

Abstract Submitted
for the APR17 Meeting of
The American Physical Society

Progress toward a Dark Photon Search with DarkLight¹ ROSS CORLISS, MIT — Despite compelling astrophysical evidence for the existence of dark matter in the universe, we have yet to positively identify it in any terrestrial experiment. If such matter is indeed a new particle, it may have a new interaction as well, carried by a dark counterpart to the photon. The DarkLight experiment proposes to search for such a beyond-the-standard-model dark photon through complete reconstruction of the final states of electron-proton collisions. In order to accomplish this, the experiment requires a moderate-density target and a very high intensity, low energy electron beam. Building on an initial beam test in 2012, the DarkLight collaboration began Phase I of the experiment with several weeks of beam time in the summer of 2016, using the Low Energy Recirculator Facility at Jefferson Lab. I will review the technical challenges of DarkLight's design, and discuss our multi-phase approach toward a full measurement, including our current status.

¹This work is supported by DOE grants DE-FG02-94ER40818 and DE-SC0011970, and NSF MRI grant PHY-1437402.

Jan Bernauer
Massachusetts Inst of Tech-MIT

Date submitted: 07 Oct 2016

Electronic form version 1.4