^{2}H(^{17}N,P) 2013Ho21

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	R. Spitzer, J. H. Kelley	ENSDF	30-Jun-2021

2013Ho21: XUNDL dataset compiled by TUNL (2013).

A beam of E(^{17}N)=13.6 MeV/nucleon ions, produced via proton removal from ^{18}O beam at the ATLAS In-Flight Facility, impinged on either 140 or 220 μg/cm^2 deuterated polyethylene targets. Protons ejected from the target were detected upstream of the target using the HELIOS detector to reconstruct the event kinematics. Detection of the forward moving ^{18}N/^{17}N reaction product helped reduce backgrounds and remove contributions from beam contaminants.

The proton kinematics were analyzed to deduce the reaction Q values and excitation energies for populated groups. The energy resolution (FWHM) was ≈275 keV. Three groups corresponding to E_x=0.12, 0.74 and 1.17 MeV are observed below the neutron separation energy. The proton angular distributions are analyzed via PTOLEMY/DWBA analysis. The group at E_x=1.17 MeV is reasonably fitted using l=0, though the resulting spectroscopic factor is not reasonable; hence the group is suggested as either a single $J^\pi=1^-$ state or a $J^\pi=1^-$, 0^- doublet. An excess of strength is observed near E_x=2.2 MeV, which may correspond to previously known levels at E_x≈2.21 and 2.42 MeV (1983Pu01).

The spectroscopic strengths and spectroscopic factors are deduced for the observed levels and limits of S≤0.07 and ≤0.05 are set for unobserved states at E_x=0, 0.59 MeV, respectively.

^{18}N Levels

E(level)	J^π	L	S[†]	Comments
120 *10*	2^-	2	0.67 *3*	
740 *10*	3^-	2	0.69 *3*	
1170 *20*	(1^-)	0	0.96 *19*	The authors indicate $J^\pi=(1^-)$ in the summary; though in the discussion and in Table I they suggest a possible doublet with $J^\pi=(0^-$ and $1^-)$ and S=0.72 *14*, assuming equivalent values of S for 0^- and 1^- states .
≈2.2×10^3?				

[†] Absolute uncertainties in the normalized values estimated as 30%.