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**Study of the $^{12}$B(d,p)$^{13}$B reaction with the HELIOS spectrometer** H.Y. LEE, J.P. SCHIFFER, Argonne National Laboratory, A.H. WUOSMAA, Western Michigan University, HELIOS COLLABORATION[1] — The $^{12}$B(d,p)$^{13}$B reaction has been studied in inverse kinematics at ATLAS at an energy of 6.25 MeV/u with the HELIOS spectrometer to study the positive-parity orbitals for the neutron-rich $^{13}$B nucleus. Two states previously suggested to have positive-parity at 3.48 and 3.68 MeV were resolved and their proton angular distributions measured. The $^{11}$B(d,p)$^{12}$B reaction was also studied as a reference standard. The angular distribution for the 3.48 MeV state is consistent with an l=0 transition as expected from shell-model calculations which suggest a $1/2^+$state that is primarily an $s_{1/2}$ neutron coupled to the $1^+$ ground state of $^{12}$B. The 3.68-MeV angular distribution is dominantly l=2 (with a slight l=0 admixture), consistent with the shell-model expectation of a $3/2^+$state, although the spectroscopic factor relative to that for the 3.48-MeV state is much smaller than the shell-model prediction.

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