Abstract Submitted
for the DNP16 Meeting of
The American Physical Society

Spectroscopic factors near the r-process path using (d,p) measurements at two energies D. WALTER, J.A. CIZEWSKI, T. BAUGHER, A. RATKIEWICZ, B. MANNING, Rutgers University, S.D. PAIN, ORNL, F.M. NUNES, S. AHN, NSCL/MSU, G. CERIZZA, C. THORNSBERRY, K.L. JONES, UT-Knoxville — To determine spectroscopic factors, it is necessary to use a nuclear reaction model that is dependent on the bound-state potential. A poorly constrained potential can drastically increase uncertainties in extracted spectroscopic factors. Mukhamedzhanov and Nunes [1] have proposed a technique to mitigate this uncertainty by combining transfer reaction measurements at two energies. At peripheral reaction energies (˜5 MeV/u), the external contribution of the wave function can be reliably extracted, and then combined with the higher energy reaction (˜40 MeV/u) with a larger contribution from the interior. The two measurements will constrain the single-particle asymptotic normalization coefficient, ANC, and enable spectroscopic factors to be determined with uncertainties dominated by the cross section measurements rather than in the bound-state potential. Published measurements of ^{86}Kr(d,p) at 5.5 MeV/u [2] have been combined with recent results at 35 MeV/u at the NSCL using the ORRUBA and SIDAR arrays of silicon-strip detectors. Preliminary analysis shows that the single-particle ANC can be constrained. The details of the analysis and prospects for measurements with rare isotope beams will be presented. This research by the ORRUBA Collaboration is supported in part by the NSF and the U.S. DOE. [1] A.M. Mukhamedzhanov and F.M. Nunes, Phys. Rev. C 72, 017602 (2005) [2] K. Haravu et al., Phys. Rev C 1,938 (1970)

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Date submitted: 30 Jun 2016 Electronic form version 1.4