

$^{20}\text{Ne}(^3\text{He},^6\text{He})$  1970Me11,1998Gu10

Type	Author	Citation	Literature Cutoff Date
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**1970Me11:** Beams of  $\approx 60$  MeV  $^3\text{He}$  ions, from the Berkeley 88-inch cyclotron impinged on a gas target filled with 97% enriched  $^{20}\text{Ne}$  (and  $\text{CO}_2$ ). Two Si  $\Delta\text{E}-\Delta\text{E}-\text{E}-\text{VETO}$  telescopes, placed at equal angles on either side of the beam detected and identified reaction products. The  $^6\text{He}$  spectrum was analyzed and the mass excess  $\Delta\text{M}=16.508$  MeV 23 was deduced. The  $A=17$  mass multiplet was analyzed using the IMME equation. The  $^{12}\text{C}(^3\text{He},^6\text{He})^9\text{C}$  reaction was used for calibrations.

**1995Gu08,1995Gu17,1998Gu10:** The  $(^3\text{He},^6\text{He})$  three neutron transfer reaction was studied at the University of Tokyo/Center for Nuclear Studies by impinging a 70.08 MeV  $^3\text{He}$  beam on a 99.95% enriched  $^{20}\text{Ne}$  filled gas cell. The  $^6\text{He}$  reaction products were momentum analyzed using a QDD magnetic spectrometer before detection in a typical position sensitive focal plane array. The overall energy resolution for  $^6\text{He}$  ions was  $\approx 180$  keV. The reaction was measured at 12 angles between  $\theta_{\text{lab}}=7.0^\circ$  and  $38.0^\circ$ , and the angular distributions were analyzed via DWBA to obtain L values. The  $J^\pi$  values for some states was deduced based on comparison with known levels in the  $^{17}\text{N}$  mirror nucleus. The mass excess  $\Delta\text{M}=16.453$  MeV 32 was deduced, and the IMME was evaluated for six sets of  $A=17$   $T=3/2$  states.

 $^{17}\text{Ne}$  Levels

E(level)	$J^\pi$	L	Comments
0.0	$(1/2,3/2)^-$	1	$J^\pi$ : $1/2^-$ is preferred based on comparison with the $^{17}\text{N}$ levels (1998Gu10). $\Delta\text{M}=16.508$ MeV 23 (1970Me11). $\Delta\text{M}=16.453$ MeV 32 (1998Gu10).
1288 8	$(3/2,1/2)^-$	1	$J^\pi$ : $3/2^-$ is preferred based on comparison with the $^{17}\text{N}$ levels (1998Gu10).
1764 12	$(5/2,7/2)^-$	3	$J^\pi$ : $5/2^-$ is preferred based on comparison with the $^{17}\text{N}$ levels (1998Gu10).
1908 15	$1/2^+, (3/2,5/2)^+$	0,(2)	$J^\pi$ : $1/2^+$ is preferred (1998Gu10).
2651 12		(3,2)	$J=5/2^+, 5/2^-, 3/2^+, 7/2^-$ E(level): Possible doublet. Only one peak is observed. However the relatively poor energy resolution may conceal two groups in this region. An analysis of the angular distributions for the $E_x \approx 2623$ keV region is consistent with $L=3$ ( $J^\pi=(5/2^-, 7/2^-)$ ), while analysis of the $E_x \approx 2765$ keV region is consistent with $L=2$ ( $J^\pi=(3/2^+, 5/2^+)$ ).
2997 11	$(7/2,5/2)^-$	3	$J^\pi$ : $7/2^-$ is preferred based on comparison with the $^{17}\text{N}$ levels (1998Gu10).
3548 20	$(9/2,11/2)^-$	5	$J^\pi$ : $9/2^-$ is preferred based on comparison with the $^{17}\text{N}$ levels (1998Gu10).
4010 10	$(3/2,5/2)^+$	2	$J^\pi$ : $3/2^+$ is preferred based on comparison with the $^{17}\text{N}$ levels (1998Gu10).
4487 22			
5141? 62			
5722 23			
6132 35			
6366 22			