Abstract Submitted
for the DNP13 Meeting of
The American Physical Society

High-resolution single-neutron transfer measurements in ^{131}Sn[1] A. BEY, K.L. JONES, A. AYRES, S.H. AHN, UTK, J.M. ALLMOND, JIHIR, D.W. BARDAYAN, A. GALINDO-URIBARRI, J.F. LIANG, C.D. NESARAJA, D.C. RADFORD, S.D. PAIN, S.T. PITTMAN, D. SHAPIRA, K.T. SCHMITT, M.S. SMITH, D.W. STRACENER, R.L. VARNER, ORNL, R.L. KOZUB, Tenn. Tech. Univ., R. GARCIA-RUIZ, KU Leuven, M.E. HOWARD, B.M. MANNING, P.D. O'MALLEY, A. RATKIEWICZ, Rutgers Univ., M. MATOS, LSU, E. PADILLA-RODAL, UNAM — The r-process accounts for the production of approximately half of the elements heavier than iron, but most of the (n,γ) cross-sections are unknown. Near shell-closures, the level density becomes low in neutron-rich nuclei and the process is dominated by direct neutron capture involving primarily shell model orbitals. Precise information on these states is essential to reduce uncertainties in nucleosynthesis models. Below the N=82 shell, a large amount of ^{130}Sn accumulates at late times of the freeze-out, and subsequent individual captures are predicted to influence the final abundance distribution. Spectroscopic studies of ^{131}Sn have been performed at HRIBF using the (^{9}Be,^{8}Be-γ) and (^{13}C,^{12}C-γ) reactions with a 4MeV/u ^{130g,m}Sn beam. Channel selectivity was obtained by measuring particle-γ coincidences in the HyBall and CLARION arrays. Strongly populated single-neutron excitations were identified and a detailed level structure of ^{131}Sn has emerged, including the yrast structure arising from neutron transfer onto the 7^- isomer of ^{130}Sn. Details and results of the experiments will be presented.

[1]Supported by the U.S. DOE and the NSF.

Anissa Bey
University of Tennessee, Knoxville

Date submitted: 01 Jul 2013 Electronic form version 1.4