

Abstract Submitted
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Development of a forward-angle gamma-ray detector array for MoNA-LISA¹ DANIEL VOTAW, Michigan State Univ, MONA COLLABORATION COLLABORATION — In recent years invariant mass spectroscopy has been successfully applied to measure neutron-unbound states. In this method neutrons are measured in coincidence with charged fragments following reactions with radioactive beams produced in projectile fragmentation reactions. When the final nucleus has bound excited states it is necessary to include gamma-ray detection in order to extract the excitation energy of the initial state. Because the MoNA-LISA setup at NSCL uses a large-gap Sweeper magnet to deflect the charged particles, conventional gamma-ray scintillation arrays cannot be used efficiently because of the large fringe field of the magnet. Thus we are developing a small cesium iodide (CsI) array using silicon photomultipliers (SiPMs) which are agnostic to the presence of a magnetic field. Using GEANT4 simulations the parameters of the array will be optimized to achieve the required efficiency and energy resolution of the Doppler-corrected energy spectra, necessary to extract the gamma-ray transitions in the final nucleus.

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