Adopted Levels: not observed

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 151, 1 (2018)	1-Apr-2018

Q(β^-)=−17890 *SY*; S(n)=18290 *SY*; S(p)=−1250 *SY*; Q(α)=−4550 *SY* 2017Wa10
Estimated uncertainties (2017Wa10): 430 for Q(β^-), 350 for S(n), 180 for S(p), 230 for Q(α).
S(2n)=34893 *434*, S(2p)=1029 *170*, Q(εp)=10619 *170* (syst,2017Wa10).

No significant change from the ENSDF update by B. Singh (23-DEC-2015), except notes from 2016Go26.

2016Go26: From ^{59}Ge decay energy spectrum (Fig. 3(a)), authors note that the pronounced structure at 6500 keV (appears to be at 6000 keV) could originate from a β2p branch via the isobaric analogue state in ^{59}Ga, however, not confirmed.

2005St29 (also 2005St34): ^{59}Ga isotope searched in fragmentation of $^{78}Kr^{34+}$ beam in a ^{9}Be target at E=140 MeV/nucleon. Reaction products selected according to their momentum/charge ratio using the A1900 spectrometer of the National Superconducting Cyclotron Laboratory (NSCL) at MSU. Measured fragments, TOF and energy losses using timing scintillator (SCI), a position-sensitive parallel-plate avalanche counter (PPAC) and three silicon detectors (PIN). Half-life estimated from comparison of upper limit of experimental production yield with expected production yield from theoretical calculations.
No events could be assigned to ^{59}Ga, implying that ^{59}Ga is most likely unbound towards proton emission.

^{59}Ga Levels

E(level)	$T_{1/2}$	Comments
0.0?	<43 ns	%p=? Proton decay is expected to be the primary mode since S(p)=−1250 *180* (2017Wa10). J^π: $3/2^-$ proposed from systematic trend (2017Au03); $1/2^-$ neutron orbital in theoretical calculations (1997Mo25). $T_{1/2}$: from experimental search for ^{59}Ga combined with expected number of transmitted nuclei based on abrasion-ablation model cross sections and the time of flight of 370 ns for ^{59}Ga. Assuming a systematic uncertainty of one order of magnitude in calculated cross section, estimated $T_{1/2}$=43 ns *+28−12*. Theoretical $T_{1/2}$ for β decay=42 ms (1997Mo25).