Ni(^{58}Ni,X) 2012Au08,2007Do17

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Wang Jimin and Huang Xiaolong	NDS 144, 1 (2017)	1-Mar-2016

2012Au08: ^{51}Ni nuclei produced in the reaction Ni(^{58}Ni,X), E(^{58}Ni)=74.5 MeV/nucleon using LISE3 separator at GANIL. See 2011As08 for experimental setup for the production of ^{51}Ni isotope. The analysis of the data presented the first observation of β^+-delayed two-proton emission from g.s. of ^{51}Ni, reconstruction of the decay spectrum was done to extract evidence for delayed two-proton decay of ^{51}Ni.

2007Do17: Fragmentation reaction used to produce ^{51}Ni isotope at SISSE/LISE3 facility in GANIL. Primary beam: $^{58}Ni^{26+}$ at 74.5 MeV/nucleon, natural Ni. Fragment separator=ALPHA−LISE3. Fragment identification by energy loss, residual energy and time-of-flight measurements using two micro-channel plate (MCP) detectors and Si detectors. Double-sided silicon-strip detectors (DSSSD) and a thick Si(Li) detector were used to detect implanted events, charged particles and β particles. The γ rays were detected by four Ge detectors. Coincidences measured between charged particles and γ rays.

1987Po04: Ni(^{58}Ni,x),E=55 MeV/nucleon; measured residual nuclei mass spectra. Magnetic separation, tof, ΔE-E methods .

^{51}Ni Levels

E(level)	$T_{1/2}$	Comments
0	23.8 ms *2*	%εp=87.2 *8* (2007Do17); %ε2p=0.5 *2* (2012Au08) %εp: Total proton branching ratio is from time spectrum of events with energy >900 keV in the charged-particle spectrum. Possible small contributions from delayed-α and delayed-2p decays are ignored. %ε2p: With the total β^+p=87.2% *8* measured by 2007Do17, the β^+2p/β^+1p ratio is less than 5% in agreement with calculation by 1991De26. $T_{1/2}$: By time correlation of implantation events due to ^{51}Ni and subsequent emission of protons and γ rays (2007Do17). Other: >200 ns (TOF, 1987Po04). J^π: $7/2^-$ from systematics in 2017Au03. Theoretical calculations in 1997Mo25 suggest $3/2^-$.