

RELICS: REactor neutrino LIquid xenon Coherent Scattering experiment

The coherent elastic neutrino-nucleus scattering (CEvNS) channel stands out among all interaction channels for MeV neutrinos from nuclear reactions due to its large cross-section. However, detecting CEvNS poses significant challenges, particularly in lowering the energy threshold while mitigating the background. The RELICS experiment is proposed to use the liquid xenon time projection chamber (LXeTPC) technique to detect reactor neutrino CEvNS. The LXeTPC, featuring a 30 kg target mass, will be positioned about 25 meters away from a reactor core with 3 GW thermal power. By focusing on ionization-only analysis, RELICS aims to achieve a sub-keV nuclear recoil energy threshold. In this talk, I will introduce the design, simulation, physics potential, and current status of the RELICS experiment.

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