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Improved Measurements of θ_{13} and Future Prospects with the Double Chooz Experiment CHRISTOPHER GRANT, UC Davis, DOUBLE CHOOZ COLLABORATION — In the past year, reactor neutrino experiments have measured a surprisingly large value of the last mixing angle, θ_{13}. A large, non-zero θ_{13} has now opened the possibility for future experiments seeking to determine the neutrino mass hierarchy or the effects of a CP-violating phase in neutrino oscillations. The Double Chooz Experiment has a 10 m^3 ν-target made of Gd-doped liquid scintillator but has recently expanded the target capability by including inverse beta-decay candidates coming from delayed neutron capture on both H and Gd. Double Chooz is also unique in its ability to obtain clean background measurements with both reactor cores powered down. The addition of a near detector and inclusion of Hydrogen capture analysis will provide increased sensitivity to θ_{13}. In light of these upcoming enhancements to Double Chooz, future prospects for θ_{13} and implications for new physics will be presented.

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