



Contribution ID: 2

Type: Oral presentation

## Low Energy Excess Search and Constraints on eV-Scale Sterile Neutrino Oscillations at MicroBooNE

Wednesday, 11 October 2023 12:00 (30 minutes)

The MicroBooNE experiment employs an 85-ton active mass liquid argon time projection chamber to detect neutrinos from both the on-axis Booster Neutrino Beam (BNB) and off-axis Neutrinos at the Main Injector (NuMI) beam. One of the main goals of MicroBooNE is to investigate MiniBooNE low energy excess/anomaly. In this talk, we will present the recent results from MicroBooNE's low energy excess (LEE) search based on a search of single photons in MicroBooNE and a series of three independent analyses targeting different final-state topologies which look for an anomalous excess of electron neutrino events. We will also discuss the interpretation of these results in the context of the 3+1 oscillation framework under a light sterile neutrino model, as well as ongoing efforts for other BSM explanations of the MiniBooNE anomaly. Additionally, we will examine the impact of a degeneracy resulting from the cancellation of  $\nu_e$  appearance and disappearance, and demonstrate that combining data from the BNB and NuMI beams, which have substantially different  $\nu_e/\nu_\mu$  ratios, can break this degeneracy.

### Is this abstract from experiment?

Yes

### Name of experiment and experimental site

MicroBooNE

### Is the speaker for that presentation defined?

Yes

### Details

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<https://www.bnl.gov/science/>

### Internet talk

No

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**Session Classification:** Plenary Session

**Track Classification:** High Energy Particle Physics