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The Double Chooz experiment

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The Double Chooz experiment is one of the new generation reactor antineutrino disappearance experiments built to measure more precisely the mixing angle Θ_{13} .

For this, two identical liquid scintillator detectors located at two different baselines of the Chooz Power Plant reactor cores will be installed to make high accuracy measurements of the antineutrino flux and energy.

The value of Θ_{13} can be investigated by searching for the flux and energy spectrum difference of electron antineutrinos in the far detector with respect to the antineutrinos flux measured in the near detector.

The Double Chooz experiment has started taking data with the far detector only in April 2011. Without the near detector, the reactor antineutrino spectrum and flux is computed using reactor cores simulations and the Bugey4 antineutrino flux measurement after correction for differences in the core composition. Comparing the expected and measured flux and energy spectrum we have obtained an indication of electron antineutrino disappearance consistent with neutrino oscillations. Among the new generation reactor experiments, the Double Chooz is the only one that currently uses the shape of the energy spectrum combined with the rate in the data analysis and has a background measurement with both reactors off.

At this conference, we propose to show the latest results of the Double Chooz experiment.

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