Abstract Submitted
for the DNP20 Meeting of
The American Physical Society

Reducing uncertainties in spectroscopic factors of N≈50 nuclei through a combined analysis of neutron transfer reactions at two energies[1]
H. SIMS, D. WALTER, J. A. CIZEWSKI, A. LEPAILLEUR, Rutgers, S. D. PAIN, ORNL, A. RATKIEWICZ, LLNL, S. AHN, TAMU, ORRUBA COLLABORATION, GODDESS COLLABORATION — Neutron-transfer reactions with radioactive-ion beams (RIBs) probe the single-neutron components of the nuclear wave function. Through (d,p) reactions, spectroscopic factors can be deduced by comparing experimental differential cross sections to those calculated using nuclear reaction theory. Deduced spectroscopic factors are, however, sensitive to the parameters chosen to model the final bound-state potential. A combined method with low- and high-energy RIBs constrains the single-particle asymptotic normalization coefficient (spANC) - reducing the uncertainties on the extracted spectroscopic factors. The ground- and first-excited states in ^{85}Se were investigated through the ^{84}Se(d,p) reaction, measured at 4.5- (Thomas *et al.*) and 45 MeV/u (This work) - where silicon detector arrays measured reaction protons in coincidence with recoils. Constrained spANCs and spectroscopic factors will be presented. Continuing investigations of N≈50 nuclei, a measurement of ^{80}Ge(d,pγ) at 45 MeV/u is scheduled at the NSCL using the GRETINA - ORRUBA Dual Detector for Experimental Structure Studies (GODDESS) to detect protons and gamma-rays in coincidence. This will be compared to the 3.875 MeV/u measurement by Ahn et al. Preliminary results will be presented.

[1]This work is supported in part by the National Science Foundation and U.S. Department of Energy

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Date submitted: 25 Jun 2020 Electronic form version 1.4