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MicroBooNE results on Short Baseline Neutrino Anomalies

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The MicroBooNE experiment utilizes an 85-ton active volume liquid argon time projection chamber (LArTPC) neutrino detector. It can distinguish between photons and electron electromagnetic showers and select charged current electron neutrino and muon neutrino events with exceptional performance. In this talk, we will present results on MicroBooNE's investigation of the MiniBooNE Low Energy Excess and neutrino Short Baseline Anomalies more generally. We will present the initial findings from MicroBooNE's search for sterile neutrinos in a 3+1 model, utilizing Fermilab's Booster Neutrino Beam (BNB). We will explore the impact of degeneracy caused by the cancellation of $\nu_{e\mu}$ appearance and disappearance. Additionally, we will demonstrate how combining data from BNB and Neutrinos at the Main Injector (NuMI) beams, which have substantially different $\nu_{e\mu}$ ratios, can break this degeneracy. Moreover, we will show MicroBooNE's search for neutrino-induced single-photon production and the latest developments in the search for single-photons.

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