# IFIC group week report

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# protoDUNE-SP status

Beam is over

| Momentum | Total Triggers | Expected Pi trig. | Expected Proton trig. | Expected Electr. trig. | Expected Kaon trig. |
|---|---|---|---|---|---|
| **0.3 GeV/c** | 269K | 0 | 0 | 242K | 0 |
| **0.5 GeV/c** | 340K | 1.5K | 1.5K | 296K | 0 |
| **1 GeV/c** | 1089K | 382K | 420K | 262K | 0 |
| **2 GeV/c** | 728K | 333K | 128K | 173K | 5K |
| **3 GeV/c** | 568K | 284K | 107K | 113K | 15K |
| **6 GeV/c** | 702K | 394K | 70K | 197K | 28K |
| **7 GeV/c** | 477K | 299K | 51K | 98K | 24K |
| **All momenta** | **4175K** | **1694K** | **779K** | **1384K** | **73K** |

But still plenty to do in terms of physics:

- stability and performance of the detector
- cosmic rays
- different E field configurations

# protoDUNE-SP: PD data analysis

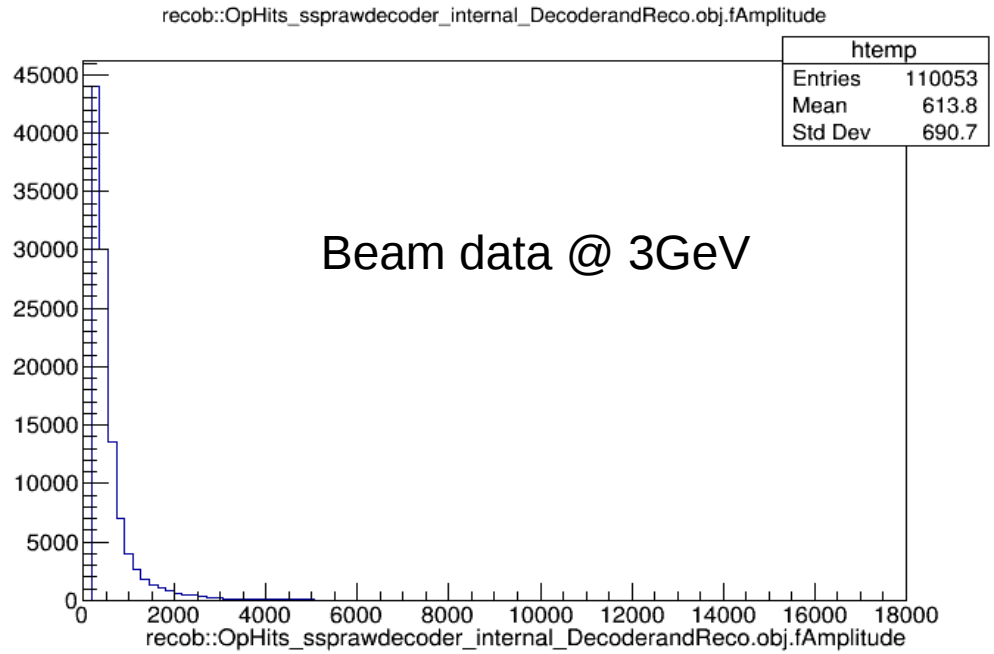
PDs and CRTs aren’t still understood well enough to have reconstructed variables

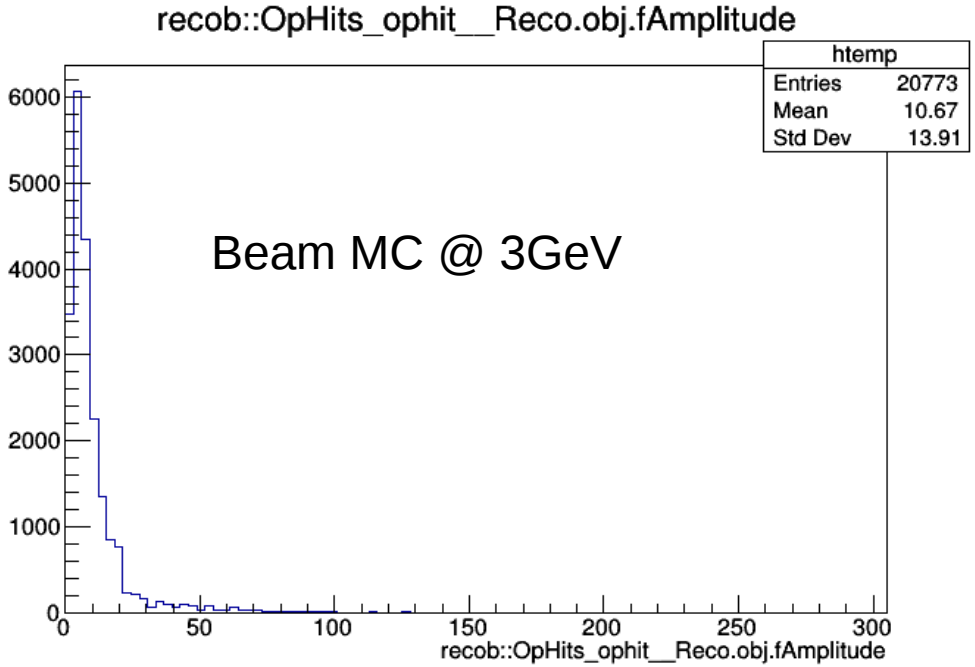
I am talking with the experts (Bryan Ramson) to have more information about this

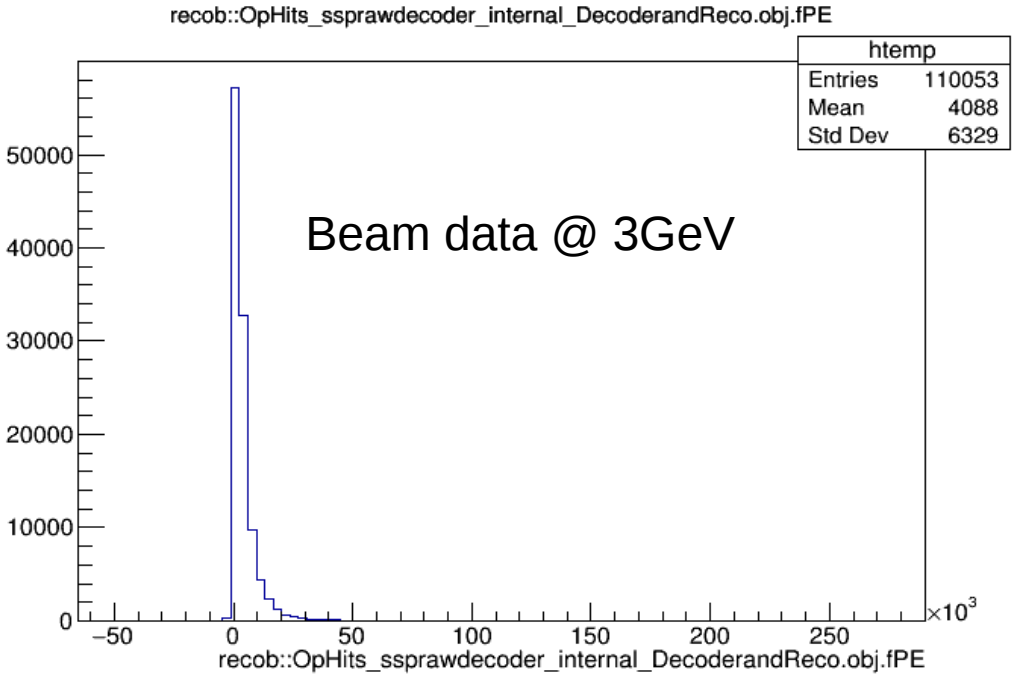
The PD variables in the reco files are the amplitude, time, PE, etc. and they differ between data and MC (in value, name and, therefore, in meaning)

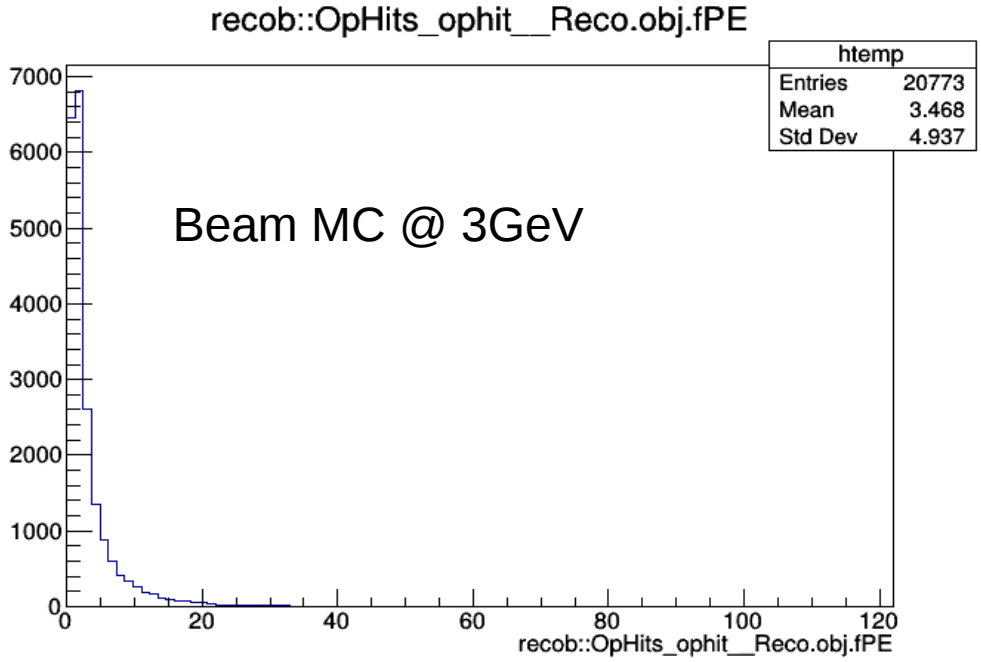
No point providing comparison plots then...

# protoDUNE-SP: PD data analysis



# protoDUNE-SP: highland for data analysis

Meeting with Georgios, Stefania and Leigh:

- In general, they are positive with the idea (specially Stefania and Leigh)
- In addition to have HighLAND independent from lArSoft, they also suggested to include it as an ups product of lArSoft, so it gets downloaded and installed automatically when someone installs lArSoft
  - ➔ This is basically motivated because most of the people doing analysis will be familiarized with lArSoft and not with HighLAND
  - ➔ The idea of highland working with lArSoft also appeared (don't want to have redundancies of the analysis software):
    - Make custom analysis module with lArSoft accessing all its tools easily
    - Feed HighLAND with the generated ana_tree (flat tree) to handle the systematics mainly
  - ➔ As far as I understand and see, this seems over-complicated
  - ➔ But the key points to decide will be:
    - Fastest to produce analysis trees from the TB of data
    - Most flexible and efficient way of adding variables for particular analyses

# protoDUNE-SP: highland for data analysis

- Concerning the last point, think it would be interesting to have intermediate trees with an intermediate level of information so it potentially contains all the relevant variables for any analysis and is significantly smaller than the reco files

- We have been invited to have a talk at the protoDUNE analysis workshop on January 27th
  - ➔ Explain the code
  - ➔ An analysis example and, ideally, compare the results with an analogous analysis done with lArSoft