ^{9}Be(^{238}U,X) reaction with a beam energy of 1 GeV/nucleon produced by the SIS synchrotron at GSI facility. Target=2500 mg/cm^2. The fragment residues were analyzed with the high resolving power magnetic spectrometer Fragment separator (FRS). The identification of nuclei was made on the basis of magnetic rigidity, velocity, time-of-flight, energy loss and atomic number of the fragments using two plastic scintillators and two multisampling ionization chambers. The FRS magnet was tuned to center on ^{210}Au, ^{216}Pb, ^{219}Pb, ^{227}At and ^{229}At nuclei along the central trajectory of FRS.

Unambiguous identification of nuclides required the separation of different charge states of the nuclei passing through the FRS. At 1 GeV/nucleon incident energy of ^{238}U, fraction of fully stripped ^{226}Po nuclei was about 89%. Through the measurement of difference in magnetic rigidity in the two sections of the FRS and the difference in energy loss in the two ionization chambers, the charge state of the transmitted nuclei was determined, especially, that of the singly charged (hydrogen-like) nuclei which preserved their charge in the current experimental setup. Measured production cross sections with 10% statistical and 20% systematic uncertainties.

Comparisons of measured σ with model predictions using the computer codes COFRA and EPAX.

^{228}At Levels

E(level)	$T_{1/2}$	Comments
0	>300 ns	%β^-=? Production σ=2.53 nb (from e-mail reply of Oct 29, 2010 from H. Alvarez-Pol, which also stated that further analysis was in progress). From A/Z plot (figure 1 in 2010Al24), ≈ 45 events are assigned to ^{228}At. E(level): the observed fragments are assumed to correspond to the ground state of ^{228}At. The β^- is the main decay mode expected. The delayed neutron decay is not likely due to low or negative Q value. Calculated %β^-n=0.57 (1997Mo25). $T_{1/2}$: lower limit from time-of-flight as given in 2006Ca30 for a similar setup. Actual half-life is expected to be much larger as suggested by the calculated value of 2.7 s for β decay and >10^{20} s for α decay (1997Mo25), and systematic value of 5 s for β decay (2011AuZY). J^π: $1/2^+$ for proton and $7/2^-$ neutron configuration predicted in 1997Mo25 calculations.