LArSoft Coordination Meeting

Release and project report

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Today’s agenda and speakers

- Release and project report (Erica)
- Profiling work in preparation for optimization with GPUs (Marc Paterno)
- A glimpse of code development with Spack (Kyle Knoepfel)
- AOB

Releases

- Since Dec 12 LCM:
  - v08_05_00_23 released Dec 12, 2023
    - MicroBooNE MCC9.1 production release
  - v09_82_00 released Dec 13, 2023
    - LArSoft/larg4#50: set the excitation energy in the gdml file
    - LArSoft/larg4#49: optionally restricting the particles that are saved to specified volumes.
      - Resolves issue 26106
    - LArSoft/larg4#48: option to store dropped MCParticles as a separate vector
      - Based on changes made to legacy larg4 - SBNSoftware/larsim@e4bf606
    - LArSoft/larg4#51: store original track ID in sim energy deposit
    - LArSoft/larsim#126: Corrected for SCE convention and generalized
      - Changes default behavior in DUNE's MC simulation
      - Tested with ICARUS, affects any detector with E field that does not point in +X direction.

Releases

- Since Dec 12 LCM:
  - v09_90_00rc1 released Dec 19, 2023
    - Release candidate built with art 3.14.03
  - v09_82_01 released Jan 11, 2024
    - LArSoft/larsim#128: Store original track id for sim energy deposits
    - LArSoft/larpandoracontent#59: PandoraPFA repository Coverity and CI workflow updates
      - Updates for git workflows that run within the PandoraPFA repository to reflect recent updates to ROOT builds.
      - This does not modify any products or alter LArSoft repository behaviour.

Status of PRs

- Approval in progress
  - larbatch#25: Add script to make the tarball in bzip2 format
  - larsim#129: Add check that TPCID is valid in ISCalcCorrelated
    - Needed to allow DUNE-VD to simulate light outside TPC volume
- Under discussion
  - larg4#52: Select separate volumes for dropped and nominal MCParticles
    - Allows tracking of dropped particles for shower particles outside active volume
  - larsim#127: Change SingleGen to use NuRandomService to initialize random engine (Opened Nov 14, 2023)
    - Awaiting response from author

Status of coming updates (updated since Dec 12, 2023 LCM)

- **Geometry refactoring**
  - Release candidate v10_00_00rc0 available since Nov 2, 2023
  - Feature branches / PRs needed to update experiment code are available
    - See Release and Project Report, page 6, at Dec 12 LCM
  - Working on documentation for experiments + final presentation at next LCM
  - Need sign-off from experiments prior to migration
- **Root**
  - Moving to v6.28 series to address dictionary issues, possibly others
  - Requires *art* v3.13+
  - Current target is v6.28.10a

Status of coming updates (updated since Dec 12, 2023 LCM)

- ***art***
  - LArSoft release candidate v09_90_00rc1 based on v3.14.03 + root 6.28.10a
    - Skipping art v3.13 series

- **Geant4**
  - Will build LArSoft release candidate with Geant v4_11_1_p03b + art v3.14.x
  - Experiment sign-off required prior to migration

Status of coming updates (updated since Dec 12, 2023 LCM)

- **The proposed plan**
  - Migrate LArSoft to art v3.14.03 asap, assuming no further issues
    - Will include root 6.28.10a
    - No changes will be needed to experiment code
    - Will migrate as soon as builds of Triton and TensorFlow are ready
  - Build Geant4 RC with Geant 4_11_1_p03 and art v3.14.03
    - Need experiment sign-off to migrate
  - Release LArSoft v10 with refactored geometry after *art* migration
    - Need experiment sign-off prior to release

Please let us know of any problems with this plan

Status of coming updates (updated since Dec 12, 2023 LCM)

- **Spack**
  - Current plan calls for full migration before SL7 EOL
    - UPS **not supported** under AL9.
    - Experiments must update from cetbuildtools to cetmodules
  - Have Spack builds of LArSoft v09.81.00 under AL9 and SL7
    - Verified no missing rpaths in lar, art, root executables – otherwise untested.
    - To set up in AL9

      ```
      source /cvmfs/larsoft.opensciencegrid.org/spack-packages/setup-env.sh
      spack load larsoft/e3ryycs
      ```

    - To set up in SL7:

      ```
      source /cvmfs/larsoft.opensciencegrid.org/spack-packages/setup-env.sh
      spack load larsoft/2vibnrv
      ```

  - New: potential model for developing under Spack. (Kyle's talk today!)

MARLEY question?

- Who is using MARLEY?
- Does anyone need a default neutrino spectrum in LArSoft?
  - The one there is an outdated supernova spectrum from DUNE collaborators
  - Will either replace it or let experiments handle their own based on answer to this question.

The end