

Adopted Levels

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. D. Nesaraja	NDS 115, 1 (2014)	31-Jul-2013

$Q(\beta^-)=9.81 \times 10^3$ 19; $S(n)=6.32 \times 10^3$ 24; $S(p)=13.63 \times 10^3$ 41; $Q(\alpha)=-1163 \times 10^1$ 19 2012Wa38
 $Q(\beta^-n)=5220$ 190 (2012Wa38).

2011Es06: Time of flight measurements performed at the National Superconducting Cyclotron Laboratory. Mass access of ⁶⁹Co= -500370 210.

2011Da08,2002MaZN (thesis): Produced by projectile fragmentation of ⁸⁶Kr beam on 50 mg/cm² thick Ta at 57.8 MeV/nucleon. Separated by LISE2000 spectrometer at GANIL. Detector system included a three-element Si-detector telescope containing a double-sided silicon-strip detector (DSSSD) backed by a Si(Li) detector and surrounded by four clover type EXOGAM Ge detectors. Product identified by mass, atomic number, charge, energy loss and time of flight. Measured isotopic T_{1/2} from timing correlation between implanted ions and β decay events. Fitting procedure included five parameters: β-detection efficiency, background rate, mother, daughter and granddaughter half-lives.

2010Ga06: Produced from inelastic scattering of secondary ⁶⁴Cr beam at 87 MeV/nucleon on ⁹Be target using the S800 focal-plane detection at NSCL, MSU.

2005NiZZ,2004NiZY: Produced by fragmentation of ⁷³Kr beam at 63 MeV/nucleon on a ⁸⁶Kr³²⁺ at RIKEN. Separated by RIPS spectrometer and identified with silicon and TOF detectors. Preliminary results of T_{1/2} determined from correlations between implanted nuclei and beta decay.

2003So21,2005GaZR (thesis): Produced by fragmentation of ⁷⁶Ge³⁰⁺ beam on a ⁵⁸Ni target at 61.8 MeV/nucleon. Nuclei separated by LISE3 achromatic spectrometer at GANIL, and identified by three consecutive Si detectors where two were used for energy loss and TOF measurements while the third was used to determine their residual energies. 2005GaZR (thesis) determined T_{1/2} from correlations between implanted nuclei and beta decay. Half-lives determined by fitting procedure involving five parameters: half-lives of mother, daughter and grand-daughter nuclei, β-efficiency and background rate.

2002Kr13: Produced from ²³⁸U(p,f) reaction at E= 30 MeV with resonant laser-ionization and mass separation at Louvain-la Neuve cyclotron facility. Production rate was 7 atoms/μC 3.

1999So20 (also 1999Le67): Produced by fragmentation of ⁸⁶Kr beam on ⁵⁸Ni target at 60.4 MeV/nucleon. Nuclei separated by LISE3 achromatic spectrometer at GANIL, and identified by four consecutive silicon detectors. Measured isotopic T_{1/2} from timing of β decay.

2001Fr21,1999Mu17: ⁶⁹Co produced from 30 MeV proton induced fission reaction on ²³⁸U. Extracted selectively by resonant laser ionization and mass separator (LIGIS-LISOL) facility at Leuven. Measured βγ and γγ coincidence spectra with high purity Ge detectors and plastic scintillators. Measured T_{1/2} from timing of β delayed γ intensity.

1999Mu17 (supersedes 1998FrZY): Produced from ²³⁸U(p,f) with two-resonant-step laser ionization and the LISOL mass separator at Louvain-la Neuve cyclotron facility. Identified by β delayed γ spectrometry. Measured isotopic T_{1/2} from timing of γ decay.

1994Se12: Produced by fragmentation of ⁵⁸Cr beam on Th at E=800 MeV, followed by mass separation and TOF isochronous spectrometer. Measured ground state mass.

1992We04: Produced by fragmentation of a 500 MeV/nucleon ⁸⁶Kr beam on a Be target. Isotope identification by the fragment separator FRS at GSI in combination with TOF and energy-loss measurements. A total of 190 counts were assigned to ⁶⁹Co corresponding to cross section of 0.49 microbarns with an uncertainty of 50%.

1991Be33 (also 1993BeZM): Identified from ²³⁹Pu(n_{thermal},f) with the recoil spectrometer LOHENGRIN. Measured T_{1/2} from time correlations between identified fragments and the β particles.

1985Gu14: Produced by fragmentation of ⁸⁶Kr beam on thick targets of Ti and Ta at 33 MeV. Separated by LISE triple focusing analyzer at GANIL. Identified through TOF and ΔE-E measurements. Mass histograms of the production of neutron-rich isotopes of Co displayed shows a peak corresponding to ⁶⁹Co.

⁶⁹Co Levels

E(level)	J ^π	T _{1/2}	Comments
0.0	(7/2 ⁻)	227 ms 11	%β ⁻ =100 J ^π : from systematics. T _{1/2} : weighted average of 229 ms 24 (2011Da08), 232 ms 17 (2005GaZR), 0.22 s 2 (1999Mu17), 190 ms 40 (1999So20), 0.27 s 5(1991Be33). %β ⁻ n: 0.88 estimated from theory (1997Mo25).