Analysis Group

Meeting Summary

ArgonCube Fortnightly Meeting

February 27, 2020

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Organization

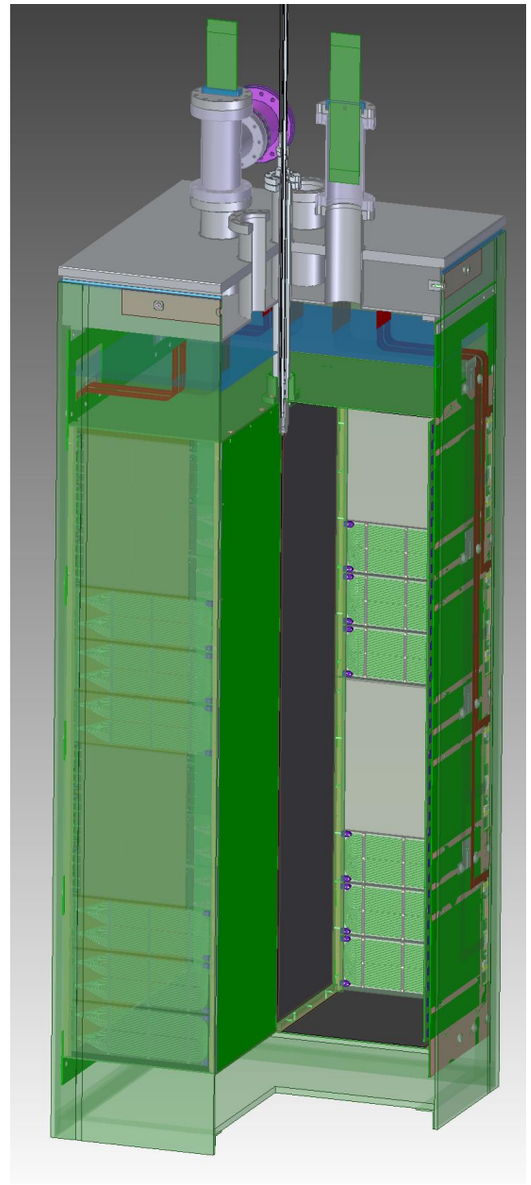
- Last Thursday was the first biweekly meeting of the LAr ND Analysis group
- Goals
  - Coordinate development related to DUNE LAr ND analysis
    - ArgonCube 2x2/ProtoDUNE-ND analysis + ND physics studies
  - Interface with the ND Software Integration Group
  - Ensure we are on target for collaboration deliverables (e.g. TDR)
- Organization
  - Meetings: Every other Thursday, 9:30–10:30 AM CT, additional as needed
  - Mailing list: lar-nd-analysis@fnal.gov for announcements and discussions
  - DUNE Slack: #lar_nd_analysis
  - DUNE ND SW Integration group
    - dune-nd-sw-integration@fnal.gov, #nd_software_integrate

LAr ND Analysis

A Brief Status Overview

Status

- Existing code with GENIE + edep-sim, DUNENDGGD geometry, plus ArgonBox, has supported CDR (and IDR) level studies so far
- As a next stage, desire to understand details re: impact of geometry & optical system on reco, pileup ID
- Work is in progress to build an end to end simulation & analysis chain, with many parts already existing
  - Efforts on simulation, detector response (charge & light), reconstruction, and analysis
  - Currently "standalone" codes, developing generically for integration/adaptation (framework-agnostic)
  - ND physics studies can develop in parallel e.g. using truth-level Edep or (better yet) hit smearing
- Developments on LArSoft-based tools (see Gianluca Petrillo's January CM talk, ND SW Integration session: slides)
- Recent discussions towards an additional, complementary Pandora-based reconstruction path



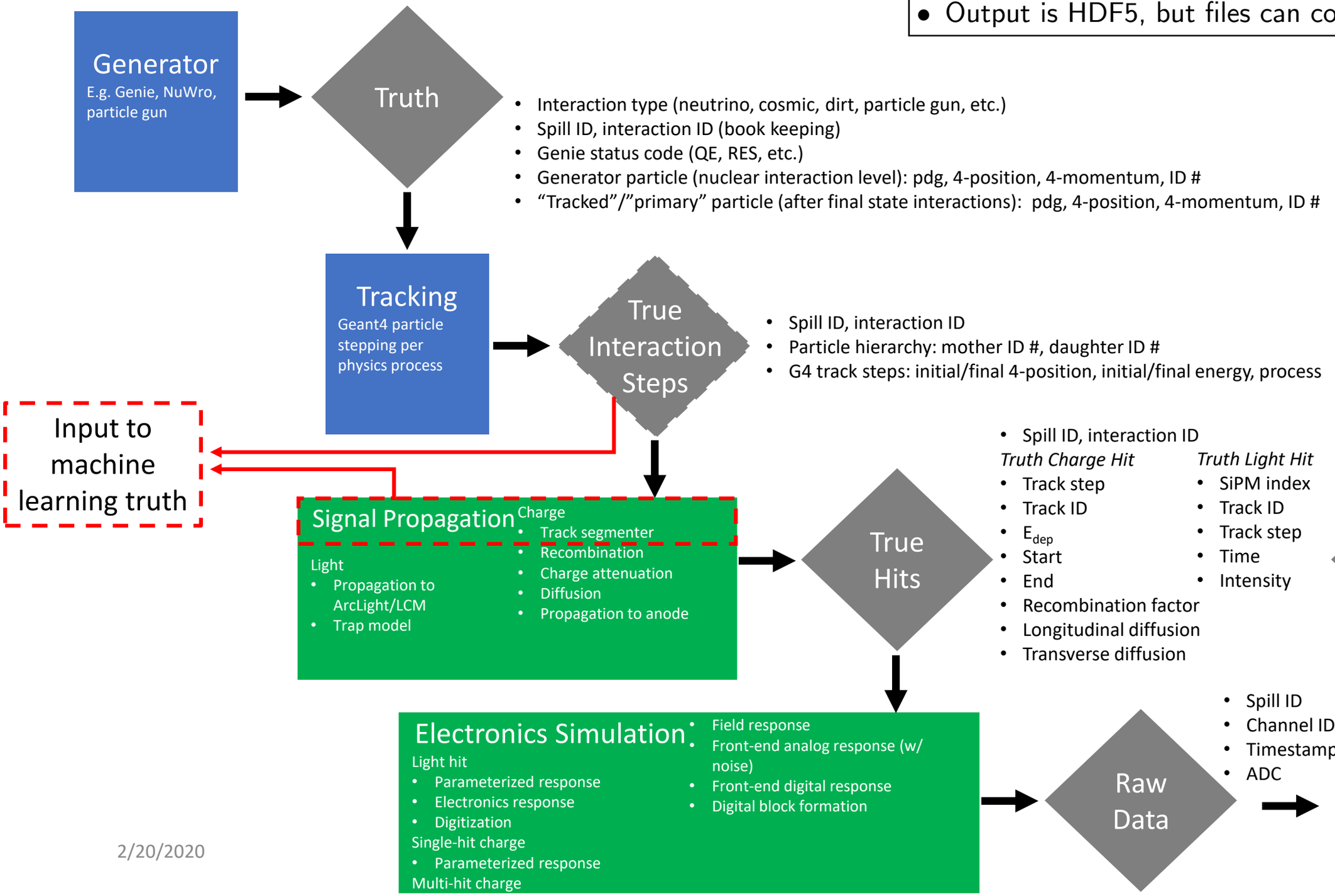
Knut Skarpaas (SLAC)

Simulation

Brooke Russell

Discussion Points

- D. Dwyer, F. Piastra, B. Russell, and K. Terao
- Discussion of where to apply Landau fluctuations
- Possibility to merge steps to skip large G4 output
- Desire to keep truth generic, e.g. supporting BSM
- Output is HDF5, but files can converted to ROOT



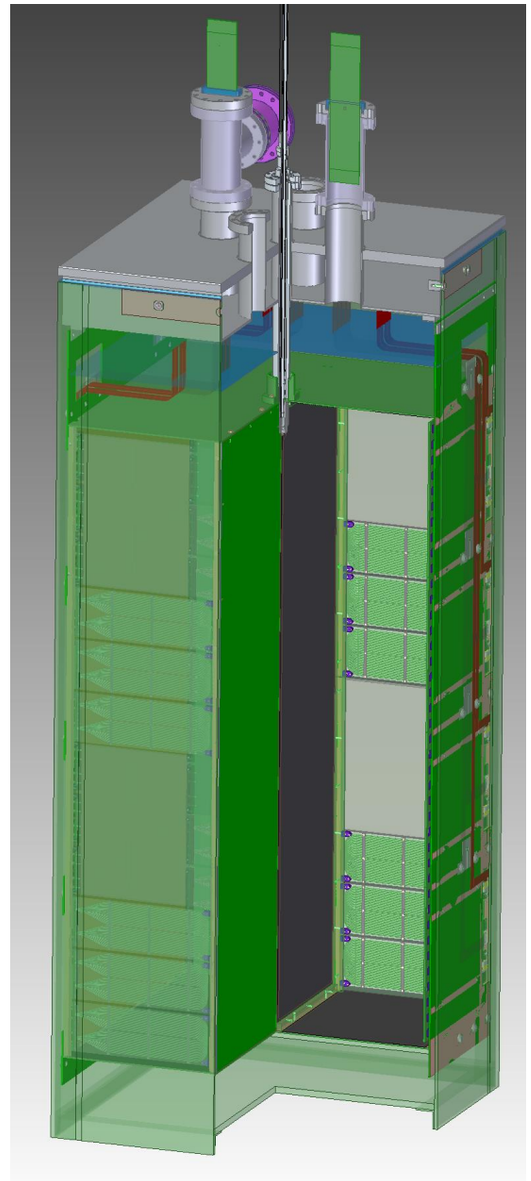
Roundtable

ArcLight Simulation [P. Koller]

- Geometry implemented in NDGGD GDML, working on optimized G4 photon simulation with Francesco.
- Expect to be able to built photon lookup tables around 1-2 months
- Some discussion of GPU-accelerated photon simulation, e.g. Chroma

Other Business [A. Mastbaum]

- Next meeting: *Thursday, March 5, 9:30–10:30 CT*
  - Reconstruction overview + update
  - Contributions welcome!



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