Vertical drift production and summer plans

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FD sim/reco WG meeting
18th July 2022

The production

- The production has been submitted
- 24 million beam neutrinos requested
- 2 million events per individual sample
  - 30 deg, 48 deg geometries
  - Unoscillated, both fully oscillated combinatorics
  - FHC, RHC
- 95% of simulated events discard the raw digits
- ETA ~1 month

What is next

- A brief bit of downtime
- We need to start preparing to make official plots/numbers for the VD TDR
  - CVN (**N. Nayak**):
    - Efficiences/purities vs true neutrino energy
    - Event scores
  - Nu energy reco (**W. Wu**):
    - Biases & resolutions vs true neutrino energy
    - Reconstructed energies
  - Pandora (**D. Brailsford, M. Bridiga Brunetti**):
    - Lepton reco. efficiencies vs true momenta
    - Lepton angular acceptances
- We have made all of these plots before, so this shouldn't be too much extra work
  - An exception here is the CVN which will need retraining for the 30deg
- **<u>We will need to start making these plots as soon as the files become available in ~1 months time</u>**

Validation system

- We are periodically asked, ‘What is X was different in the simulation’ or ‘How would changing Y in the detector design impact performance’

- Any one of these studies usually relies on 3 pieces of work
    1. Altering X or Y in the simulation
    2. Simulating/reconstructing events using the altered codebase
    3. Making plots using the simulated events
- The overhead usually means we’d need to involve everyone in the VD group every time we needed to do such a study, particularly for point 3
    - This can be (mostly) automated!

- A good validation system is already in place in HD, which can automatically make high statistics, physics plots using feature branches of our codebase (**R. Cross, V. Di Benedetto**)
    - https://wiki.dunescience.org/wiki/DUNE_Computing/DUNE_CI_Setup_and_Usage
- Implementing a similar validation system for VD, and including all of the TDR plots on the previous slide, would mean we can answer simulation and design-level questions much more easily
- **We need a manager to oversee this. Please get in touch if you are interested.**

Summary

- The summer production request has been submitted
- We now need to start thinking about the plots we'll need to make using the production
- We'd like to implement a validation system for VD
  - **<u>We need a manager to oversee it. Please get in touch if you are interested</u>**