

# New results on searches for CEvNS and Physics beyond the Standard Model using Skipper-CCDs at CONNIE

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The CONNIE experiment uses high-resistivity silicon CCDs with the aim of detecting the coherent elastic scattering (CEvNS) of reactor antineutrinos with silicon nuclei at the Angra-2 reactor. It was recently upgraded with two Skipper-CCDs, increasing the sensitivity reach down to a record 15 eV, and becoming the first experiment to employ Skipper-CCDs for reactor neutrino detection. We report on the new results from 300 days of 2021-2022 data with an exposure of 18.4 g-days. The difference between the reactor-on and off rates shows no excess and yields upper limits at 95% CL for CEvNS. We also present the results of three BSM searches to illustrate the potential of Skipper-CCDs: 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 relativistic millicharged particles produced by reactors. We present the prospects for increasing the detector mass.

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**Primary author:** NASTEVA, Irina (Federal University of Rio de Janeiro (BR))

**Presenter:** NASTEVA, Irina (Federal University of Rio de Janeiro (BR))

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