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Two-neutron knockout reaction to final levels in the T_z = -2 nuclei ^{24}Si, ^{28}S, and ^{32}Ar KENICHIRO YONEDA, P.G. HANSEN, D. BAZIN, B.A. BROWN, C.M. CAMPBELL, J.M. COOK, D.C. DINCA, A. GADE, T. GLASMACHER, T.E. HOAGLAND, J.L. LECOUEY, W.F. MUELLER, H. OLLIVER, B.M. SHERRILL, J.R. TERRY, NSCL, Michigan State University, P.D. COTTLE, K.W. KEMPER, R. REYNOLDS, B.T. ROEDER, Florida State University, J.A. TOSTEVIN, University of Surrey, UK — Two-proton knockout from a neutron-rich nucleus has recently been shown[1] to proceed as a direct reaction. While the inclusive and partial cross sections could be understood in a simple theory, a more precise description can be based on a scheme that combines the full shell-model two-nucleon spectroscopic amplitudes with eikonal reaction theory[2]. We report here a first attempt to investigate the analogous two-neutron knockout from a proton-rich nucleus at energies around 100 MeV/nucleon. The projectiles ^{26}Si, ^{30}S, and ^{34}Ar lead to products that have a 2^+ level as the only bound excited state, and are thus well suited for an accurate test of the theory. The experiment carried out at the NSCL observed this gamma peak in coincidence with the projectile residues in all three cases. The partial cross sections to the 0^+ and 2^+ levels will be discussed and compared with theory. This work was supported by NSF grants PHY-0110253, PHY-9875122, PHY-0244453, and PHY-0342281.

1. D. Bazin et al., Phys. Rev. Lett. 41 (2003) 012501.
2. J. A. Tostevin et al., Phys. Rev. C 70, 064602 (2004).

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