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The Heavy Photon Search experiment at Jefferson Lab (15' + 5')

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The Heavy Photon Search (HPS) experiment at Jefferson Lab is searching for potential particle carriers of a dark force called “heavy photons” that mix with ordinary photons through kinetic mixing. If the coupling to normal matter is weak, then heavy photons can travel a detectable distances before decaying to e^+e^- . HPS uses a PWO Electromagnetic Calorimeter for fast triggering and complementary energy information in the reconstruction of the e^+e^- -invariant mass. The silicon microstrip vertex tracker is used for momentum and vertex reconstruction with unprecedented precision. The HPS experiment took its first data in an engineering run during the spring of 2015 using a 1 GeV electron beam and a 4 μm tungsten target. HPS is taking more data at 2 GeV in winter 2016. This talk will present the HPS setup, data analysis, and preliminary results, if available.

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