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ANALYZING-POWER MEASUREMENTS FOR (p,n) REACTIONS

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We measured the analyzing power[1] for the $^{16}O(p,n)^{16}F(4^-,6.37\ MeV)$ reaction at 134.0 MeV and the differential cross section for the same reaction at 135.2 MeV. The shape of the cross section for the transition to this unnatural parity stretched state is described well by a distorted-wave impulse-approximation calculation using a $(\pi d_{5/2}, \nu p^{-1}_{3/2})_{4^-}$ configuration and the effective interaction derived by Love and Franey from nucleon-nucleon phase shifts. The analyzing power from this calculation reproduces all of the qualitative features of the data and supports the use of the impulse approximation as an excellent starting point for describing the reaction mechanism.

We measured the analyzing power for the $^{28}Si(p,n)^{28}P(6^-,4.95\ MeV)$ reaction at 133.5 MeV and the differential cross section for the same reaction at 135.2 MeV. Work is still in progress on the comparison of our results with similar measurements of Yen et al.[2] of the analog reaction $^{28}Si(p,p')^{28}Si(6^-, T=1, 14.35\ MeV)$.

The above studies represent a portion of the doctoral dissertation of A. Fazely.[3] Dr. Fazely received his Ph.D. degree in August 1982.

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