

Abstract Submitted
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DarkLight: A Search for Dark Photons GLENN RANDALL, Arizona State University, DARKLIGHT COLLABORATION — The DarkLight experiment will search for a theoretically proposed heavy photon, postulated to carry a dark sector force. Discovery of this particle could give vital clues to the nature of dark matter, explain the difference between the theoretical and measured values of the muon magnetic moment, and account for a positron excess that has been observed in the Milky Way. We will look for a resonance in virtual photon mass in a high precision measurement of the process $e^-p \rightarrow e^-p e^+e^-$, which would imply the existence of a heavy photon. This will be done using lepton trackers and a proton detector to reconstruct interactions of an intense electron beam on a gaseous hydrogen target. The final experiment proposes to take approximately 1 ab^{-1} of data using a 100 MeV electron beam at the Low Energy Recirculator Facility at Jefferson Lab. Design testing and measurement of QED backgrounds will begin in summer 2016. In this talk, I will discuss the DarkLight experiment and its status.

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