

The Heavy Photon Search experiment: summary and recent developments for the 2019 Data Run

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New physics beyond the Standard Model (SM) could be responsible for the presence of Dark Matter in the Universe. A hidden, or “dark”, sector interacting with SM particles via new force carriers is a natural scenario to explain the features of Dark Matter. In the last decade, growing interest has been dedicated to the search for dark sectors with force carriers in the MeV-GeV mass range. A well motivated model envisions the presence of a $U(1)$ gauge boson, the heavy photon A' , whose existence can be probed with fixed-target experiments at accelerators.

The Heavy Photon Search Experiment (HPS) at the Thomas Jefferson National Accelerator Facility (JLAB) searches for heavy photons and other new force carriers that are produced via electro-production and decay visibly to electron-positron pairs. This talk presents recent developments in reconstruction and calibration of the 2019 Data Run at 4.55 GeV, including performance of the newly adopted Kalman Filter track reconstruction algorithm.

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