U(p,X) 2022Po02

History

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

2022Po02: ^{69}Fe isotopes were produced at TRIUMF′s Isotope Separator and Accelerator (ISAC) by impinging 480 MeV protons on a UC_x target The reaction products ionized with TRIUMF′s resonant laser ion source (TRILIS) using the two-step resonant laser excitation scheme. The ionized beams were mass separated and transported to TRIUMF′s Ion Trap for Atomic Nuclear (TITAN) facility where MR-ToF-MS measurements were used to determine masses of the Fe ions based on tof and kinetic energy. Measured mass excess for g.s and isomer and deduced excitation energy for the isomer.

^{69}Fe Levels

E(level)	J^π	Comments
0.0	$(1/2^-)$	Measured mass excess=−39504 keV *11* (2022Po02). J^π: Proposed by 2022Po02 based on neutron orbital patterns in ^{63,65,67,69}Fe nuclei. Using the mean-field single-particle neutron energies obtained with the Woods-Saxon Hamiltonian, the 43rd neutron occupies the $p_{1/2}$ orbital.
222 *14*	$(7/2^+)$	E(level): From the directly measured masses of ME=−39504 *11* and ME-39281.7 *91* for the ground state and the isomer in 2022Po02. $T_{1/2}$: 100-200 ms from storage ring time measurement by 2022Po02. J^π: Based on configuration and partial half-life (Weisskopf)=162 ms as deduced by the evalutor. Note that the authors in 2022Po02 favored $9/2^+$. Configuration=ν7/2[413]. Measured mass excess=−39281.7 keV *91* (2022Po02).