Adopted Levels

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Ameenah R. Farhan, Balraj Singh	NDS 110,1917 (2009)	30-Jun-2009

Q(β^-)=1.04×10^4 *syst*; S(n)=5.5×10^3 *syst*; Q(α)=−1.73×10^4 *syst* 2012Wa38
Note: Current evaluation has used the following Q record 10370 syst 5450 syst 20850 calc −16860 calc 2009AuZZ,1997Mo25.
Q(β^-) and S(n) from 2009AuZZ; S(p) and Q(α) from 1997Mo25.
ΔQ(β^-)=ΔS(n)=950 (2009AuZZ). Q(β^-n)=6100 *950*, s(2n)=8660 *950* (syst,2009AuZZ).
Values in 2003Au03: Q(β^-)=10450 *1170*, S(n)=5620 *1210*, s(2n)=8830 *1420*, Q(β^-n)=6210 *1170*; all from systematics.
Being a doubly magic (Z=28, N=50) nucleus, ^{78}Ni is of major astrophysical significance in the synthesis of heavy elements.
Isotopic identification and production:
1995En07, 1997Be70 (also 1997Be12): isotopic identification and production in reaction: ^{9}Be(^{238}U,F) E=750 MeV/nucleon; measured production σ, fragment separator using magnetic rigidity, energy deposit, trajectory and time-of-flight techniques.
2002Kr10: ^{238}U(p,F) E=30 MeV. Measured production cross section, mass separator and laser ionization.
2005Ho08 (also 2007Sc29,2004St28,2005Sc28): ^{9}Be(^{86}Kr,X) E=140 MeV/nucleon; fully-ionized ^{86}Kr beam, A1900 fragment separator at NSCL facility. Detected β particles correlated with implanted nuclei in Si detectors. A total of 11 events was assigned to ^{78}Ni with a corresponding cross section of 0.02 pb 1. Measured half-life of ^{78}Ni.
Additional information 1.

^{78}Ni Levels

E(level)	J$^\pi$	T$_{1/2}$	Comments
0.0	0$^+$	0.11 s *+10−6*	%β^-=100; %β^-n=? Only β^- decay mode detected. Calculated (1997Mo25) %β^-n=49. T$_{1/2}$: from measurement of time sequence of decay type events correlated with the implanted nuclei (of ^{78}Ni) in Si detectors (2005Ho08, 2007Sc29). The authors used method of maximum likelihood analysis which required, as input parameters, values of β-detection efficiency, background, half-lives of daughter and granddaughter nuclei and experimental or theoretical values of %β^-n of all nuclei involved.