

Abstract Submitted  
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**Neutrino-nucleus coherent scattering as a probe of neutron density distributions** KELLY PATTON, North Carolina State University, JON ENGEL, University of North Carolina at Chapel Hill, GAIL MCLAUGHLIN, North Carolina State University — Neutrino-nucleus coherent elastic scattering provides a theoretically appealing way to measure the neutron part of the associated form factor. We show, using an expansion of the form factor into moments, that neutrinos from stopped muons can probe not only the second moment of the form factor (the neutron radius) but also the fourth moment. Using simple Monte Carlo techniques for Argon, Germanium, and Xenon detectors of 25 tonnes, 10 tonnes, and 3 tonnes, respectively, we show that the neutron radii could be found with an uncertainty of a few percent. If the luminosity of the neutrino flux is known independently, it is possible to discriminate between the predictions of various Skyrme models as well.

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