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Study of the ^{15}C(d, ^{3}He)^{14}B Reaction[1] S. BEDOOR, A.H. WUOSMAA, J.C. LIGHTHALL, S.T. MARLEY, D.V. SHETTY, Western Michigan University, M. ALBERS, M. ALCORTA, S. ALMARAZ-CALDERON, B.B. BACK, C.R. HOFFMAN, R.C. PARDO, K.E. REHM, Argonne National Laboratory, P.F. BERTONE, Louisiana State University — We have studied the ^{14}B nucleus employing the ^{15}C(d,^{3}He)^{14}B reaction in inverse kinematics using HELIOS (the HELIcal Orbit Spectrometer) at the ATLAS facility at ANL. A ^{15}C beam was produced using the In-Flight method. The ^{3}He particles were detected with HELIOS. The recoiling $^{13,\ 14}$B nuclei were identified in a set of silicon ΔE–E telescope, distinguishing bound and unbound states in ^{14}B. From a previous study of the ^{13}B(d, p)^{14}B reaction the $(2_1,1_1)^-$ states were found to be admixtures of $\ell = 0$ and $\ell = 2$ made up of $\pi(0p_{3/2})^{-1}$–$\nu(1s_{1/2})$ and $\pi(0p_{3/2})^{-1}$–$\nu(0d_{5/2})$ configurations. The $(2_2,1_2)^-$ excited states were not observed. A complementary reaction can identify the $(2_2,1_2)^-$ states in order to track the single particle strength in ^{14}B. In the current study, proton removal from ^{15}C explores only the $\pi(0p_{3/2})^{-1}$–$\nu(1s_{1/2})$ component of states in ^{14}B. The results provide a determination of 2_2^- energy level and better constrain the $1s_{1/2}$ and $0d_{5/2}$ effective single–particle energies in ^{14}B.

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