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Development of the focal plane system for the SEparator for CApture Reactions[1] A. A. D. HOOD, J. C. BLACKMON, R. COTTINGHAM, C. M. DEIBEL, E. GOOD, K. JOERRES, A. LAMINACK, LSU, A. GARRITY, Francis Marion Univ., FOR THE SECAR COLLABORATION — The SEparator for CApture Reactions (SECAR) is currently under construction for the National Superconducting Cyclotron Laboratory and future Facility for Rare Isotope Beams. SECAR is designed to conduct sensitive measurements of capture reactions critical to understanding stellar explosions. We have developed a versatile focal plane system that will differentiate reaction recoils from unreacted scattered beam particles in measurements covering a large range of energies and masses. The elements of the focal plane system include two metal-foil, micro-channel plate (MCP) detectors, a variety of diagnostics, and two alternative recoil stopping detectors. The MCP detectors will measure the time-of-flight (and therefore velocity) as well as the position of the recoils. Our primary heavy ion recoil detector is a gas ionization chamber that measures position, total energy and relative energy loss and provides good atomic number discrimination at energies greater than about 0.5 MeV/u. For some cases, this gas counter will be replaced by silicon strip detectors to provide superior energy resolution. We will describe the overall design and report on construction and testing of the detector systems.

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