^{150}Lu p decay (45 ms) 2000Gi01,2003Ro21

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 185, 2 (2022)	23-Aug-2022

Parent: ^{150}Lu: E=0; J^π=(2$^+$); $T_{1/2}$=45 ms *5*; Q(p)=1269.6 *23*; %p decay=76 *12*

^{150}Lu-J^π: From 2001Fe05 and 2003Ro21, based on coupling of K^π=5/2$^-$ proton (from $h_{11/2}$ shell) to K^π=1/2$^-$ neutron and oblate deformation of ≈−0.16 (Nilsson orbits are assigned for small oblate deformation).

^{150}Lu-$T_{1/2}$: Weighted average of 43 ms *5* (2003Ro21), 49 ms *5* (2000Gi01), and 35 ms *10* (1993Se04).

^{150}Lu-Q(p): From 2021Wa16. Nuclear Q value=1283 *4* (2003Ro21,including screening correction).

^{150}Lu-%p decay: %p=76 *12* for decay of ^{150}Lu g.s., estimated by evaluators from experimental half-life of 45 ms *5* and theoretical β-decay half-life of 189.7 ms (2019Mo01), with 50% uncertainty assigned to the theoretical value. Others: 68 *6* (2003Ro21, from theoretical β-decay half-life of 155 ms from 1997Mo25); 70 *4* (2000Gi01).

2000Gi01, 2003Gi10: ^{150}Lu isotope formed by ^{96}Ru(^{58}Ni,p3n) with E=292 MeV ^{58}Ni beam from the 25-MV tandem accelerator at ORNL, separated by the Recoil Mass Spectrometer and implanted into a double-sided silicon strip detector (DSSD). Measured proton energy and half-life. Isotopic assignment is based on cross section measurements and systematics arguments for proton decay probabilities near N=82.

2003Ro21: ^{150}Lu isotope was formed by ^{96}Ru(^{58}Ni,p3n) with E=297 MeV ^{58}Ni beam followed by separation in Fragment Mass Analyzer (FMA) at ANL and implantation in a DSSD. Measured proton energy and half-life.

Other: 1984HoZN: $T_{1/2}\geq$10 ms.

Theory and J^π assignments: 2001Fe05.

Theoretical studies: consult the NSR database at www.nndc.bnl.gov for additional more than 40 references for proton radioactivity calculations.

^{149}Yb Levels

E(level)	J^π	$T_{1/2}$	Comments
0	(1/2$^+$)	0.7 s *2*	J^π,$T_{1/2}$: from the Adopted Levels.

Protons (^{149}Yb)

E(p)	E(^{149}Yb)	I(p)	L	Comments
1261 *4*	0	100	(5)	E(p): from 1993Se04. Other: 1262.7 *36* (1984HoZN).