

Abstract Submitted
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Prospects for using coherent elastic neutrino-nucleus scattering to measure the nuclear neutron form factor KELLY PATTON, Univ of Washington, GAIL MCLAUGHLIN, North Carolina State University, KATE SCHOLBERG, Duke University, JON ENGEL, University of North Carolina, Chapel Hill, NICOLAS SCHUNCK, LLNL — Coherent elastic neutrino-nucleus scattering is a potential probe of nuclear neutron form factors. We show that the neutron root-mean-square (RMS) radius can be measured with tonne-scale detectors of argon, germanium, or xenon. In addition, the fourth moment of the neutron distribution can be studied experimentally using this method. The impacts of both detector size and detector shape uncertainty on such a measurement were considered. The important limiting factor was found to be the detector shape uncertainty. In order to measure the neutron RMS radius to 5%, comparable to current experimental uncertainties, the detector shape uncertainty needs to be known to 1% or better.

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