

TITLE: Heavy Photon Search Engineering Run and Performance

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ABSTRACT:

The Heavy Photon Search (HPS) experiment at Jefferson Lab searches for a new vector force carrier called the heavy photon. Heavy photons could kinetically mix with Standard Model photons and be radiated off electron beams incident on a fixed target. They may then decay to $e^+ e^-$ pairs promptly or after traveling a short, resolvable distance, either of which can be detected experimentally. Heavy photons have also been hypothesized as mediators between Standard Model and dark matter particles. The HPS experiment took its first data in the engineering run during the spring of 2015 using a 1 GeV electron beam and a 4 μm tungsten target. The experiment utilized a silicon vertex tracker for momentum and vertex reconstruction, together with an electromagnetic calorimeter to measure the energy of electrons and positrons and to trigger events. This talk describes the detectors and their performance during the engineering run.