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**Gas Ring Cherenkov Detector for High Luminosity and High Background Rates Experiments at Hall-A Jefferson Lab.** BASHAR ALJAWRNEH, A AHMIDOUCH, North Carolina AT State Univ, T AVERETT, (College of William & Mary, S DANAGOULIAN, North Carolina AT State Univ, B WOJTSEKHOWSKI, Jefferson Lab, H YAO, (College of William & Mary — A Gas Ring Cherenkov (GRINCH) detector is being developed for the JLab Hall-A BigBite spectrometer. The goal is to accommodate high luminosity and high background rates experiments such as the A1n and the GMn experiments. GRINCH is a 1-atm C4F8O-based Cherenkov counter. The Cherenkov ring is reflected by a set of cylindrical mirrors onto a Photon Detector Array (PDA). It consists of 510 29-mm diameter Electron Tubes 9125B PMTs, which provide timing information. The PMTs are mounted inside a magnetic shielding box to shield against the 15-30 Gauss magnetic field of the spectrometer magnet. Mirrorized plastic reflectors are used to collect the reflected Cherenkov light onto the PMTs. The PDA has been constructed and tested and the GRINCH vessel has been constructed as well. We present the GRINCH design, simulation results, and results of the PDA testing with 15- and 60-gauss magnetic field.

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