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Precise Measurements of Oscillation Parameters and Search for a Light Sterile Neutrino at Daya Bay HIN LOK HENOCH WONG, University of California, Berkeley, DAYA BAY COLLABORATION — The Daya Bay Reactor Neutrino Experiment is designed to precisely measure the neutrino oscillation parameter θ_{13}, via the relative comparison of antineutrino rates and energy spectra at different baselines. The experiment's unique configuration of multiple baselines from six 2.9 GW_{th} nuclear reactors serving as intense $\bar{\nu}_e$ sources to eight functionally identical detectors deployed in two near (effective baselines ∼500 m and ∼600 m) and one far (∼1600 m) underground experimental halls also makes it possible to look for oscillations with a fourth (sterile) neutrino in the $10^{-3}eV^2 < |\Delta m^2_{41}| < 0.3eV^2$ range. In this talk, I will present Daya Bay's latest results. A three-flavor oscillation model analysis based on 1230 days of data has yielded the most precise determination of the flavour-mixing angle $sin^2 2\theta_{13}$ and the neutrino mass-squared difference Δm^2_{32}. In addition, the search for a light sterile neutrino using 621 days of data did not show a significant preference towards a four-flavor oscillation model. The resulting limits on $sin^2 2\theta_{14}$ constitute the world's best in most of the sub-eV mass region.

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