

Abstract Submitted
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The Coherent Elastic Neutrino Nucleus Scattering (CENNS) Experiment at Fermilab ROBERT COOPER, Indiana University — Low energy neutrinos (< 50 MeV) with a wavelength larger than target nuclei can engage in coherent elastic scattering with low momentum transfer. Coherent scattering is important in supernovae, low- Q^2 weak nuclear form factors, and low-energy tests of the Standard Model. Despite a large interaction cross section, it has remained unobserved because of its low energy deposition and neutron backgrounds. The CENNS collaboration is proposing to deploy a 1-ton, single-phase, liquid argon detector for a first measurement of coherent neutrino scattering near the booster neutrino beam (BNB) at Fermilab. By placing the detector near the beam target in a far off-axis position, a flux of low-energy neutrinos is produced with a similar energy spectrum as stopped pion sources. The proximity to the BNB introduces a potential background of beam-correlated neutrons whose elastic scatters are indistinguishable from the neutrino signal. In this talk, I will describe the proposed detector, our completed beam-correlated neutron background measurements, and upcoming shielding and background neutron studies.

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