

“Weekly” report

Pablo F, 2019/03/07

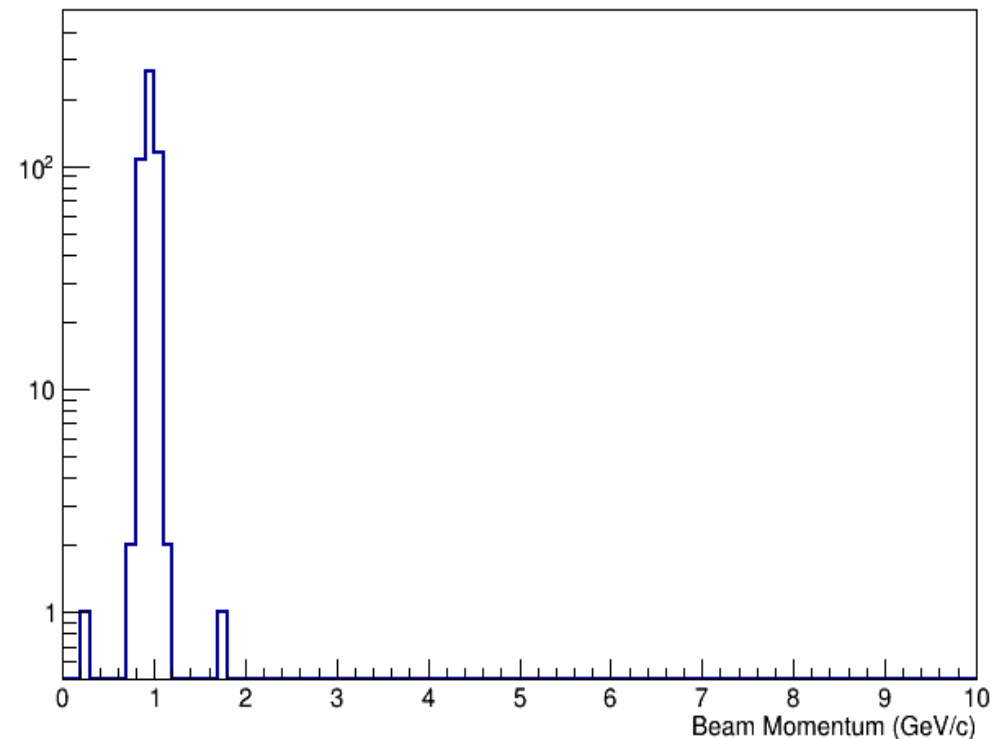
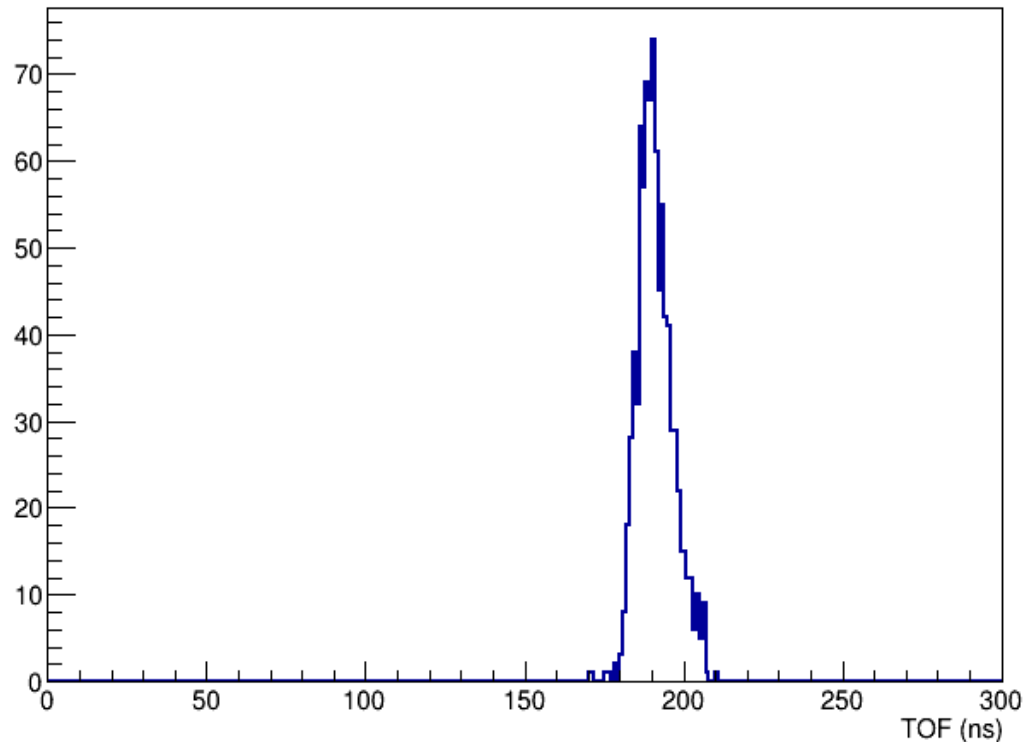
ProtoDUNE-SP analysis

Still working on adapting Highland (news from Anselmo, Fran or Miguel?)

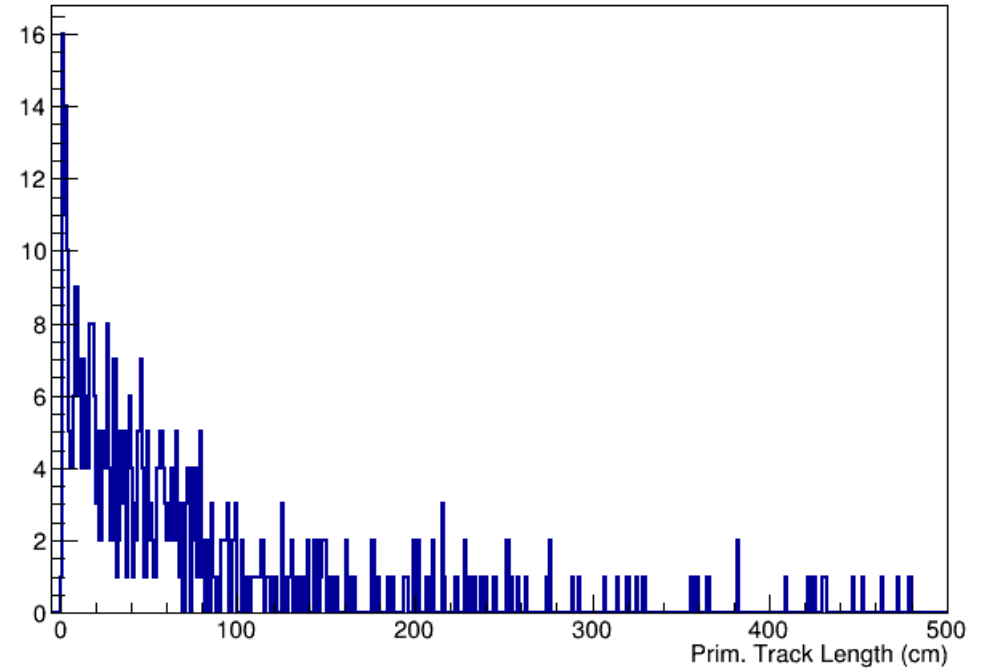
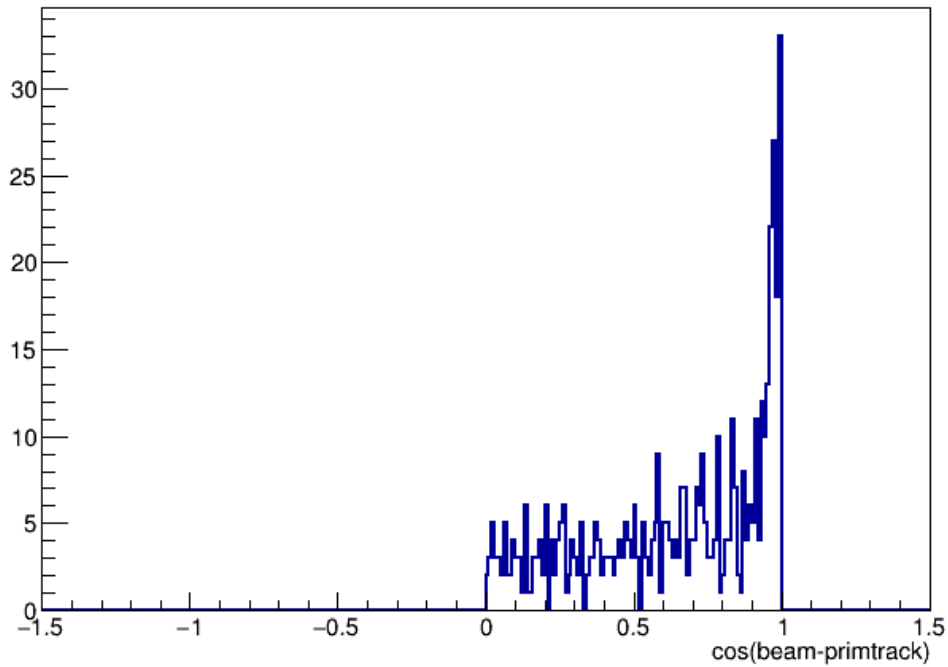
I have been trying to adapt Highland to process the ProtoDUNE-SP data files, but still with many errors

In the meantime, I have been reproducing one of the most complete analyses done in ProtoDUNE-SP with LArSoft, so we can compare it to that produced by Highland
→ 1 GeV protons (Heng-Ye)

Some example plots from run 5387 of ProtoDUNE-SP beam data



ProtoDUNE-SP analysis

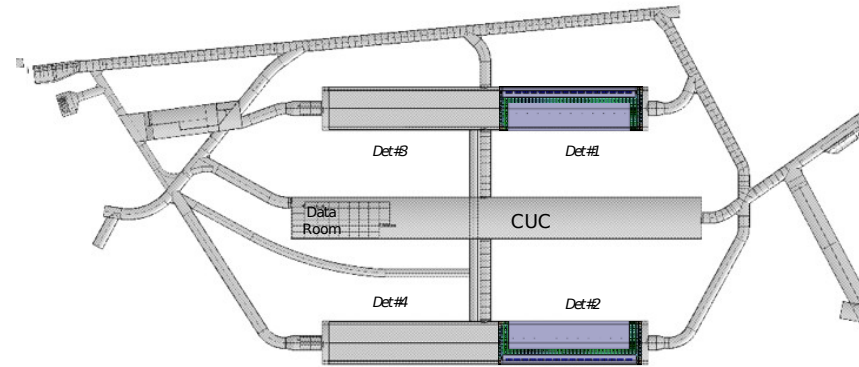


The code is at
`/nashome/p/pablofer/larsoft/larsoft_mydev/srcs/dunetpc/dune/Protodune/singlephase/protonanalysis/protons`

CISC coordination

The detector layout has changed:

- Detector 1 in cavern 1
- Detector 2 in cavern 2
 - Larger amount of space for detector 1 and 2 installation



Surface and underground options for the ITF were (and still are) considered
The underground option shows more advantages than the surface option:

Underground installation

Pro

- Less handling than other options.
 - Will reduce handling risk.
- No truck transport of integrated APAs are needed.
 - Reduces risk of damage in transit
- Lower cost than a surface integration. Save \$~4.5M over a warehouse option.
 - Much lower integrated manpower due to less repeated work.
 - No cost for the space
- Will not need independent ITF managers, supervisors, or crew chiefs.
- The underground machine shop and storage area can be used.
- Scientists and technicians are only needed for 1 years in SD per detector.
- Do not need a surface ITF

Con

- Must wait till the cold boxes are available to start integration (~2yr).
 - PRO - Could allow lessons learned from next ProtoDUNE run to impact electronics.
 - PRO - More time for R&D
- More people are needed to do the work however this easily fits under the limit for underground workers.
- Transport crates are needed for all APA unless they are transferred in the warehouse. (May be a pro if the transfer is easier and you need less crates.)
- Need a bigger cleanroom and more assembly towers with lifts.
- A different process is needed if detector #2 is dual phase.
 - 2 process carts fit in the maintenance shop. Could possibly fit 4 if 2 are only electronics.

T2K+SK joint analysis

VALOR is running in the FNAL machines for the time being (ideally we want it in SK machines)

David (from UAM), with some help from me, will start working on adapting the new VALOR framework to manage the SK atmospheric