Abstract Submitted
for the DNP16 Meeting of
The American Physical Society

A MiniBooNE Accelerator-Produced (sub)-GeV Dark Matter Search REMINGTON THORNTON, Indiana University, MINIBOONE-DM COLLABORATION — Cosmological observations indicate that our universe contains dark matter (DM), yet we have no measurements of its microscopic properties. Whereas the gravitational interaction of DM is well understood, its interaction with the Standard Model is not. Direct detection experiments search for a nuclear recoil interaction produced by a DM relic particle and have a low-mass sensitivity edge of order 1 GeV. To detect DM with mass below 1 GeV, either the sensitivity of the experiments needs to be improved or use of accelerators producing boosted low-mass DM are needed. Using neutrino detectors to search for low-mass DM is logical due to the similarity of the DM and ν signatures in the detector. The MiniBooNE experiment, located at Fermilab on the Booster Neutrino Beamline, ran for 10 years in ν and $\bar{\nu}$ modes and is already well understood, making it desirable to search for accelerator-produced boosted low-mass DM. A search for DM produced by 8 GeV protons hitting a steel beam-dump has finished, collecting 1.86×10^{20} POT. Final analysis containing 90% confidence limits and a model independent fit will be presented.

Remington Thornton
Indiana University

Date submitted: 01 Jul 2016 Electronic form version 1.4