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Search for a dark matter force mediator VARDAN KHACHATRYAN, ROUVEN ESSIG, Stony Brook University, NATALIA TORO, PHILIP SCHUSTER, SLAC, BOGDAN WOJTSEKHOWSKI, Jefferson Lab — We present an update of the A' Experiment (APEX) at the Thomas Jefferson National Accelerator Facility (JLab) in Virginia, USA. APEX searches for a new gauge boson (A') with sub-GeV mass and coupling to ordinary matter of $\alpha' \sim (10^{-3} - 10^{-4})\alpha$, where α is the fine-structure constant. Electrons with an energy of 1–2 GeV impinge upon a fixed target of tungsten to produce an A' via a process analogous to photon bremsstrahlung, which then decays to an e^+e^- pair that is detected by the JLab Hall A High Resolution Spectrometers. A test run was held in July of 2010, covering an A' mass range from 175 to 250 MeV and couplings $g'/e > 10^{-3}$. A full run is approved for 30 days of beam time and will cover $m_{A'} \sim 65 - 250$ MeV. We will describe the experimental plan, which was recently re-optimized.

Bogdan Wojtsekhowski
Jefferson Lab

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