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Knockout reactions from p-shell nuclei: tests of ab initio structure models DANIEL BAZIN, Michigan State University, GEOFF GRINYER, GANIL, SOFIA QUAGLIONI, LLNL, JAMES TERRY, LANL, DIRK WEISSHAAR, ALEXANDRA GADE, NSCL/MSU, JEFF TOSTEVIN, Surrey, ALEX BROWN, CHRIS CAMPBELL, NSCL/MSU, THOMAS GLASMACHER, FRIB/MSU, SEAN MCDANIEL, NSCL/MSU, PETR NAVRATIL, TRIUMF, ALEXANDRE OBERTELLI, CEA-Saclay, ROBERT WIRINGA, ANL — Absolute cross section measurements have been performed at the level of 5% precision following single neutron knockout reactions from ^{10}Be and ^{10}C at intermediate beam energy. Theoretical nucleon densities and bound-state wavefunction overlaps obtained from Variational Monte-Carlo (VMC) and No-Core Shell Model (NCSM) ab initio calculations have been incorporated into the theoretical description of knockout reactions. Comparison to experimental cross sections demonstrates that the VMC approach provides the best agreement while the NCSM and conventional shell-model calculations both over-predict the cross section for ^{10}Be by 20 to 30% and ^{10}C by 40 to 50%, respectively. This study provides new insight into the importance of nucleon correlations and 3-body forces in light nuclei and the accuracy of the VMC and NCSM structure models for describing these effects at the microscopic level.

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