

Abstract Submitted
for the APR05 Meeting of
The American Physical Society

Direct quantitative observation of a negative-parity intruder state in ^{28}Ne ¹ P.G. HANSEN, J.R. TERRY, D. BAZIN, B.A. BROWN, C.M. CAMPBELL, J.A. CHURCH, J.M. COOK, A.D. DAVIES, D.C. DINCA, J. ENDERS, A. GADE, T. GLASMACHER, J.L. LECOUEY, W.F. MUELLER, H. OLLIVER, B.M. SHERRILL, K. YONEDA, National Superconducting Cyclotron Laboratory, Michigan State University, J.A. TOSTEVIN, Dept. of Physics, University of Surrey, Guildford, UK — We present results for the neutron knockout from a 70 MeV beam of ^{28}Ne interacting with a ^9Be target. The projectile residues were detected in the high-resolution S-800 spectrograph and excited levels were identified via gamma-ray coincidences observed with the array of segmented germanium detectors SeGA. Events not coincident with gamma rays amounted to 38%. These were predominantly associated with a momentum distribution with a clear $l=3$ shape corresponding to a spectroscopic factor of close to unity, so that, on the average, at least one of the 18 neutrons in the projectile must be in an $f_{7/2}$ orbital. This confirms for the first time the strong presence of f -shell intruders in the ground state predicted for this nucleus in the Monte-Carlo shell-model calculations by Utsuno et al., Phys. Rev. C 60, 054315 (1999).

¹Work supported by NSF grants PHY-0110253, PHY-9875122, PHY-0244453, and PHY-0342281.

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Date submitted: 22 Dec 2004

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