

${}^{49}\text{Ni}$   $\epsilon\text{p}$  decay [2007Do17](#)

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 179, 1 (2022)	30-Nov-2021

Parent:  ${}^{49}\text{Ni}$ :  $E=0$ ;  $J^\pi=7/2^-$ ;  $T_{1/2}=7.5$  ms 10;  $Q(\epsilon\text{p})=19250$  SY;  $\% \epsilon\text{p}$  decay=83 13

${}^{49}\text{Ni}$ - $J^\pi$ : From systematics in [2021Ko07](#).

${}^{49}\text{Ni}$ - $T_{1/2}$ : From implant-proton(t), measured by [2007Do17](#).

${}^{49}\text{Ni}$ - $Q(\epsilon\text{p})$ : 19250 610 (syst) from [2021Wa16](#).

${}^{49}\text{Ni}$ - $\% \epsilon\text{p}$  decay:  $\% \epsilon\text{p}=83$  13 ([2007Do17](#)).

[2007Do17](#):  ${}^{49}\text{Ni}$  source ions were produced by fragmentation of 74.5 MeV/nucleon  ${}^{58}\text{Ni}$  primary beam on natural Ni target at SISSE-LISE3 facility of GANIL. Fragments were selected by the ALPHA-LISE3 separator and implanted into double-sided silicon strip detectors (DSSSDs).  $\gamma$  rays were detected by four Ge detectors. Measured  $E_\gamma$ ,  $I_\gamma$ , particle- $\gamma$ -coin, implant-proton(t). Deduced parent  $T_{1/2}$ , decay branching ratio.

$T_{1/2}$  measured by time correlation of implantation events due to  ${}^{49}\text{Ni}$  and subsequent emission of protons and  $\gamma$  rays.

Total proton branching ratio is from time spectrum of events with energy >900 keV in the charged-particle spectrum. Possible small contributions from delayed- $\alpha$  and delayed-2p decays are ignored.

 ${}^{48}\text{Fe}$  Levels

E(level)	$J^\pi$	Comments
0	$0^+$	
969.5 5	( $2^+$ )	$J^\pi$ : proposed by <a href="#">2007Do17</a> based on comparisons with the mirror nucleus ${}^{48}\text{Ti}$ and the neighboring ${}^{50}\text{Fe}$ isotope.

 $\gamma({}^{48}\text{Fe})$ 

$E_\gamma$ †	$I_\gamma$ ‡	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$
969.5 5	82 43	969.5	( $2^+$ )	0	$0^+$

† From [2007Do17](#).

‡ Absolute intensity per 100 decays.

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## Decay Scheme

Intensities:  $I_{(\gamma+ce)}$  per 100 parent decays