Adopted Levels

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	31-Aug-2022

Q(β^-)=5850 *SY*; S(n)=4520 *SY*; S(p)=8690 *SY*; Q(α)=1310 *SY* 2021Wa16

Estimated uncertainties (2021Wa16): 300 for Q(β^-), 420 for S(n) and S(p), 500 for Q(α).

Q(β^-n)=2230 *300*, S(2n)=8210 *360*, S(2p)=19620 *500* (syst, 2021Wa16).

2010Al24: ^{207}Au 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 Criterion established in 2010Al24 for acceptance of identification of a new nuclide: 1. number of events should be compatible with the corresponding mass and atomic number located in the expected range of positions at both image planes of the FRS spectrometer; 2. number of events should be compatible with >95% probability that at least one of the counts does not correspond to a charge-state contaminant. Comparisons of measured σ with model predictions using the computer codes COFRA and EPAX.

2017Ca12: production of ^{207}Au in ^{9}Be(^{238}U,X),E=1 GeV/nucleon using FRS separator and segmented silicon detectors (SIMBA) at UNILAC-GSI facility.

Theoretical calculations:

2021Ku17: calculated shape evolution, quadrupole deformation parameter, electric quadrupole moment, single-particle energy levels, binding energy, nuclear charge radius, neutron and proton rms radii, and neutron skin thickness using Hartree-Fock-Bogoliubov Model.

2003Fa08: calculated Q values, half-life, β^-n probability, logft, first-forbidden to total ratio for the decay using spherical QRPA with several interactions.

^{207}Au Levels

E(level)	$T_{1/2}$	Comments
0	>300 ns	%β^-=100; %β^-n=? Only the β^- decay is expected, followed possibly by β^-n decay from theoretical $T_{1/2}(\beta)$=23.4 s, $T_{1/2}(\alpha)>10^{20}$ s (2019Mo01), thus 100% β^- decay is assigned by inference. Theoretical $T_{1/2}$=23.4 s, %β^{-n}=3 (2019Mo01). Theoretical $T_{1/2}$=. From A/Z plot (Fig. 1 in 2010Al24), eight events are assigned to ^{207}Au. E(level): it is assumed that the observed fragments correspond to nuclei in their ground state. J$^\pi$: Ω_p=3/2$^+$ (2019Mo01, theory); 3/2$^+$ from systematics (2021Ko07). $T_{1/2}$: lower limit of 300 ns 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 theoretical value of 23.4 s ((2019Mo01) for β decay; and systematic value of 3 s (2021Ko07). From a decreasing trend of half-lives with increasing neutron number in neutron-rich nuclei, expected $T_{1/2}$<40 s from known half-lives of 40 s for ^{206}Au, 32 s for ^{205}Au and 40 s for ^{204}Au. Production cross section measured in 2010Al24, values are given in Fig. 2, plot of σ versus mass number for Au isotopes, with statistical uncertainty=10%, and systematic uncertainty=20%. Production σ=1.65 nb (from e-mail reply of Oct 29, 2010 from H. Alvarez-Pol).