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Development of the Focal Plane Detection System for the Future Gas-Filled Separator at the Cyclotron Institute ERIN BERTELSEN, Dickinson State University, Dickinson, ND 58601, DMITRIY MAYOROV¹, CHARLES “CODY” FOLDEN III, Cyclotron Institute, Texas A&M University, College Station, TX 77843 — A focal plane detection system is being developed for use with the gas-filled separator previously known as SASSYER (Small Angle Separator System at Yale for Evaporation Residues) that will be installed at the Cyclotron Institute at Texas A&M University. This system will be used to study heavy ($Z \geq 90$) elements and features two 60x40 strip double-sided silicon detectors (DSSDs) and accompanying multiplexing read-out electronics. The DSSDs cover an area of 120x40 mm² and are read-out by fourteen 16-channel multiplexers (Mesytec MUX-16) that perform the function of a preamplifier, shaper, and leading-edge discriminator in one unit. The multiplexers are controlled by four “MUX drivers,” each of which serves as a signal bus for multiple MUX-16 boards. The system allows a single 16-channel ADC to read the combined 200 strips of both DSSDs. A four peak source composed of ¹⁴⁸Gd, ²³⁹Pu, ²⁴¹Am, and ²⁴⁴Cm was used to characterize the performance of the system, with a preliminary energy resolution of ~ 60 keV measured for the ²⁴¹Am alphas. This contribution will discuss the work performed in assembly of the test setup, optimization and performance check of the multiplexers, and the preliminary energy and position data collected with the α -source.

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