U(n,X),U(p,X) 2017Fa09,2012Pr11

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. D. Nesaraja	NDS 207,1 (2026)	1-Apr-2023

2017Fa09: ^{69}Ga was produced at the ISOLDE-CERN facility by bombarding UCx target with neutrons. The neutrons were produced via spallation process by 1.4 GeV proton beam incident on a solid tungsten neutron converter. The Ga isotopes were ionized using the RILIS sources which was followed by mass separation using the high-resolution mass separator. The properties were then studied using the Collinear resonance ionization spectroscopy technique. Deduced: spins, magnetic dipole and electric quadrupole moments, and isotope shift. Comparison with large-scale shell-model calculations using JUN45 and GXPF1 interactions.

2012Pr11: ^{69}Ga was produced by impinging 1.4 GeV protons on the UC_x target at ISOLDE-CERN facility. Fragments diffused out of target were first selectively ionized using the RILIS laser ion source and then accelerated to 30 keV. The process was followed by mass separation and delivery to the ISODLE cooler-buncher, ISCOOL. Ions were released the released in bunches toward the COLLPAS experimental beam line. Isotope shifts were measured by collinear laser spectroscopy using the COLLAPS setup. Deduced rms charge radius.

^{69}Ga Levels

E(level)	J^π	Comments
0	$3/2^-$	μ=+2.014 *4* (2017Fa09) Q=+0.167 *24* (2017Fa09) μ: Deduced from the measured A($5s^2S_{1/2}$,^{69}Ga)=+1067.7 *18* MHz in 2017Fa09 and A($5s^2S_{1/2}$,^{71}Ga)=+1358.2 *16* MHz (2010Ch16), relative to μ(^{71}Ga)=+2.56227 *2* (2005St24) and J(^{71}Ga)=3/2. Q: Deduced from the measured B($4p^2P_{3/2}$,^{69}Ga)=+61 *8* MHz in 2017Fa09 and B($4p^2P_{3/2}$,^{71}Ga)=+39 *2* MHz (2010Ch16), relative to Q(^{71}Ga)=+0.107 *1* (2008Py02). J^π: Directly measured using the hyperfine structure analysis in 2017Fa09. π from μ and the proposed mixed $\pi p_{3/2}$ and $\pi f_{5/2}$ configuration (2017Fa09). Isotope shift $\delta\nu$=+33 *35* MHz, measured relative to ^{71}Ga (2017Fa09). $\delta\langle r^2\rangle$(^{71}Ga,^{69}Ga)=−0.116 fm^2 *10*(stat) *28*(syst) (2012Pr11). Isotope shift $\delta\nu$(^{71}Ga,^{69}Ga)=+40 MHz *4*(stat) *4*(syst) (2012Pr11).