

SES19-2019-000189

Abstract for an Invited Paper
for the SES19 Meeting of
the American Physical Society

Measuring coherent elastic neutrino-nucleus scattering with COHERENT

DAN PERSHEY, Duke University

The coherent elastic neutrino-nucleus scattering (CEvNS) process was first observed in 2017 by the COHERENT collaboration using a low background, 14.6 kg CsI[Na] detector using a stopped pion source at the SNS. We cover COHERENT's ongoing effort to further measure CEvNS on a variety of nuclear targets, including a new CEvNS result using an argon target.

CEvNS is a powerful tool to study nuclear structure, stellar astrophysics, and the nature of the weak force. We also discuss the role of CEvNS measurements in constraining physics beyond the standard model along with COHERENT sensitivity to test anomalies currently observed across high energy physics. In particular, we highlight the advantage of CEvNS detectors in searching for sub-GeV dark matter. A modest-scale argon detector would test cosmologically observed dark matter concentration using an accelerator-produced flux over parameter space complementary to direct detection experiments.