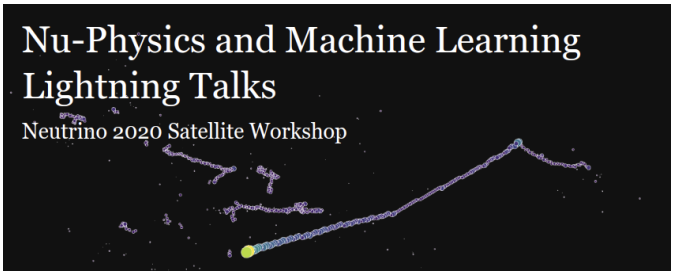

Contribution ID: **12** Type: **not specified**

Using a Convolutional Neural Network to Reconstruct Dead Channels in MicroBooNE

Friday, 19 June 2020 11:00 (15 minutes)

LArTPCs (Liquid Argon Time Projection Chambers) are one of the most promising types of detector in beam neutrino physics. When a neutrino interacts in liquid argon, the resulting leptons ionize the argon atoms which emit electrons. An electric field in the detector causes the electrons to drift to a set of wire readout planes which convert the analog signal into a digital one. The resulting ADC values can be reconstructed into an image of wire vs. time values. Convolutional neural nets have been used in the field of deep learning to search for patterns in images and to alter images, so they can be applied to the result image from a LArTPC. One potential problem in LArTPCs is faulty wiring. If some of the wires are not reading out data properly, it can cause gaps in the images. This can make event reconstruction less effective. This talk presents the results for training a generative convolutional neural network that reconstructs the ADC values in simulated faulty channels for a LArTPC detector output.

Primary author: MASON, Katie (Tufts University)

Presenter: MASON, Katie (Tufts University)

Session Classification: Day 2: Morning