

New results from CONNIE with Skipper-CCDs at the Angra-2 reactor

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The goal of CONNIE (COherent Neutrino-Nucleus Interaction Experiment) is to detect reactor antineutrinos via the CE ν NS (Coherent Elastic Neutrino Nucleus Scattering) channel using fully depleted high-resistivity CCDs (charge coupled devices) installed at about 30 meters from the core of the 3.8 GW Angra-2 nuclear reactor in Rio de Janeiro, Brazil. In 2021, The detector was upgraded with two Skipper-CCDs, becoming the first to deploy these type of sensors at a reactor, and lowering the detection threshold to a record 15 eV. We report new results from 300 days of data from 2021-2022, with an exposure of 18.4 g-days, including 95% C.L. limits on the CE ν NS rate with Skipper-CCDs. Additionally, we present three BSM searches to illustrate the potential of Skipper-CCDs, namely: a limit on new neutrino interactions in simplified models with light vector mediators, a dark matter search by diurnal modulation yielding limits on DM-electron scattering, and a search for millicharged particles produced by reactors. We will discuss our current plans and ongoing efforts to increasing the detector mass.

Poster prize

No

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