

${}^{48}\text{Ni}$  2p decay (2.1 ms):? [2005Do20,2009Bi06](#)

Type	History		Literature Cutoff Date
	Author	Citation	
Full Evaluation	Balraj Singh	ENSDF	20-Feb-2010

Parent:  ${}^{48}\text{Ni}$ :  $E=0$ ;  $J^\pi=0^+$ ;  $T_{1/2}=2.1$  ms  $+21-7$ ;  $Q(2p)=1350$  20; %2p decay=30 24

${}^{48}\text{Ni}$ - $Q(2p)$ : From [2005Do20](#). Other: 3070 620 (syst,[2009AuZZ](#),[2003Au03](#)).

${}^{48}\text{Ni}$ - $T_{1/2}$ : From [2005Do20](#). Other:  $>0.5$   $\mu\text{s}$  ([2000Bi01](#),[2001Gi02](#) estimated from tof). Partial  $T_{1/2}(2p$  mode) $=8.4$  ms  $+128-70$  ([2005Do20](#)).

${}^{48}\text{Ni}$ -%2p decay: %2p=25  $+29-19$  ([2005Do20](#)).

This decay mode is tentative.

[2005Do20](#) (also [2005Bi31](#),[2005Gi15](#)):  $\text{Ni}({}^{58}\text{Ni},X)$   $E=74.5$  MeV/nucleon. Measured projectile fragments (SISSI-LISE3 facility at GANIL; 50  $\mu\text{m}$  thick Be degrader in intermediate focal plane, two microchannel plate detectors in first focal plane and four Si detectors at end of LISE3 beam line; tof). Four implantation events recorded; all correlated with subsequent decay events. A decay energy of 1350 20 from one event at approximately the expected energy, no  $\beta$  coin and short half-life of 2.1 ms is consistent with the observation of 2-proton radioactivity in  ${}^{48}\text{Ni}$ . See also [2007Do17](#) from the same group, where four events are ascribed to  ${}^{48}\text{Ni}$  isotope.

[2009Bi06](#): compare the experimental evidence in [2005Do20](#) with three different theoretical calculations, including R-matrix model of [2003Br07](#), and find a good agreement, suggesting a more firm evidence for 2p decay mode of  ${}^{48}\text{Ni}$ .

[2003Ba99](#) calculated two-proton decay widths. [2003Br07](#) calculated  $T_{1/2}(2p)$  and compared to data. [2003Gr24](#) calculated  $T_{1/2}(2p)$  vs decay energy. [2004Pf02](#) compiled theoretical  $Q$ 's and  $T_{1/2}(2p)$ 's. [2005Pf01](#) compiled two-proton decay data and theory.

[2004Bb14](#) calculated 2p spectroscopic factors. [2006Ro09](#) calculated 2p decay partial half-lives and decay energies using shell-model embedded in the continuum (SMEC).

[Additional information 1](#).

 ${}^{46}\text{Fe}$  Levels

<u>E(level)</u>	<u><math>J^\pi</math></u>
0?	$0^+$