Contribution ID: **31** Type: **Oral**

CONUS - Detecting elastic neutrino nucleus scattering in the fully coherent regime with reactor neutrinos

Thursday, 6 June 2019 11:32 (22 minutes)

The discovery of coherent elastic neutrino nucleus scattering (CEνNS) by the COHERENT experiment set the stage for new investigations within and beyond the standard model's neutrino sector. However, its detection in the fully coherent regime at low neutrino energies is still pending since the associated low nuclear recoils are experimentally challenging in terms of detection threshold and background reduction. The CONUS experiment aims for the detection of CEνNS at a 17.1m-distance to the powerful reactor core of the commercial nuclear power plant in Brokdorf, Germany. The experiment, being operational since April 2018, takes advantage of the latest generation of ultra-low threshold and high-purity Germanium detectors with noise thresholds around 300 eV as well as an advanced shield design. A first dataset of 1 month reactor OFF time and 6 months reactor ON time has been evaluated, while data collection for the second physics run is ongoing. This talk gives an overview of the latest results and developments of the CONUS experiment, like investigations of reactor-correlated backgrounds and planned upgrades for future data taking periods.

Collaboration name

CONUS

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Session Classification: Neutrino

Track Classification: Neutrino Physics