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New CEvNS limit from the CONUS experiment

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The CONUS experiment aimed to detect coherent elastic neutrino-nucleus scattering (CEvNS) of reactor antineutrinos on germanium nuclei in the fully coherent regime. It operated from 2017 to 2022 at 17m from the 3.9 GWth core of the Brokdorf nuclear power plant (Germany). The CEvNS search was performed with four 1 kg point-contact high-purity germanium (HPGe) detectors, which provided a sub keV energy threshold with background rates in the order of 10 events per kg, day and keV.

The analysis of the final CONUS data set allows to establish the current best limit on CEvNS from a nuclear reactor with a germanium target, improving by an order of magnitude on the previous world's best limit. Moreover, this new result refutes other measurements where quenching factors deviating significantly from Lindhard theory were considered. The results from the last physics run together with the quenching measurements performed by CONUS will be discussed in this talk.

Submitted on behalf of a Collaboration?

Yes

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