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Background Neutron Studies for Coherent Elastic Neutrino-Nucleus Scattering Measurements at the SNS DIANE MARKOFF, NC Central University, COHERENT COLLABORATION — The COHERENT collaboration has proposed to measure coherent, elastic neutrino-nucleus scattering (CEνNS) cross sections on several nuclear targets using neutrinos produced at the Spallation Neutron Source (SNS) located at the Oak Ridge National Laboratory. The largest background of concern arises from beam-induced, fast neutrons that can mimic a nuclear recoil signal event in the detector. Multiple technologies of neutron detection have been employed at prospective experiment sites at the SNS. Analysis of these data have produced a consistent picture of the backgrounds expected for a CEνNS measurement. These background studies show that at suitable locations, the fast neutrons of concern arrive mainly in the prompt 1.3 μs window and the neutrons in the delayed window are primarily of lower energies that are relatively easier to shield.

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