

^{150}Lu p decay (43 μs) [2003Gi10](#),[2003Ro21](#)

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

Parent: ^{150}Lu : E=22 7; $J^\pi=(1^-,2^-)$; $T_{1/2}=43 \mu\text{s}$ 7; Q(p)=1269.6 23; %p decay=100.0

^{150}Lu -E: From difference between measured proton-decay energies of g.s. and this level.

^{150}Lu - J^π : $(1^-,2^-)$ from [2001Fe05](#) and [2003Ro21](#), based on coupling of $K^\pi=3/2^+$ proton (from $d_{3/2}$ shell) to $K^\pi=1/2^-$ neutron (Nilsson orbits are assigned for small oblate deformation).

^{150}Lu - $T_{1/2}$: Weighted average of 52.5 μs +130-87 ([2003Ro21](#)) and 39 μs +8-6 ([2003Gi10](#)). Other: 30 μs +95-15 ([2000Gi01](#)).

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

^{150}Lu -%p decay: %p=100 ([2003Ro21](#),[2000Gi01](#)); estimated from experimental and theoretical β -decay half-life of 155 ms ([1997Mo25](#)). Note that theoretical β -decay half-life is 189.7 ms in [2019Mo01](#).

[2000Gi01](#), [2003Gi10](#): ^{150}Lu isotope formed by $^{96}\text{Ru}(^{58}\text{Ni},p3n)$ 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 $^{96}\text{Ru}(^{58}\text{Ni},p3n)$ 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.

Theory and J^π assignments: [2001Fe05](#).

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

 ^{149}Yb Levels

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

Protons (^{149}Yb)

E(p)	E(^{149}Yb)	L	Comments
1283 6	0	(2)	E(p): weighted average of 1286 6 (2003Ro21) and 1277 8 (2003Gi10). Other: 1295 15 (2000Gi01).