

Current status of the Ricochet experiment

Thursday 13 June 2024 10:00 (20 minutes)

The RICOCHET reactor neutrino observatory aims at measuring the coherent elastic neutrino-nucleus scattering (CEvNS) of antineutrinos at the Institut Laue-Langevin, ILL (Grenoble, France). To that end, RICOCHET employs two cryogenic calorimeter technologies : one based on germanium targets with neutron-transmutation-doped thermistors (the CryoCube) and one based on superconducting targets and a transition-edge sensor readout (the Q-Array).

The CryoCube exploits a combined readout of phonons and ionization to identify nuclear recoil events and reject other backgrounds (electron recoils). The Q-Array will use pulse shape discrimination related to the different timescales of quasiparticle recombination and phonon relaxation for electron- and nuclear-recoils respectively.

The cryogenic facility was first installed and tested in a surface laboratory before being installed at the end of 2023 at the nuclear reactor. The detector commissioning started in February 2024 with a detector payload of three 40-gram germanium detectors. The results of the surface laboratory tests, the design of the facility, the discovery sensitivity and the first results of the commissioning phase of the Ricochet experiment will be presented in this contribution.

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Session Classification: Talks