

New physics and astrophysics applications of coherent neutrino-nucleus scattering

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Coherent elastic neutrino-nucleus scattering (CEvNS) is a long-standing theoretical prediction of the Standard Model (SM), and the COHERENT experiment has recently achieved the first detection of it. CEvNS provides an important probe of physics beyond the SM. In addition, it can open up a new window into neutrino astrophysics, through studies of low energy neutrinos from the Sun, atmosphere, and supernovae. CEvNS is also vital for understanding and interpreting future particle dark matter searches. In this talk, I will discuss the prospects for learning about the nature of neutrinos and astrophysical sources from CEvNS detection, highlighting how astrophysical and terrestrial-based detections play important and complementary roles.