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New results and future capabilities of the Double Chooz reactor antineutrino experiment

We present a new measurement of the neutrino oscillation parameter $\sin^2 2\theta_{13}$ derived from two years of data taken with the Double Chooz far detector. This result, drawn from twice the data used in our previous gadolinium-based analysis, is the most precise Double Chooz measurement to date. Along with increased statistics, the analysis features an improved energy scale, reduced backgrounds, and a unique background constraint from reactor-off data. Additionally, we report the precision we expect to achieve when the Double Chooz near detector begins taking data within the next year.

Primary authors: Dr NOVELLA, Pau (CIEMAT); CARR, Rachel (Columbia University); Dr LUCHT, Sebastian (RWTH Aachen University)

Presenters: Dr NOVELLA, Pau (CIEMAT); CARR, Rachel (Columbia University); Dr LUCHT, Sebastian (RWTH Aachen University)

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