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The Double Chooz reactor neutrino experiment

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The Double Chooz reactor neutrino experiment will be the next detector to search for a non vanishing θ_{13} mixing angle with unprecedented sensitivity, which might open the way to unveiling CP violation in the leptonic sector. The measurement of this angle will be based in a precise comparison of the antineutrino spectrum at two identical detectors located at different distances from the Chooz nuclear reactor cores in France. Double Chooz is particularly attractive because of its capability to explore $\sin^2(2\theta_{13})$ down to 0.03 @ 90% C.L. for $DM^2 = 2.5 \times 10^{-3} \text{ eV}^2$ in three years of data taking with both detectors. The installation of the far detector started in May 2008 and the first neutrino data are expected in 2009. In this talk, I will review the current status of the Double Chooz experiment, its physics potential and the design and expected performance of the detector.

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