Adopted Levels

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen[#]	NDS 126, 1 (2015)	31-Mar-2015

S(n)=16610 *SY*; S(p)=1970 *SY*; Q(α)=−6920 *SY* 2012Wa38
Estimated uncertainties (2012Wa38): ΔS(n)=570, ΔS(p)=500, ΔQ(α)=450.
S(2n)=37330 (calculated,1997Mo25). S(2p)=1180 *413*, Q(εp)=15520 *400* (syst,2012Wa38).
First identification of ^{43}Cr nuclide by 1992Bo37.
1992Bo37: ^{43}Cr produced by Ni(^{58}Ni,X) E=69 MeV/nucleon, followed by measurement of fragment spectra. Measured β^+p, E(p), I(p), $T_{1/2}$.
1994Bl10: ^{43}Cr produced by ^{9}Be(^{58}Ni,X) E=600 MeV/nucleon. Measured production cross sections.
2001Gi01, 2001Gi02: ^{43}Cr produced by Ni(^{58}Ni,X) E=74.5 MeV/nucleon. Selected isotopes implanted in a ΔE-E silicon detector telescope. Measured $T_{1/2}$, E(p), I(p).
2007Do17: E=74.5 MeV/nucleon ^{58}Ni was produced at the SISSI-LISE3 facility of GANIL, incident on a natural nickel target of 250 mg/cm^2. Fragments were selected by the ALPHA-LISE3 separator, identified by two micro-channel plate (MCP) detectors and detected in a detection setup consisting of silicon and germanium detectors. Measured β-delayed proton and γ spectra, branching ratios, half-life.
2011Po01: E=161 MeV/nucleon ^{58}Ni beam was produced at the NSCL, MSU, incident on a target of 800 mg/cm^2 natural nickel foil. Reaction products were separated by the A1900 fragment separator and identified by time-of-flight (TOF) and energy-loss. Decays were detecte using the Optical Time Projection Chamber (OTPC). Measured Ep, Ip, branching ratios for difference decay modes. Deduced half-life.
2012Au08 (also 2012As02): ^{43}Cr nuclei produced in the reaction Ni(^{58}Ni,X), E(^{58}Ni)=75 MeV/nucleon using LISE3 separator at GANIL ^{43}Cr ions were separated, identified and then implanted onto the time projection chamber (TPC). Decays were detected in a time-projection chamber (TPC), where signals from four gas electron multipliers (GEM) detected in a two-dimensional strip detector combined with drift-time analysis were used to reconstruct the tracks of the particles in three dimensions. Characterization of the TCP was done with the β^+p decay of ^{52}Ni with reference to proton energies and branching ratios. Measured energy loss, decay events, angular correlation between two protons. Deduced delayed one-, two-, and three-proton decay branching ratio. Implantation and decay events were time correlated. Recorded events in this study: 180 events for β^+2p emission, and three events for β^+3p emission from decay of ^{43}Cr.
Structure and reaction calculations: 2004Bb14, 2003Br07, 2003Gr04, 2003Gr24, 1997Co19, 1994Bl10, 1991De26, 1975Be56.

^{43}Cr Levels

E(level)	J$^\pi$	$T_{1/2}$	Comments
0	(3/2$^+$)	21.2 ms *7*	%ε+%β^+=100; %εp=79.3 *30* (2012Au08); %ε2p=11.6 *10* (2012Au08) %ε3p=0.13 *+18−8* (2012Au08) Other: %ε+%β^+=12 *4*, %εp=81 *4*, %ε2p=7.1 *4*, %ε3p=0.08 *3* (2011Po01). %$\beta^+\alpha$=? %β^+p=23 *6* and %β^+2p=6 *5* from 1992Bo37. %β^+p+%β^+ 2p=12 *4* to the IAS (1992Bo37). Search for β delayed α decay proved inconclusive (1992Bo37). Theory: 1991De26. Total delayed-proton emission of 88% *4* from 2011Po01 compares well with another recent measurement of 92.5% *28* by 2007Do17. Relative branching ratios of delayed protons: 91.8% *3* for one-proton, 8.1% *3* for two-proton and 0.096% *30* for three-proton emissions (2011Po01). Relative branching ratios of delayed protons: 87.1% *25* for one-proton, 12.7% *10* for two-proton and 0.14% *+19−9* for three-proton emissions (2012Au08). Absolute branches were deduced using total delayed proton emission branch of 91.0% *23* from 2007Do17 and 2011Po01. Measured E(p)=4363 keV *9* (2007Do17) assigned to β^+2p mode. From simulations studies and in comparison with the experimental results, 2012Au08 show that the two protons do not share equally the delayed-2p decay energy and are emitted sequentially. A ratio of 34%−66% between the two protons is in good agreement with experimental data. In addition, an isotropic distribution of the relative angle angle between the two protons is a signature of sequential emission which is supported by measured angular correlation between two protons emitted by the decay of ^{43}Cr (2012Au08).

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Adopted Levels (continued)

^{43}Cr Levels (continued)

E(level)	J^{π}	$T_{1/2}$	Comments
			J^{π}: proposed by 2001Gi01 from the β^+ decay to the $(3/2^+)$ IAS state in ^{43}V. $T_{1/2}$: weighted average of 20.6 ms *9* (2011Po01, decay time distribution of β-delayed one-proton events), 21.1 ms *4* (2007Do17, decay time distribution), 21.6 ms *7* (2001Gi01, decay time distribution), 21 ms *+4−3* (1992Bo37, decay time distribution).