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IDEAS FOR PHYSICS WEEK

RELATED TO THE PION ANALYSIS IN PROTODUNE-SP

STATUS

- ▶ Some progress on topics related to the analysis done with J. Mandalia during this summer
 - ▶ beam/TPC track matching
 - ▶ preliminary studies on the impact of the SCE on reconstruction performances and dEdx
- ▶ Code developed in a standalone (simple) macro, using infos from the AnaTree
- ▶ Reproducing Jesal's results
 - ▶ Update/develop of a dedicated module (simplified AnaTree) to store infos of interest for the analyses (pion, proton..)
 - ▶ develop a macro to analyse the output of the module

Need to boost the analysis, many studies to be done, the DUNE physics week could be a perfect place for develop some simple/short topics related to the analysis

IDEAS

▶ (Cosmic) background:

- ▶ continue work on the beam/TPC matching
- ▶ overlaps of tracks with comics event: (impact on the dEdx, criteria to reject tracks?)

e.g. Use of the CRT information, check completeness and/or purity to workout criteria to select/reject the track/event

All infos might be present in the AnaTree (to be checked)

▶ Signal:

- ▶ the slab-method need to define the concept of "interaction" (secondary vertex well reconstructed? which kind of event do we consider? any contamination?)
- ▶ What is the distribution of scattering angles for elastic and inelastic scattering? How often do we miss these?

e.g. MC-based study looking at candidate primary tracks (pion), study the interaction types and its characteristics, define if dominant contamination, possibly identify rejection criteria.

All infos should be already present in the AnaTree