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FENRIS Focal-plane Detector Package on the TUNL Split-pole Spectrograph[1] CALEB MARSHALL, KIANA SETOODEHNIA, FEDERICO PORTILLO, RICHARD LONGLAND, North Carolina State Univ, TUNL — The Facility for Experiments of Nuclear Reactions in Stars (FENRIS) uses an Enge split-pole spectrograph to measure reactions of interest for astrophysics. Magnetic spectrographs focus particles onto a plane according to their charge to mass ratio and kinetic energy. A detector positioned at this focal plane needs to be able to measure the spatial separation of focused particle groups in order to extract their physical quantities. The FENRIS focal plane detector, in particular, must provide both accurate position measurements and particle identification for reaction products. Our detector package consists of two position sensitive gas proportionality counters, a gas proportionality energy loss section, and a residual energy scintillator. Our design choices and fabrication techniques for each of these sections has produced a detector that achieves the previously stated requirements, eases routine maintenance, and is flexible enough to accommodate future upgrades. Calibration and characterization experiments have been carried out, and their results have validated the detector design.

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