^{1}H(^{18}Ne,D) 2017Sh29

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. H. Kelley, G. C. Sheu	ENSDF	16-Jan-2018

2017Sh29: A beam of 35 MeV/nucleon ^{18}Ne ions, produced by fragmentation of a ^{20}Ne beam on a beryllium target at the JINR/Flerov Laboratory of Nuclear Reactions, was used to populated ^{17}Ne states via ^{1}H(^{18}Ne,d) reactions on a cryogenic hydrogen target. The ^{17}Ne excitation energy was determined by analyzing the scattered deuterons, while the Γ_{2p} decay branch was experimentally determined by kinematic reconstruction of the ^{15}O+p+p events. The overall angular coverage was $\Theta_{c.m.}\approx 3°-24°$. Two peaks corresponding to the ground and first excited state are resolved in the analysis of the scattered deuterons; a broad background and some enhancement that corresponds to higher excied states is also visible. On the other hand, analysis of the ^{17}Ne*$\geq^{15}$O+2p recoils showed groups corresponding to ^{17}Ne*(1916,2651) with only a suggestion of limited counts for the unbound first excited state. The analysis focused on obtaining the $\Gamma_{2p}/\Gamma_{\gamma}$ for the first excited state, which is relevant for nuclear astrophysics. The limit $\Gamma_{2p}/\Gamma_{\gamma}\leq 1.6\times10^{-4}$ *3* was deduced by comparing the yield of deuterons to ^{17}Ne*(1288) with the yield deduced from a reconstruction of ^{15}O+2p events.

^{17}Ne Levels

E(level)	J^{π}[†]	Comments
0	$1/2^-$	
1288	$3/2^-$	E(level): From (1998Gu10). $\Gamma_{2p}/\Gamma\approx\Gamma_{2p}/\Gamma_{\gamma}\leq 1.6\times10^{-4}$ *3*.
1916	$1/2^+$	E(level): Possibly contaminated by E*=1764 keV events.
2651	$5/2^+$	

[†] From (1998Gu10).