Adopted Levels

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	31-Mar-2017

Q(β^-)=15640 *SY*; S(n)=3470 *SY*; S(p)=17210 *SY*; Q(α)=−15750 *SY* 2017Wa10
Estimated $\Delta Q(\beta^-)$=540, $\Delta S(n)$=640, $\Delta S(p)=\Delta Q(\alpha)$=710 (2017Wa10).
S(2n)=8760 *640*, S(2p)=37500 *780*, Q(β^-n)=9220 *500* (syst,2017Wa10).

1997Be70, 1995En07: ^{74}Co identified in ^{9}Be(^{238}U,F), E=750 MeV/nucleon reaction; fully-stripped fission products separated using Fragment-Recoil Separator (FRS). Measured magnetic rigidity, trajectory, energy deposit, time-of-flight, production cross section and residuals fission yields.

2005Ma59 (also 2005Ma95): ^{74}Co produced by fragmentation of ^{86}Kr beam at 140 MeV/nucleon in a ^{9}Be target, followed by analysis of reaction products using A1900 spectrometer. Measured γ, β, γ(implanted ion) coin.

2010Ho12: ^{9}Be(^{86}Kr,X) E=140 MeV/nucleon; fully-ionized ^{86}Kr beam, A1900 fragment separator at NSCL facility using Bρ-ΔE-Bρ method. After separation, the mixed beam was implanted into the NSCL β-counting system (BCS) consisting of stacks of Si PIN detectors, a double-sided Si strip detector (DSSD) for implantation of ions, and six single-sided Si strip detectors (SSSD) followed by two Si PIN diodes. The identification of each implanted event was made from energy loss, time-of-flight information and magnetic rigidity. The implantation detector measured time and position of ion implantations and β decays. Neutrons were detected with NERO detector. Measured β- and βn-correlated events with ion implants; half-life of ^{74}Co and delayed-neutron emission probability from a total of 331 implants, and 16 correlated βn coincidences.

2011Da08: ^{74}Co produced in the fragmentation of 57.8 MeV/nucleon ^{86}Kr beam impinged on 50 mg/cm^2 thick tantalum target using LISE-2000 spectrometer at GANIL facility. 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 half-life of ^{74}Co decay. See also 2002MaZN thesis reporting some of the same results.

2014Xu07: ^{74}Co nuclide produced in ^{9}Be(^{238}U,F) reaction with a ^{238}U^{86+} beam of 345 MeV/nucleon produced by the RIKEN accelerator complex. Identification of ^{74}Co nuclei was made on the basis of magnetic rigidity, time-of-flight and energy loss of the fragments (ΔE-Bρ-tof method) using BigRIPS fragment separator and ZeroDegree Spectrometer (ZDS) at RIBF-RIKEN facility. Based on A/Q spectrum and Z versus A/Q plot. Measured heavy fragment, β and γ spectra using wide-range active silicon strip stopper array (WAS3ABi) for beta and ion detection, and EUROBALL-RIKEN Cluster array for γ detection. Decay curves were obtained from time differences between implantation and correlated β decays. Also 2014XuZZ thesis by the first author of 2014Xu07.

Additional information 1.

^{74}Co Levels

E(level)	$T_{1/2}$	Comments
0.0	31.3 ms *15*	%β^-=100; %β^-n=18 *15* (2010Ho12); %β^-2n=? Theoretical $T_{1/2}$=23 ms, %β^-n=6.4, %β^-2n=1.5 (2003Mo09). Theoretical $T_{1/2}$=71 ms, %β^-n=4.4, %β^-2n=1.3 (2016Ma12). $T_{1/2}$: weighted average of 30 ms *3* (2005Ma59, 2005Ma95, β and $\beta\gamma$ correlated with ^{74}Co ions) and 31.6 ms *15* (2014Xu07, β-implants correlated decay curves). Other less precise measurements using β-implant correlated decay curves: 34 ms *+6−9* (2010Ho12) and 19 ms *7* (2011Da08,2002MaZN). Weighted average of all the four values is 30.9 ms *15*. β^-n decay to ^{73}Ni is indicated by the presence of a 240γ (belonging to ^{73}Ni) in $\beta\gamma$ coin spectrum (2005Ma59). From the detailed analysis of β(implant) decay curve, 2010Ho12 deduce %β^-n=18 *15*. Others: ≥26 *9* (2005Ma59, from $\beta\gamma$ data and decay scheme analysis), %β^-n=14 *11* (2014XuZZ, preliminary value).