

Abstract Submitted  
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**Determining fragmentation dynamics through a study of neutron multiplicity at the NSCL**<sup>1</sup> SHARON STEPHENSON, PETER CHRIST, MARIA MAZZA, Gettysburg College, MONA COLLABORATION — In nuclear fragmentation reactions the number of neutrons and the excitation energy of the final fragment are related to the excitation energies of prefragments, which are produced in the reaction target but not directly observed. The MoNA Collaboration designed and performed an experiment to measure the number of neutrons in coincidence with charged projectile fragments to determine the excitation mechanisms of specific prefragments. All prior MoNA experimental campaigns concentrated on neutrons emitted from discrete levels in near dripline nuclei and treated any evaporation neutrons as an underlying background. This experiment capitalizes on those evaporation neutrons, focusing on sodium, neon and fluorine reaction products. For the experiment a  $^{32}\text{Mg}$  secondary beam with energy 86 MeV/u was incident on a Be reaction target. This target is upstream from the Sweeper, a superconducting dipole steering magnet with a bending angle of  $43^\circ$  and a vertical gap that permits forward-focused neutrons to get to the MoNA, the Modular Neutron Array. The rigidity of the Sweeper was varied during this experiment to increase the detection range. Analysis of the neutron-neutron hit distribution in coincidence with each sodium, neon, or fluorine charged fragment will be presented.

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