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Precision Neutrino Mixing Angle Measurement with Double Chooz Experiment and Latest Results

Monday 28 August 2023 14:30 (15 minutes)

The Double Chooz experiment has been at the forefront of accurately measuring the third neutrino mixing angle θ_{13}. The experiment involves two identical liquid scintillator detectors at 400m and 1km baselines from the two N4 nuclear reactors in Chooz, France. To detect the neutrinos, the experiment uses the "total neutron capture" technique to measure the inverse beta decay (IBD) signature, which includes prompt positron annihilation and a delayed neutron capture signal on all possible isotopes available in the detector. The experiment's double detector setup, carefully considering all neutrino rates, energy spectral shapes, and inclusive backgrounds control model, allows for accurate measurement of θ_{13} and a precise characterization of the reactor flux. The latest results from the Double Chooz measurement and other physics searches, such as sterile neutrino oscillations, will be presented during this talk.

Submitted on behalf of a Collaboration?

Yes

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