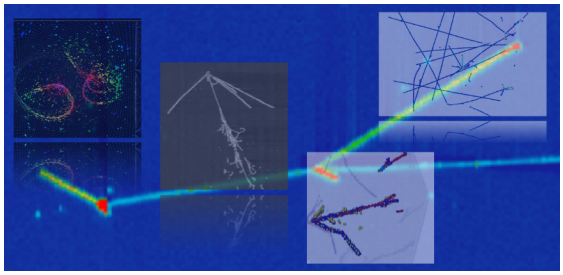

Contribution ID: **35** Type: **not specified**

Deep Learning applications for electron neutrino reconstruction in the ICARUS experiment

Tuesday, 22 August 2023 14:10 (25 minutes)

The ICARUS T600 detector is a liquid argon time projection chamber (LArTPC) installed at Fermilab, aimed towards a sensitive search for possible electron neutrino excess in the 200-600 MeV region. To investigate numu to nue appearance signals in ICARUS, a fast and accurate algorithm for selecting electron neutrino events from a background of cosmic interactions is required. We present an application of the general-purpose deep learning based reconstruction algorithm developed at SLAC to the task of electron neutrino reconstruction in the ICARUS detector. We demonstrate its effectiveness using a simulation dataset containing nue events and out-of-time cosmic interactions generated using the CORSIKA software. In addition, we compare the selection efficiency/purity and reconstructed energy resolution across different initial neutrino energy ranges, and discuss current efforts to improve reconstruction of low energy neutrino events.

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Session Classification: Session 2