

Prospects for Exploring New Physics in Coherent Elastic Neutrino-Nucleus Scattering Experiments

Coherent Elastic Neutrino-Nucleus Scattering (CENNS) is a Standard Model process that, although predicted for decades, has only been detected recently. Now that CENNS has been discovered, it provides a new probe for physics beyond the Standard Model. We study the potential to probe new physics with CENNS through the use of low temperature bolometers at a reactor source. We consider contributions to CENNS due to a neutrino magnetic moment, Non-Standard Interactions that may or may not change flavor, and simplified models containing a massive scalar or vector mediator. Targets consisting of Ge, Zn, Si, CaWO_4 , and Al_2O_3 are examined. We present results demonstrating that proposed experiments using bolometers with a reactor source are well positioned to place leading bounds on NSI, and we show the improved bounds that can be placed with various combinations of target materials.

Session and Location

Wednesday Session, Poster Wall #23 (Robert-Schumann-Room)

Poster included in proceedings:

yes

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