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Neutrino physics at a reactor with the CONNIE experiment

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The CONNIE experiment uses fully depleted high-resistivity CCDs with the goal of detecting the coherent elastic neutrino nucleus (CEvNS) scattering of reactor antineutrinos off silicon nuclei, and to probe physics beyond the Standard Model (SM). It is located at 30 m from the core of the 3.8 GW Angra 2 nuclear reactor in Brazil. Since its 2016 upgrade, the experiment has operated with a low noise level of <2e- RMS and an active mass of 50 g. The analysis of the 2016-2018 data has been used to set a 95% C.L. limit on the CEvNS rate, which has been translated into stringent constraints on simplified SM extensions involving light mediators. In this talk, we report on the performance of the detector over the last 4 years, the finalized blind analysis of the 2019 data which features a reduced energy threshold (50 eV), and future perspectives for using skipper CCDs to observe CEvNS at reactors.

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