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Study of 13B(d,p)14B Reaction in Inverse Kinematics with Helios[1] S. BEDOOR, A.H. WUOSMAA, J.C. LIGHTHALL, S.T. MARLEY, D.V. SHETTY, Western Michigan, M. ALCORTA, B.B. BACK, P.F. BERTONE, K.E. REHM, A.M. ROGERS, J.P. SCHIFFER, ANL, B.A. BROWN, Michigan State, C.M. DEIBEL, Louisiana State — The ^{14}B nucleus was studied employing the (d, p) reaction in inverse kinematics using HELIOS at the ATLAS facility at ANL. A beam of ^{13}B with energy 15.7 MeV/nucleon was produced using the In-Flight method. Protons from the $^{13}\mathrm{B}(d, p)^{14}\mathrm{B}$ reaction were detected and analyzed using the HELIOS device. Detecting and identifying the recoiling ^{13}B and ^{14}B nuclei in a silicon ΔE-E telescope at forward angles distinguished bound and unbound states in ^{14}B. Angular-momentum transfers and relative spectroscopic factors were deduced for the four lowest states in ^{14}B. The ground and first excited states, 2^- and 1^- respectively, are presumably made up of $\pi(0\mathrm{p}_{3/2})$-$\nu(1\mathrm{s}_{1/2})$ configurations, while coupling of the proton hole to a $\mathrm{d}_{5/2}$ neutron produces $(1,2,3,4)^-$. The $0\mathrm{d}_{5/2}$-$1\mathrm{s}_{1/2}$ splitting in ^{14}B is expected to be small, producing mixing between the $(1,2)^-$ $\ell = 0$ and 2 configurations. The measured spectroscopic factors for neutron transfer will be compared to the predictions of the shell model calculations.

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