Adopted Levels

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, Huang Xiaolong, and Wang Xianghan	NDS 204,1 (2025)	30-Jun-2023

Q(β^-)=19150 *syst*; S(n)=1260 *syst*; S(p)=18990 *syst*; Q(α)=−17050 *syst* 2021Wa16

Estimated uncertainties (2021Wa16): 720 for Q(β^-), 850 for S(n), 1000 for S(p), 920 for Q(α).

S(2n)=4280 *780*, Q(β^-n)=15610 *670* (syst,2021Wa16). S(2p)=43480 (Theory, 2019Mo01). Q(β^-2n)=13270 *650*, Q(β^-3n)=8980 *670*, Q(β^-4n)=5950 *630*, Q(β^-5n)=1350 *640* (syst, deduced by evaluator from relevant mass excesses in 2021Wa16).

2018Ta17: ^{62}Sc formed by fragmentation of $^{70}Zn^{30+}$ beam at 345 MeV/nucleon from RIKEN-RIBF accelerator complex. Rotating target of ^{9}Be of 15 mm thickness were located at the BigRIPS two-stage ion separator. Particle identification (PID) was achieved by measuring time of flight (TOF), energy loss (ΔE), total kinetic energy (TKE), and magnetic rigidity (Bρ) through event by event analysis of reaction products. Particles of interest were stopped in a 76-mm thick CsI crystal after passing through six 1-mm thick silicon p-i-n diodes, while the magnetic rigidity (Bρ) of the fragments was reconstructed from position and angle measurements at foci using two sets of position-sensitive parallel plate avalanche counters (PPACs). Optimization was done using LISE^{++} simulation code.

Additional information 1.

^{62}Sc Levels

E(level)	Comments
0	%β^-=100; %β^-n=?; %β^-2n=?; %β^-3n=?; %β^-4n=? %β^-5n=? Only the β^- decay mode is expected, accompanied by delayed neutron decays, thus 100% β^- decay is assigned by inference. A total of two events were assigned to ^{62}Sc, with tuned setting of the spectrometer for ^{60}Ca. It is assumed that the observed events correspond to the ground-state activity. Theoretical $T_{1/2}(\beta)$=4.2 ms, %β^-n=27, %β^-2n=33, %β^-3n=1.0, %β^-4n=0.0, %β^-5n=0.0 (2019Mo01). Theoretical $T_{1/2}(\beta)$=7.0 ms, %β^-n=71.1, 79.6; %β^-2n=21.8, 13.4; %β^-3n=1.26, 0.78; %β^-4n=0.032, 0.008; %β^-5n=0 (2021Mi17, two values for a decay mode refer to different fission barriers). $T_{1/2}$: half-life of the ^{62}Sc activity has not been measured. It is expected to be greater than the time-of-flight through the beam transport system, which may be about 500 ns. From systematics of half-lives of neighboring Sc isotopes, the half-life is expected to be <10 ms (12 ms for ^{58}Sc, 13 ms for ^{57}Sc, 26 ms for ^{56}Sc and 105 ms for ^{55}Sc), assuming a decreasing trend of half-life as neutron number increases in neutron-rich nuclei. From systematics, $T_{1/2}$=2 ms in 2021Ko07. J$^{\pi}$: 1 or 8 from Ω(p)=7/2 and Ω(neutron)=9/2 (2019Mo01, theory).