

Abstract Submitted  
for the APR18 Meeting of  
The American Physical Society

**Background Studies for an Accelerator-Based Dark Matter Search**<sup>1</sup> NAN MA, Occidental College — The unknown composition of dark matter has always been one of the most intriguing problems in physics. Absence of experimental support for Weakly Interacting Massive Particle (WIMP) has focused attention to another dark matter candidate, Light Dark Matter at Accelerators (LDMA). The Directional Recoil Identification From Tracks (DRIFT) project has developed highly sensitive detectors to detect the directionally sensitive ionization created by recoils, an ideal detector for low energy recoils by LDMA. Recoils due to cosmic-ray induced neutrons are one of the most important backgrounds for DRIFT at surface level accelerators. We have been exploring the backgrounds in DRIFT-IIIf, the current detector, under different shielding conditions. Experiments are compared with simulations on GEANT4. Our results show that DRIFT is only sensitive to neutron recoils despite large muon and gamma backgrounds from cosmic rays on the surface. Neutron recoil results will be presented for a detector unshielded, under various thickness of concrete and a lead shield exposed to cosmic rays at the surface.

<sup>1</sup>We are deeply grateful for the financial support of the Kenneth T. Eileen L. Norris Foundation as well as the Undergraduate Research Center at Occidental College for sponsoring this work.

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Date submitted: 11 Jan 2018

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