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A Scattering Chamber System to Measure Cross Sections of Multiple Star Configurations in Neutron-Deuteron Breakup at 19 MeV^1 LOUIS THREATT, BENJAMIN CROWE, LARRY CUMBERBATCH, North Carolina Central University, CALVIN HOWELL, Duke University and TUNL, DIANE MARKOFF, North Carolina Central University — The kinematics of the neutrondeuteron (nd) breakup reaction enable observables to be studied in a variety of exit-channel configurations that show sensitivity to realistic nucleon-nucleon (NN) potential models and three-nucleon force (3NF) models. Rigorous 3N calculations give very good descriptions of most 3N reaction data. However, there are still some serious discrepancies between data and theory. The largest discrepancy observed for nd breakup is for the cross section for the space-star configuration. Several experimental groups have obtained results showing this discrepancy but it is important to note that they all used essentially the same experimental setup and so their experimental results are subject to the same systematic errors. We will discuss a new scattering chamber system that we have developed to measure simultaneously the cross sections of multiple orientations of the star configuration in nd breakup at 19.0 MeV utilizing an experimental technique that is significantly different from the one used in previous breakup experiments.

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Benjamin Crowe North Carolina Central University

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