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Focal Plane Detector Package for PREX-II[1] DUSTIN MCNULTY, Idaho State University, PREX/CREX AND JLAB HALL A COLLABORATION — The Pb Radius Experiment, PREX, aims to make a high precision, statistics limited measurement of a sub-ppm parity violating asymmetry. To achieve this goal in relatively short time requires high (GHz-level) scattered flux rates on the main integrating detectors. As a result, the PREX-II main detectors employ radiation-hard, high-purity Spectrosil 2000 fused-silica tiles as an active Cerenkov medium for counting electrons. Each tile is optically polished and coupled to a photo-multiplier tube with a quartz window for UV light transmission. The focal plane detector packages also each include three 10x20 cm^2 active area GEM tracking planes for Q^2 normalization, and two auxiliary quartz detectors for monitoring parity non-violating asymmetry backgrounds from any residual transverse polarization of the electron beam. Detailed studies of expected flux rates, detector photo-electron yields, and pmt gains have been made in order to optimize the detector design as well as test and minimize the systematic uncertainty associated with pmt non-linearity. In this talk, we will present the design of the PREX-II focal plane detector package and report on the key performance parameters achieved during the experiment.

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