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The Coherent Elastic Neutrino Nucleus Scattering (CENNS) Experiment at Fermilab ROBERT COOPER, Indiana University, CENNS COLLABORATION — Low energy neutrinos (< 50 MeV) with a wavelength larger than target nuclei can engage in coherent elastic scattering with low momentum transfer. This scattering channel has remained unobserved due to low energy deposits and despite a large scattering cross section. Coherent scattering is important for supernovae, low-Q^2 weak nuclear form factors, and other low-energy Standard Model tests. Dark matter detector technologies make a first measurement possible with accelerator neutrino sources. The CENNS collaboration is proposing a 1-ton, single-phase, liquid argon detector to measure 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, recent beam-correlated neutron background measurements, and ongoing shielding studies.

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