

Abstract Submitted
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GEM Detectors for the DarkLight Phase-1 Experiment¹ SAHARA JESMIN MOHAMMED PREM NAZEER, Hampton University, DARKLIGHT COLLABORATION — The DarkLight experiment has been proposed to search for a heavy photon A' in the mass range of 10-100 MeV/ c^2 produced in electron-proton collisions. Phase-I of DarkLight has started to take place in 2016 at the Low Energy Recirculator Facility (LERF) at Jefferson Lab. LERF delivered a 100 MeV electron beam onto a windowless hydrogen gas target. The phase-I detector tracks leptons inside the DarkLight solenoid with a set of Gas Electron Multiplier (GEM) detectors, combined with segmented scintillators for triggering. The GEM telescope consists of four 10×10 cm² triple layer GEM chambers with 2D readout strips, mounted in a slightly angled fixed frame about 12 cm tall. The GEM data are read out with analog pipeline front-end cards (APV-25) each of which can process 128 readout channels. Each GEM chamber has 250 channels for each coordinate axis, read out with two APVs on each side, resulting in 2000 readout channels for the GEM stack, processed by 16 APVs. One Multi Purpose Digitizer (MPD) module is used to read out all of the 16 APV-25 cards. Details of the design and the readout of the GEM detectors will be presented, as well as discussion of their performance in the August run.

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