

Abstract Submitted
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Spectral Study of a Broad Energy HPGe Detector for First Measurement of Coherent Neutrino Scattering JASON SURBROOK, Univ of NC - Chapel Hill, MATTHEW GREEN, Oak Ridge National Laboratory — Intense neutrino flux at the Spallation Neutron Source (SNS) at Oak Ridge National Laboratory (ORNL) in the energy domain below $E_\nu = 50\text{MeV}$ makes SNS a suitable location for measurement of Coherent Neutrino Scattering. Coherent scattering is assumed to occupy vital roles in supernovae (SN) events and measurement offers promising insight into SN mechanics and advancements in SN- ν detection. Furthermore, this interaction is well-calculable and therefore, a strong test of the Standard Model. P-Type Point Contact High-purity germanium detectors are excellent candidates for this measurement due to their sensitivity to low-energy nuclear recoils. One such, a Canberra Broad Energy HPGe detector, was tested for quality degradation from exposure to fast neutrons in the SNS target building, to assess usefulness in a future coherent scattering experiment. Analysis of the lead-shielded spectra was handled using tools developed for the MAJORANA DEMONSTRATOR neutrinoless double-beta decay experiment. Broad spectrum energy resolution and ^{68}Ge decay rates were calculated. This poster will present findings that will help determine this detector's eligibility and exposure limitations for measurement in a future coherent neutrino scattering experiment at the SNS.

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