Contribution ID: **351** Type: **Talk**

Search for New Physics in e+e- Final States With an Invariant Mass of 10-20 MeV Using the ARIEL Electron Accelerator

Wednesday 8 September 2021 16:32 (18 minutes)

The DarkLight Collaboration
Arizona State University, University of British Columbia, Hampton University, TJNAF, MIT, St. Mary's University, Stony Brook University, TRIUMF,
University of Manitoba, University of Winnipeg

Proposal S2134 by the DarkLight collaboration of Canadian and U.S. institutions has been approved with high priority in April 2021 to carry out an experiment to search in the e+e- invariant mass region of 10 - 20 MeV in electron scattering from tantalum for evidence of new physics. The experiment will use the electron accelerator of the Advanced Rare IsotopE Laboratory (ARIEL) at TRIUMF, Vancouver, Canada. The experiment is motivated by anomalies resulting from the muon g-2 determination and reported in the decays of excited 8Be and 4He (ATOMKI anomaly). Initial data taking is anticipated to take place using a beam energy of 31MeV and intensity of 150 μA. It is anticipated that the energy available with the ARIEL electron accelerator will increase, thus providing a definitive experimental constraint on the existence of a dark fifth-force carrier, proposed to explain the reported anomalies. The planned experiment will be described in detail and expected sensitivities projected.

Primary authors: MILNER, Richard (MIT); Prof. BERNAUER, Jan (Stony Brook University); Prof. CORLISS, Ross (Stony Brook University)

Presenters: Prof. BERNAUER, Jan (Stony Brook University); Prof. CORLISS, Ross (Stony Brook University)

Session Classification: Dark matter and cosmology

Track Classification: Dark matter and cosmology