Contribution ID: **59**   Type: **Poster**

A Novel Hit-Based Method to Distinguish Tracks and Showers in ProtoDUNE Single Phase

Pandora [1,2] is a pattern recognition software used in liquid argon
time projection chamber (LArTPC) experiments such as MicroBooNE, DUNE,
SBND, ICARUS, and ProtoDUNE Single Phase (SP). The output of a LArTPC
can be considered a high-resolution 2D image and energy depositions,
called hits, from particles in a LArTPC create complicated topologies
that are broadly classified into tracks and showers. The event
reconstruction is particularly challenging when there are multiple
overlapping particles and in order to fully harness the imaging
capabilities of those experiments, Pandora needs to separate them. A
hit-based approach to this problem is presented, which analyses small
regions around each hit in data events from ProtoDUNE-SP and from
those regions it calculates local variables that are used subsequently
in a machine learning approach. After this stage, it is given to each
hit a probability to belong to a track or shower-like particle.
Results will show the performance of separation between tracks and showers.

[1] Eur. Phys. J. C (2018) 78: 82.
[2] Eur. Phys. J. C (2015) 75: 439

Working group

WG6

Primary author: Mr VERGANI, Stefano (University of Cambridge)

Presenter: Mr VERGANI, Stefano (University of Cambridge)

Session Classification: Poster session NB: do not use Safari; use Firefox, Chrome or Edge