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Recent neutrino cross section results from MicroBooNE

Making high precision measurements of neutrino oscillation parameters requires an unprecedented understanding of neutrino–nucleus scattering. MicroBooNE is able to perform high resolution imaging of numerous final state topologies resulting from neutrino interactions. This talk will give an overview of MicroBooNE's most recent neutrino cross section results. These include our latest ν_μ CC pionless result where we measure proton multiplicity probing the modeling of sub-leading proton kinematics for the first time. We will also present our latest measurements of ν_e CC interactions, including new pionless measurements using two different neutrino beams. These help to shed light on the ν_e/ν_μ cross-section ratio that forms a key systematic in neutrino oscillation measurements. Alongside this, we will show MicroBooNE' s first measurement of coherent charged-pion production, a channel that has been proposed as a constraint of neutrino beam fluxes. Finally, we will present MicroBooNE's first measurement of kinematic imbalance in neutral pion interactions, probing the impact of nuclear modeling and the impact of final-state interactions in resonant pion production. Together, these measurements form a comprehensive program exploring the modeling of neutrino scattering on argon, providing critical inputs for upcoming oscillation experiments.

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