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Improved Sterile Neutrino Constraints from the STEREO Experiment with 179 Days of Reactor-On Data

The STEREO experiment is a very short baseline reactor antineutrino experiment. It is designed to test the hypothesis of light sterile neutrinos being the cause of a deficit of the observed antineutrino interaction rate at short baselines with respect to the predicted rate, known as the Reactor Antineutrino Anomaly. The STEREO experiment measures the antineutrino energy spectrum in six identical detector cells covering baselines between 9 and 11 m from the compact core of the ILL research reactor. In this poster, results from 179 days of reactor turned on and 235 days of reactor turned off are reported. Using a direct comparison between antineutrino spectra of all cells, largely independent of any flux prediction, we find the data compatible with the null oscillation hypothesis. The best-fit point of the Reactor Antineutrino Anomaly is rejected at more than 99.9% C.L.

Mini-abstract

The STEREO experiment improves constraints on sterile neutrinos using its extended dataset.

Experiment/Collaboration

STEREO

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