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Entering the Two-Detector Phase of Double Chooz: First Near Detector Data and Prospects for Future Analyses RACHEL CARR, Columbia University, DOUBLE CHOOZ COLLABORATION — In 2011, Double Chooz reported the first evidence for θ_{13}-driven reactor antineutrino oscillation, derived from observations of inverse beta decay (IBD) events in a single detector located $\sim$1 km from two nuclear reactors. Since then, the collaboration has honed the precision of its $\sin^2 2\theta_{13}$ measurement by reducing backgrounds, improving detection efficiency and systematics, and including additional statistics from IBD events with neutron captures on hydrogen. By 2014, the overwhelmingly dominant contribution to $\sin^2 2\theta_{13}$ uncertainty was reactor flux uncertainty, which is irreducible in a single-detector experiment. Now, as Double Chooz collects the first data with a near detector, we can begin to suppress that uncertainty and approach the experiment's full potential. In this talk, we show quality checks on initial data from the near detector. We also present our two-detector sensitivity to both $\sin^2 2\theta_{13}$ and sterile neutrino mixing, which are enhanced by analysis strategies developed in our single-detector phase. In particular, we discuss prospects for the first two-detector results from Double Chooz, expected in 2015.

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