Contribution ID: **21**   Type: **not specified**

Muon-neutrino selection and reconstruction in ICARUS

Friday, June 17, 2022 9:50 AM (15 minutes)

The ICARUS detector will search for neutrino oscillations involving eV-scale sterile neutrinos using the Booster Neutrino Beam at Fermilab. These oscillations may be observed as muon-neutrino (ν_μ) disappearance, which will require a high purity sample of ν_μ events in the detector with sufficient statistics to maintain sensitivity to ν_μ disappearance. Additionally, the energy of neutrino events must be reconstructed in order to perform fits of neutrino oscillations. A preliminary study of selection cuts and reconstructed neutrino energy, using simulated data, will be shown to demonstrate the impact of these factors on the sensitivity of ICARUS to ν_μ disappearance.

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Session Classification: Neutrinos