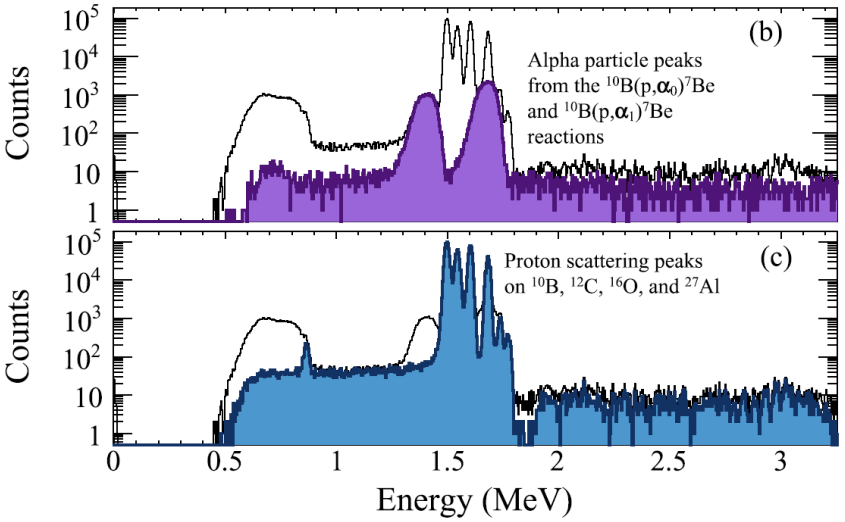
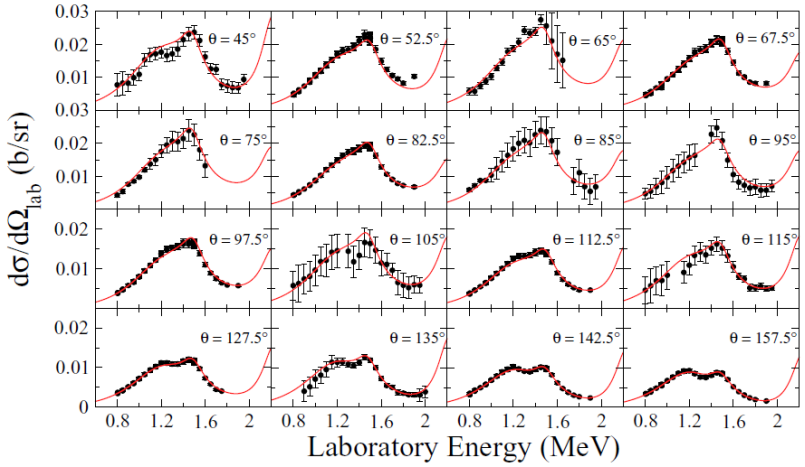
# Investigation of the $^{10}B(p, \alpha)\ ^{7}Be$ reaction for Boron-Proton Fusion Reactors

A multitude of broad interfering resonances characterize the $^{10}B(p,\alpha)^{7}Be$ cross section at low energies. The complexity of the reaction mechanism and conflicting experimental measurements have prevented a reliable prediction of the cross section over the energy ranges pertinent for a boron-proton fusion reactor environment. This study targets the proton energy region from 0.8 to 2.0 MeV, where kinematic overlap of the scattered protons and reaction $\alpha$-particles have made past measurements very challenging.




The new measurements were performed at both Ohio University and the University of Notre Dame using time-of-flight and degrader foil techniques, respectively. A comprehensive R-matrix analysis of the experimental data resulted in a more reliable and consistent description of the $^{10}B(p,\alpha)^{7}Be$ cross section, reducing the uncertainty from 20% to 10%, and bringing greater clarity to the level structure of the $^{11}C$ system.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