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Search for unbound ^{15}Be states in the 3-neutron decay channel A.N. KUCHERA, A. SPYROU, J.K. SMITH, T. BAUMANN, NSCL/Michigan State University, J. BROWN, Wabash College, P.A. DEYOUNG, Hope College, N. FRANK, Augustana College, M. JONES, Z. KOHLEY, M. THOENNESSEN, NSCL/Michigan State University — The first observation of ^{15}Be has been made recently using a (d,p) reaction from a ^{14}Be beam. The observed resonance at 1.8(1) MeV, which decays to the ground state in ^{14}Be, was tentatively assigned to have a spin and parity of $5/2^+$. Prior to this result, a two-proton knockout reaction from ^{17}C, which was expected to populate the $3/2^+$ state, did not produce a significant number of one-neutron decay events from ^{15}Be. It was suggested that any states populated in this way should then decay through the first excited unbound state of ^{14}Be [2]. Both experiments used the Modular Neutron Array (MoNA) together with the Sweeper dipole magnet and charged particle detectors to make measurements of the neutron-fragment coincidences from the decay of the neutron-unbound systems. The two-proton knockout data were recently analyzed to search for the predicted, yet unobserved, $3/2^+$ state in the 3-neutron decay channel to ^{12}Be. Through simultaneous fitting of the reconstructed decay energy spectra and other experimental observables, limits on the potential $3/2^+$ state will be presented.

[1] J. Snyder et al., Phys. Rev. C 88, 031303(R) (2013).
[2] A. Spyrou et al., Phys. Rev. C 84, 044309 (2011).

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