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Latest Results from Double Chooz

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Double Chooz (DC) is a reactor neutrino oscillation experiment based at the Chooz nuclear power plant in Northern France. In 2011 DC was the first reactor neutrino experiment to report indication of non-zero θ_{13}, the last unmeasured neutrino mixing angle of the PMNS matrix. This result was confirmed in 2012 by independent experiments. Before the completion in December 2014 of the Near Detector (ND), situated ˜400 m from the reactors, DC performed θ_{13} measurement using data from the Far Detector (FD), sitting at ˜1 km from the reactors. Over the past years DC has vastly improved its analysis techniques and its sensitivity to θ_{13}. The inclusion of ND data improves sensitivity even further, owing to the near iso-flux position of the two detectors, as well as identical detector design resulting in suppressed detection systematics. In its latest analysis, DC has boosted the event statistics by adopting a novel approach on the candidate selection, considering Inverse Beta Decay (IBD) events with neutrons captured on both Gadolinium (which is the preferred event sample in reactor neutrino experiments) and Hydrogen. This effectively increases the detection volume by more than three times and was made possible due to improved background rejection and reduced systematics.
Precision and accuracy of θ_{13} have a leading impact on the current explorations of neutrino CP violation and atmospheric mass ordering. Thus the redundancy of multiple θ_{13} measurements is critical.
In this talk the latest results of θ_{13} by DC will be showed. Some of the DC analyses beyond θ_{13} will also be addressed.

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