^{53}Ni εp decay 2007Do17

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Yang Dong, Huo Junde	NDS 128, 185 (2015)	10-Jul-2015

Parent: ^{53}Ni: E=0.0; J^π=(7/2$^-$); $T_{1/2}$=55.2 ms *15*; Q(εp)=11412 *26*; %εp decay=23.4 *10*

1976Vi02: ^{53}Ni produced by ^{40}Ca(^{16}O,3n), E=65 MeV, measured: E(p), $T_{1/2}$, a semiconductor counter telescope, 14-19 μm for the ΔE detectors, 107-250 μm for the E detectors. Other: 1979ViZY.

1993Xu04: ^{53}Ni produced by ^{28}Si(^{28}Si,3n), E=104, 115.5, and 127.2 MeV, measured: E(p), $T_{1/2}$, three particle telescopes, each consisting of three semiconductor detectors: 20 μm for the ΔE detector, 250 μm for the E detector, 250 μm for the E_{rej} detector which was used as a rejection detector to eliminate positron interference.

2007Do17: Fragmentation reaction used to produce ^{53}Ni isotope, primary beam: $^{58}Ni^{26+}$ at 74.5 MeV/nucleon; target=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. γ rays were detected by four Ge detectors. Coincidences measured between charged particles and γ rays. $T_{1/2}$ measured by time correlation of implantation events due to ^{53}Ni and subsequent emission of protons and γ rays. A partil decay scheme was built.

All dada are from 2007Do17, except as noted.

^{52}Fe Levels

E(level)	J^π†
0.0	0^+
849	2^+

† From Adopted Levels.

γ(^{52}Fe)

E_γ	I_γ†	E_i(level)	J^π_i	E_f	J^π_f
849.3 *3*	12.5 *14*	849	2^+	0.0	0^+

† For absolute intensity per 100 decays, multiply by 0.234 *10*.

Delayed Protons (^{52}Fe)

E(p)	E(^{52}Fe)	I(p)†	E(^{53}Co)	Comments
1929 *18*	849	23 *2*	4380	E(p): Others: E(p)=1940 50 (1976Vi02), E(p)=1920 (1993Xu04).

† For absolute intensity per 100 decays, multiply by 0.234 *10*.

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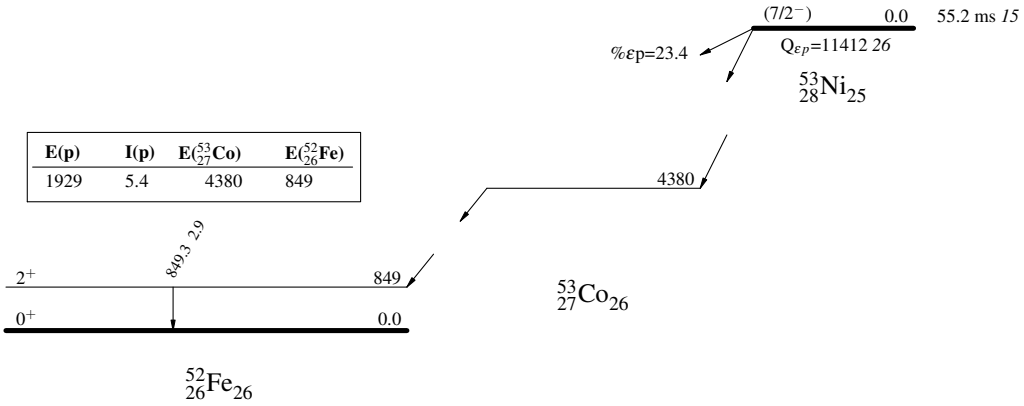
Decay Scheme

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



E(p)	I(p)	E($^{53}_{27}$Co)	E($^{52}_{26}$Fe)
1929	5.4	4380	849