

Addition of a Backtracker for Optical Hits.

Jason Stock, Juergen Reichenbacher
South Dakota School of Mines and Technology
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Changes

Units to Modify

- LArSim OpFastScintillation
- LArSim LArG4_module
- LArSim OpDetPhotonTable

New Units

- Lardataobj SimOpChannel
- LArSim PhotoBackTracker
(Is there a more intuitive name for this?)

New Unit. SimOpChannel

The SimOpChannels will be made as similarly to the current SimChannels as possible. This will be the new data product added to the simulation during the LG4 stage.

They will include the same methods but will use photons instead of charge.

Photons will be added to the SimOpChannels with a AddScintillationPhotons method (based on AddIonizationElectrons method).

SimOpChannel is done.

- Will push feature branch soon.
- Needs better comments to facilitate review.

Changes to OpFastScintillation

All changes will be made near where StepPhotonTable is written.

A new vector of SimOpChannels will be filled just after the loop that makes StepPhotons. This will be done once for each OpChannel (Fortunately, there are very few OpChannels compared to real channels, and most ticks should be empty).

Changes to OpDetPhotonTable

OpDetPhotonTable is used to pass the simulation photons from OpFastScintillation to LArG4_module.

OpDetPhotonTable will be extended so that it can also be used to pass SimOpChannel information to LArG4_module. This will include adding a new member to OpDetPhotonTable, and a new method to return that member.

LArG4_module

Add a new producer.

Add code to retrieve SimOpChannelColumn member from OpDetPhotonTable

(changes to LArG4_module should be very few.)

PhotoBacktracker.

A new service will be made based heavily on the existing backtracker with modifications as appropriate to run on Scintillation Deposited Photons instead of Ionization Deposited Electrons.

The biggest change will be using Number of Photons in the new module where the old module uses charge.

Questions?

Changed or new files.

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