^{2}H(^{16}O,p) 2013Al14

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	C. G. Sheu, J. H. Kelley, J. Purcell	ENSDF	5-Aug-2021

1980FlZU: ^{2}H(^{16}O,p), E=42 MeV; measured $\sigma(E_p)$. ^{17}O levels deduced ^{16}O-neutron final state interaction. Kinematically complete experiment, Si(Sb) detector, tof, deuterated polyethylene target.

2013Al14: XUNDL dataset compilded by TUNL, 2013.

The authors verified the performance of an experimental configuration using the ^{2}H(^{16}O,p)^{17}O reaction to study the (d,p) reaction in inverse kinematics. The primary focus was on ^{2}H(^{8}He,p) to study ^{9}He levels.

A beam of E(^{16}O)=15.5 MeV/A ions from accelerators at GANIL impinged on Cd_2 targets of thickness 320 or 550 μg/cm^2. Position sensitive gas chamber detectors measured the incident trajectories while recoiling protons were measured at backward angles (θ=120°−170°) by a set of four position sensitive ΔE-ΔE-E MUST2 detector telescopes. In addition, the ^{17}O ejectiles (or ^{16}O ejectiles from in flight decay of neutron unbound levels of ^{17}O) were detected by a thick plastic scintillator at θ < 5.6° along with non-interacting beam particles. The missing mass spectrum, which was deduced from the incident beam-particle kinematics and the ejected proton, revealed the ^{17}O states populated in the reaction. The spectrum was analyzed via DWBA analysis and compared with literature values.

See also (1980FlZU).

^{17}O Levels

E(level)‡	Jπ†	Γ‡	L‡	C^{2}S‡#	Comments
0	5/2$^+$			0.7 *2*	E(level): The authors deduced a ^{17}O mass excess that differs by 5 keV *2* when compared with (2017Wa10); this implies an unaccountable systematic error.
865 *9*	1/2$^+$		0	1.4 *3*	
5089 *1*	3/2$^+$	≈70 keV		0.8 *2*	
5692 *7*	7/2$^-$			0.13 *3*	
≈7550					

† Nominal values listed in (2013Al14).

‡ From (2013Al14).

Uncertainties are stated as 20% by (2013Al14).