

Kickoff - Topic 2:

Sync. and Benchmarking of SBND/ICARUS Sim and Reco

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Workshop Topic #2

Charge: Understanding where SBND and ICARUS simulation/reconstruction diverge, re-benchmarking reconstruction performance, and working on fixes/convergence

Note: converging on simulation is higher priority than reconstruction. Compatible simulation allows to correlate effects, similar reconstruction is an optimization step to maximise correlations.

Simulation tasks

- **Detector simulation**
 - G4 refactoring - implementation in ICARUS, comparisons, correlations
 - contact: Giuseppe Cerati
 - Light simulation and reconstruction - lookup vs parametrics, plan for correlations, unify approaches
 - contact: Lynn Tung
- **Generator**
 - Syncing GENIE systematics treatment: SBNEventWeight/SBND vs. nusystematics/ICARUS (latter has better performance)
 - overlap with topic #3!
 - Enable simulation of the same events across the two detectors
 - contact: Steven Gardiner
- **Simulation of Cosmics**
 - Planning for development of overlays
 - contact: Wes Ketchum (remote), + discussion!

Reconstruction tasks

- Reconstruction algorithms
 - Review usage of Pandora, unify developments
 - contact: Bruce Howard (discussion?)
 - Integrate “blip” reconstruction in larsoft/sbncode
 - contact: Will Foreman
 - Unify/porting of ML workflow, usage for analyses
 - contact: Bear Carlson (+ discussion!)
 - Usage of TITUS event display
 - contact: Joseph Zennamo
 - ...
- Validation and benchmarking of current reco
 - Test, Develop and deploy validation workflows
 - round table discussion!
- Event selection tools
 - Cosmic rejection, Beam timing
 - contact: Francesco Poppi, Anna Heggstuen (overlap with topic #4)

Zoom connection for topic #2 check-ins

- Zoom Link:

<https://fnal.zoom.us/my/gardiner?pwd=Ky94Z0k0bE5ha2pzeFp3bVNnUE9Ddz09>

- Meeting ID: 530 648 8714
- Passcode: 078428

Conclusions

Please contact @Steven Gardiner or @cerati if you are interested in contributing! Lots of high-priority work needs to be done, there is room for contributions from everyone.

Plan to use main workshop slack for advertisement of discussion sessions. Stay tuned for advertisements.

Let's get this done!