Adopted Levels

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	15-Feb-2010

S(n)=2.09×10^4 *syst*; S(p)=1.6×10^3 *syst*; Q(α)=−8.1×10^3 *syst* 2012Wa38

Note: Current evaluation has used the following Q record 20900 syst 1420 syst-7660 syst 2009AuZZ,2003Au03.

Estimated uncertainties: 420 for S(n), 460 for S(p) and Q(α) (2009AuZZ, 2003Au03).

Q(εp)=12430 *620* (syst,2009AuZZ,2003Au03), S(2p)=360 *360* (syst,2009AuZZ,2003Au03).

1992Bo37: ^{46}Fe observed from interaction of a ^{58}Ni beam of 69 MeV/u with natural nickel target using magnetic separation, Wien filter and identification through time-of-flight and ΔE-E measurements.

1994Bl10: ^{9}Be(^{58}Ni,X) E=650 MeV/nucleon, Fragment separator FRS at GSI facility, measured cross section for the production of ^{46}Fe.

Additional information 1.

2001Gi01 (also 2001Gi02): Ni(^{58}Ni,X) E=74.5 MeV/nucleon. Fragments selected by the α-LISE3 fragment separator with a Be degrader and Wien filter at GANIL. Ions implanted in a Si-detector telescope which measured ΔE, E, and position. With tof measurements, started both by the cyclotrons′ high-frequency and a micro-channel plate detector before the Wien filter, implanted ions could be identified. The telescope was surrounded by Ge detectors to measure γ′s in the radioactive decay.

2007Do17: ^{46}Fe produced in fragmentation of ^{58}Ni^{26+} beam at 74.5 MeV/nucleon with natural Ni target at SISSE/LISE3 facility in GANIL. Fragment separator=α−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. $T_{1/2}$ measured by time correlation of implantation events due to ^{46}Fe and subsequent emission of protons and/or γ 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-α and delayed-2p decays are ignored. 2007Do17 and 2001Go01 are from the same group. Some of the results in 2007Do17 are an improved analysis of experiments reported in 2001Gi01.

Mass excess of g.s.=+759 *96* (2007Do17), +755 *354* (1992Bo37) from IMME analysis.

Structure calculations using shell model: 2004Sv04, 2002Ca48, 1999Ca12: levels, B(E2), etc.

^{46}Fe Levels

Cross Reference (XREF) Flags

A ^{48}Ni 2p decay (2.1 ms):?

E(level)	J$^\pi$	$T_{1/2}$	XREF	Comments
0.0	0$^+$	13.0 ms *20*	A	%ε+%β^+=100; %εp=78.7 *38* (2007Do17) XREF: A(?). %εp: other: 36 *20* (2001Gi01, earlier value from the same group as 2007Do17). $T_{1/2}$: from 2007Do17, time correlation of implantation events due to ^{46}Fe and subsequent emission of protons and/or γ rays. Others: 12.0 ms $^{42-32}$ (2001Gi01,2001Gi02, earlier results from the same group as 2007Do17, note that half-life of 9.7 ms *+35−43* is also listed in 2001Gi01 in their figure 13 and table 6); 20 ms *+20−8* (1992Bo37). No delayed 2p decay seen (2001Gi01), in agreement with predicted %ε2p/%εp=0.10 (1991De26).