

PHYSICS COLLOQUIUM

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FERMILAB

HUNTING NEUTRINO ANOMALIES WITH MICROBOONE

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130 HAHN HALL NORTH

ZOOM LINK: [HTTPS://VIRINIATECH.ZOOM.US/J/96084996911](https://viriniatech.zoom.us/j/96084996911)

Neutrinos are the most elusive fundamental constituents of matter. And yet these particles may hold the key to exotic new phenomena, which transcend our Standard Model of particle physics. In the last several decades neutrino oscillation experiments have given us a consistent picture of neutrino mass and mixing among three neutrino flavors. However, fundamental questions about the nature of the neutrino and matter itself remain unanswered. In addition, a series of anomalies, including an unexplained excess of electron-like events seen by the MiniBooNE experiment, hint at the existence of additional “sterile” neutrino flavors and complicate this simple picture. In order to improve on the previous generation of neutrino oscillation experiments and address these anomalies, new detector technologies are required. Liquid Argon time projection chambers (LArTPCs) promise to have the sensitivity and scale needed to chart this new territory. MicroBooNE is the first large-scale LArTPC detector built in the U.S. as part of the newly re-established Short Baseline Neutrino program at Fermilab, whose aim is to address the sterile neutrino hypothesis. In this talk, I will present results from the MicroBooNE’s first series of analyses investigating the anomalous excess of electron-like events seen by MiniBooNE.