

Abstract Submitted  
for the DNP20 Meeting of  
The American Physical Society

**Seeking a Fifth Force with DarkLight**<sup>1</sup> ROSS CORLISS, Stony Brook University, DARKLIGHT COLLABORATION — In addition to cosmic motivations, anomalies in precision nuclear and atomic measurements have prompted standard model extensions in the form of Dark Photons or, more generically, a new force-carrier. Existing experimental searches for such particles have probed the majority of the parameter space of simple models, but so far no culprit has been found and the standard-model anomalies remain unexplained. The recent report of anomalous correlations in  $^4\text{He}$  transitions, joining a similar anomaly in  $^8\text{Be}$ , has heightened interest in a potential new particle near 17MeV. Although this region has been partially explored via hadronic production mechanisms, a particle with proto-phobic couplings is more effectively probed using leptonic production. The DarkLight experiment proposes to search for this particle ( $A'$ ) in electron-nuclear scattering via the process  $e^-X \rightarrow e^-XA' \rightarrow e^-Xe^+e^-$ . I will give a brief review of motivations for the search and discuss the DarkLight proposal to install a spectrometer pair at Jefferson Lab's CEBAF Injector to search for this new particle, as well as prospects for future searches at high-intensity beams such as Cornell's CBETA.

<sup>1</sup>supported by DOE Office of Science

Ross Corliss  
Stony Brook University

Date submitted: 26 Jun 2020

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