

Coherent Elastic Neutrino-Nucleus Scattering (CEvNS)

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Low-energy neutrinos can have de Broglie wavelengths that are larger than target nuclei.

At these energies, coherent elastic neutrino-nucleus scattering (CEvNS) is predicted to be the dominant interaction, yet it remains unseen.

Measuring CEvNS is difficult because elastic scattering deposits very little energy in a detector and neutron backgrounds are difficult to control, especially at accelerators.

Nevertheless, a discovery measurement is the first part in a larger program to use the CEvNS interaction to understand supernova dynamics and detection, probe the weak interaction, and search for non-standard interactions and neutrino magnetic moments.

In this talk, I will highlight the physics motivations for measuring CEvNS and two experimental efforts to discover it at accelerators.

The CENNS collaboration plans to use a large liquid argon detector near the Fermilab Booster Neutrino Beam in a far-off-axis configuration, and the COHERENT collaboration will use a number of low-energy-threshold detector technologies to measure CEvNS in a basement location at the Oak Ridge National Laboratory Spallation Neutron Source.

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