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Single particle states in ^{131}Sn and the r-process R.L. KOZUB, J.F. SHRINER, JR., TTU, A. ADEKOLA, Ohio U., D.W. BARDAYAN, J.C. BLACKMON, F. LIANG, C.D. NESARAJA, D. SHAPIRA, M.S. SMITH, ORNL, K.Y. CHAE, K.L. JONES, Z. MA, B.H. MOAZEN, UTK, K. CHIPPS, L. ERIKSON, CSM, J.A. CIZEWSKI, R. HATARIK, S.D. PAIN, Rutgers, C. MATEI, ORAU, W. KROLAS, IFJ PAN, T.P. SWAN, Surrey/Rutgers — Recent r-process calculations suggest the ^{130}Sn(n,γ)^{131}Sn reaction rate plays a pivotal role in nucleosynthesis, engendering global effects on isotopic abundances over a wide mass range.[1] Direct neutron capture is likely the dominant reaction in the r-process near the N=82 closed shell, and the reaction rate is thus strongly impacted by the properties of single particle states in this region. We have acquired (d,p) reaction data in the A$\sim$132 region in inverse kinematics using $\sim$630 MeV beams (4.85 MeV/u for ^{130}Sn) and CD_2 targets. An array of Si strip detectors, including SIDAR and an early implementation of the new ORRUBA, was used to detect reaction products. Preliminary excitation energies and angular distributions have been extracted for the strongest states observed in ^{131}Sn, and DWBA calculations have been performed to determine ℓ-values. A status report on analysis and results will be presented.
[1]J. Beun, G. C. McLaughlin, W. R. Hix, and R. Surman, in prep. (2007).
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