

Abstract Submitted  
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**Charged Particle Detector Telescope for Studies of Neutron-rich Systems**<sup>1</sup> NATHAN FRANK, GEORGIA VOTTA, Augustana College, THOMAS BAUMANN, Michigan State University, JAMES BROWN, Wabash College, PAUL DEYOUNG, Hope College, MONA COLLABORATION — A straight-forward type of experiment on neutron-rich systems involves detecting a single neutron and charged particle resulting from a nuclide decaying from a neutron-unbound state. However the charged fragment may be in a bound excited state resulting in gamma-ray emission, such as for some neutron-unbound states of  $^{25}\text{F}$  and  $^{13}\text{Be}$ . Thus efficient coincident detection of gamma-rays, neutrons, and charged particles is desired. A compact charged particle detector telescope design is being developed to provide detection of charged particles, allow the neutron to pass through with minimal attenuation to then be detected by the MoNA-LISA, and allow gamma-ray detection. Charged particles resulting from neutron-emission will pass through one silicon position sensitive detector ( $140\mu\text{m}$  thick) and a stack of silicon detectors ( $500\mu\text{m}$  thick) with a CsI crystal (3 cm thick) read out by a silicon photomultiplier (SiPM). An additional silicon position sensitive detector at the reaction target will provide the position information to calculate charged particle trajectories. This system will be installed at the NSCL and will also be available for use at FRIB. This talk will discuss initial testing of system components and the experimental setup.

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