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The latest reactor neutrino oscillation results and reactor neutrino flux and spectrum measurement results from Daya Bay

Monday 25 August 2025 15:00 (20 minutes)

The Daya Bay reactor neutrino experiment, pioneering the measurement of a non-zero value for the neutrino mixing angle θ13 in 2012, operated for about nine years from Nov. 24, 2011, to Dec. 12, 2020. Antineutrinos emanating from six reactors with a thermal power of 2.9 GWth were detected by eight identically designed detectors, which were positioned in two near and one far underground experimental halls. This spatial configuration, spanning kilometer-scale baselines between detectors and reactors, facilitates a precise determination of the relative difference of the neutrino event rates and spectra among detectors. The statistical power and well-understood systematics also enable a precise determination of the absolute reactor neutrino flux and spectrum. The collaborators continue to develop new analysis techniques and search for the potential of the experiments. This talk will show the measurements of θ13 and the mass-squared difference by utilizing the neutron Gd-capture and H-capture tagged sample under the three-neutrino mixing framework. The talk will also present the crucial measurements of the total reactor neutrino flux and spectrum, as well as the results for the U-235 and Pu-239 components.

Collaboration you are representing

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