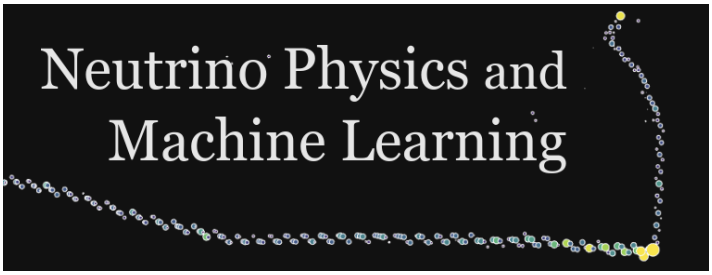

Contribution ID: **36** Type: **Individual talk**

Graph Neural Networks for Reconstruction in Liquid Argon Time Projection Chambers

Tuesday, 14 July 2020 10:00 (25 minutes)

Graph neural networks (GNNs) are a category of neural networks which operate on graph-structured inputs, instead of the grid-structured inputs required by a CNN. Building on work developed for the HL-LHC for particle tracking with GNNs as part of the Exa.TrkX collaboration, this talk presents work to develop GNN-based techniques for hit-level reconstruction in Liquid Argon Time Projection Chambers (LArTPCs). A summary is provided of workflows to perform clustering and spacepoint deghosting in two and three dimensions, using simulations of both atmospheric and beam neutrino interactions, primarily utilising an attention message-passing GNN architecture. Preliminary results will be presented for the application of edge classification to group hits into clusters, and future plans for exploring a broader variety of GNN architectures will be discussed.

Primary author: Dr HEWES, Jeremy (University of Cincinnati)

Presenter: Dr HEWES, Jeremy (University of Cincinnati)

Session Classification: Day 2 Morning