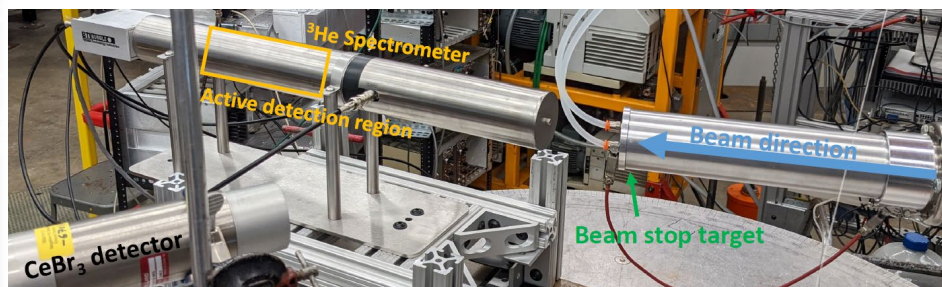
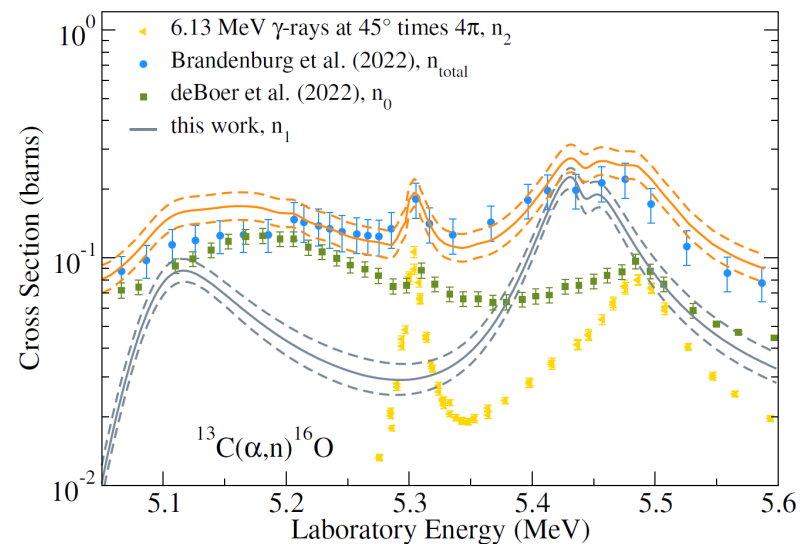
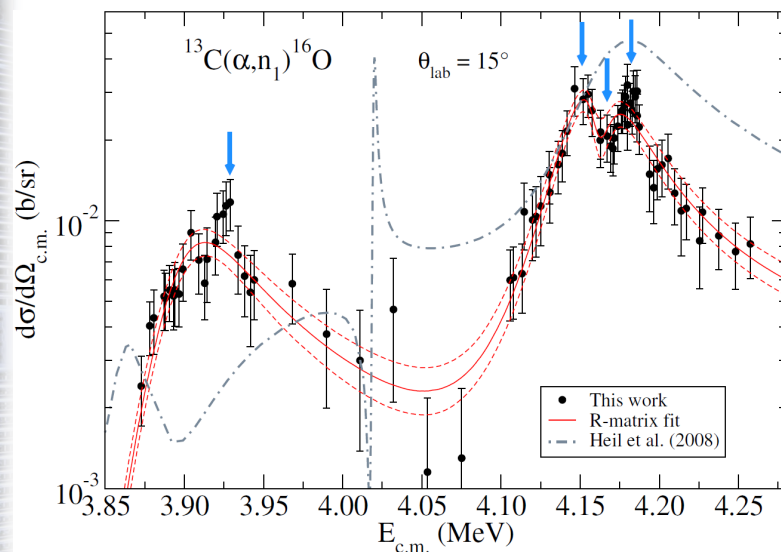


# First near threshold measurements of the $^{13}\text{C}(\alpha, n_1)^{16}\text{O}$ reaction for low background environment characterization



The modeling of backgrounds in large volume detectors requires accurate  $(\alpha, n)$  partial cross sections up to 9 MeV. Yet very little experimental data exists. Here the partial cross section of the  $^{13}\text{C}(\alpha, n_1)^{16}\text{O}$  reaction has been reported for the first time at the reaction threshold. Measurements were made using a high energy resolution helium spectrometer showing a rapidly increasing cross section, which quickly becomes



a significant fraction of the total reaction cross section. Comparison with previous theory estimates found differences of more than an order of magnitude. The level of consistency with the total reaction cross and other partial cross sections was investigated.



deBoer *et al.* PRC 106, 055808 (2022)  
NSF Grant No. PHY-2011890 and PHY-1430152 (JINA-CEE)

