

Results of Double Chooz

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Summary

Double Chooz (DC) is a reactor neutrino experiment running at Chooz nuclear power plant in France. In 2011, DC first reported indication of non-zero θ_{13} in reactor neutrino oscillation by a single detector at around oscillation maximum (far detector, FD). Until then only the upper limit was given by the CHOOZ experiment. A robust observation of θ_{13} was followed in 2012 by the Daya Bay and RENO experiments with multiple detectors. θ_{13} is most precisely measured by the reactor experiments with the systematic uncertainties at per mille level and the value is used as reference in current and future projects which aim to search for CP violation and mass hierarchy in neutrino sector. Therefore, precision and accuracy of the reactor θ_{13} is a critical matter and validation by multi-experiments based on different systematic uncertainty compositions are essential. In the last analysis of DC with single detector, precision of θ_{13} was dominated by the reactor flux uncertainty after suppression of background and detector related systematic uncertainties, and hence significant improvement is expected with two detectors. DC finished construction of the second detector close to the reactor cores (near detector, ND) and has accumulated more than 1 year of data with two detectors as of May 2016. Thanks to nearly iso-flux experimental layout in DC, reactor flux uncertainties are strongly suppressed to the lowest level in the world. In this talk a first look on the ND data and its analysis will be shown.

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