$^{2}H(^{22}O,p^{23}O)$ 2007El02,2008El02

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia[#], A. Chakraborty[##]	NDS 171, 1 (2021)	1-Jun-2020

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$^{22}O(d,p)$ in inverse kinematics.

2007El02,2008El02 – Target: CD_2; Projectile: ^{22}O beam at an energy of 34 MeV/nucleon was produced from fragmentation of primary beam of ^{40}Ar, E=94 MeV/nucleon, bombarding a ^{9}Be target at RIKEN facility. The reaction products were analyzed by fragment separator RIPS, energy loss and time-of-flight methods. The position of the incident particles was determined by parallel-plate avalanche detectors. The scattered ^{23}O particles were detected and analyzed by a silicon telescope. The protons were detected by an array of 156 CsI(Tl) scintillation detectors. The γ rays were detected with a stack of 80 NaI(Tl) detectors. Neutrons emitted from the decay of excited states of ^{23}O were detected by a neutron wall of four layers of plastic scintillators. The time-of-flight method was used to obtain the energy of the neutrons. Also measured angular distribution of one of the inelastic channels from 0.5° to 3.2°. Analysis of $\sigma(\theta)$ data by DWBA calculations. Deduced excitation energy spectrum of ^{23}O, FWHM $\approx$ 200 keV.

^{23}O Levels

E(level)	J^{π}	L	S	Comments
0.0	$1/2^{+}$			J^{π}: From Adopted Levels. Configuration: $\nu s_{1/2}$.
4000[†] 20	$(3/2^{+})$	2	0.5 1	Possible configuration: $\nu d_{3/2}$. σ=0.84 mb 17.
5300[†] 40				It is a state in fp shell. Possible configuration $\nu p_{3/2}$ with S $\approx$ 1.0. Also a smaller probability for $\nu f_{7/2}$ state with S $\approx$ 0.02. σ=0.33 mb 10.

[†] Unbound state.