Contribution ID: **140** Type: **Parallel Contributed Talk**

MicroBooNE's Search for a Photon-Like Low Energy Excess

Tuesday, 23 February 2021 17:30 (20 minutes)

MicroBooNE is a Liquid Argon Time Projection Chamber detector that has been taking data since 2015. One of its primary goals is to investigate the unexplained excess of electromagnetic events in the lowest energy ranges observed by the MiniBooNE experiment located along the same neutrino beamline. While one leading interpretation of this anomaly is electron neutrino appearance due to sterile neutrino oscillations, a viable alternate interpretation is neutrino-induced single photon events. The MicroBooNE single photon analysis aims to test this interpretation by measuring the rate of neutrino-induced resonant neutral current (NC) delta baryon production and subsequent delta radiative decay with a single photon in the final state, NC $\Delta \rightarrow N\gamma$. This search for a process that has never been observed before in neutrino scattering is projected to improve upon the current experimental limit from T2K by greater than an order of magnitude. This talk will present the status of the MicroBooNE single photon analysis and the outlook for subsequent measurements.

Collaboration name

MicroBooNE

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Session Classification: Sterile Neutrinos and New Physics