

Abstract Submitted
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The COHERENT Experiment: Overview and Update of Results

JASON NEWBY, Oak Ridge National Laboratory, COHERENT COLLABORATION — The COHERENT collaboration recently completed the first year of operation at the Spallation Neutron Source (SNS) with a 14 kg CsI detector optimized for coherent elastic neutrino nuclear scattering (CEvNS) sensitivity. The Oak Ridge National Laboratory is now converting a service corridor only 20 meters from the SNS target into a dedicated neutrino laboratory. By the Fall of 2016, the collaboration will deploy three additional targets to measure the CEvNS cross section dependence on the target nuclei neutron number with targets ranging from argon to cesium for an unambiguous first observation. The status of the CsI data analysis and related background evaluations will be presented and the details of the anticipated detector performance for all four targets will be reported. Beyond these proof-of-principle CEvNS measurements, the intensity, pulse-structure, and beam-energy make the Spallation Neutron Source ideally suited for a set of high-precision measurements using more massive, purpose-built detectors to address a host of physics topics including searches for non-standard neutrino interactions and a measurement of the weak mixing angle. The broader impact of a larger scale COHERENT program will be outlined.

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