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Neutron Recoils in the DRIFT-IIe Detector FREDERICK SCHUCKMAN, Colorado State University, THE DRIFT COLLABORATION — Evidence suggests that there exists a halo of dark matter that is distributed throughout our galaxy and extends beyond its luminous bounds. A popular dark matter candidate is the Weakly Interacting Massive Particle (WIMP). DRIFT-IIe is an iteration in a series of experiments designed for the direct and directional detection of this WIMP dark matter. The DRIFT-IIe detector employs low-pressure negative-ion gas time projection chamber technology to search for WIMP recoils, with a recoil being identified by the track of ionization it produces. DRIFT-IIe is in development and has not been deployed for WIMP searches. However, one is able to study the properties of nuclear recoils in the detector by exposing it to a neutron source. Work is under way to confirm that the detector is sensitive to the range of a nuclear recoil track in two dimensions and also sensitive to any asymmetry in the amount of ionization deposited in the start versus end of a track. Sensitivity to this asymmetry can allow one to determine the vector sense of the track along one of the principle axes of the detector. Exposing the detector to neutrons will be discussed as will how these exposures may lead to a better understanding of the signatures one may expect to observe with the detector due to the WIMP halo.

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