Abstract Submitted
for the APR16 Meeting of
The American Physical Society

Infrared Optical Readout of a Gas-Based Recoil Tracking Detector KATRINA MILLER, PHILLIP BARBEAU, Duke University, GRAYSON RICH, University of North Carolina at Chapel Hill, CONNOR AWE, Duke University — Gas-based recoil tracking detectors are used in a variety of nuclear and particle physics experiments to identify particles based on distinct interaction signatures. Past research shows that this technology, if further developed, may prove useful in the ongoing search for dark matter and coherent neutrino scattering observations. This research presents the original design and development of a tracking detector that uses gaseous argon as a scintillating material to measure infrared optical readout. The initial model of this detector, consisting of a wire chamber filled with P-10, has produced unambiguous ionization signals. Current studies are focused toward using pure gaseous argon to detect coincident scintillation signals, which will demonstrate the capability of the detector to image particle tracks using nonvisible radiation.

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Date submitted: 07 Jan 2016 Electronic form version 1.4