Muon collider studies

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Managed to overlay full BIB on event...

- Files to play around with:

  - Full BIB+ Hbb : /nfs_scratch/mallampalli/mucol/edm4hep_files/fullBIB_digi_edm4hep.root

  - No BIB+ Hbb: /nfs_scratch/mallampalli/mucol/edm4hep_files/noBIB_digi_edm4hep.root

  - Only BIB: /nfs_scratch/mallampalli/mucol/edm4hep_files/onlyBIB_digi_noHbb_edm4hep.root

- Workflow to overlay BIB setup but .....

  - The suggested steps fail when we try to do the reconstruction with full BIB overlay, even with using filtered tracks instead of the raw tracks.

  - Since we are concerned with only the CaloHits, I thought it might be ok to use the digi outputs instead of doing the reco?

  - Some other issues (next slides)

Tried using the latest files used in CERN 2023 tutorial

Error

• The files suggested seem to have a missing collection.

[ERROR "OverlayBIB"] Failed to extract MCParticle collection: lcio::DataNotAvailableException: LCEventImpl::getCollection: collection not in event:MCParticle

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A runtime error occured - (uncaught exception):

     lcio::DataNotAvailableException: LCEventImpl::getCollection: collection not in event:MCParticle

Marlin will have to be terminated, sorry.

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Switched to the older Fermilab 2022 tutorial files

- Access to snowmasslogin nodes approved last week and the files in slide 2 are using these BIB files.

- To check if everything ok, was doing some checks and found that there are issues in these files

- The CaloHit contributions x,y,z coordinates are all set to 0. This is not the case with the latest CERN 2023 BIB files (next slide).

CaloHit coordinates
Is there an issue with the Fermilab 2022 tutorial files?

CERN2023 files

Fermilab 2022 files

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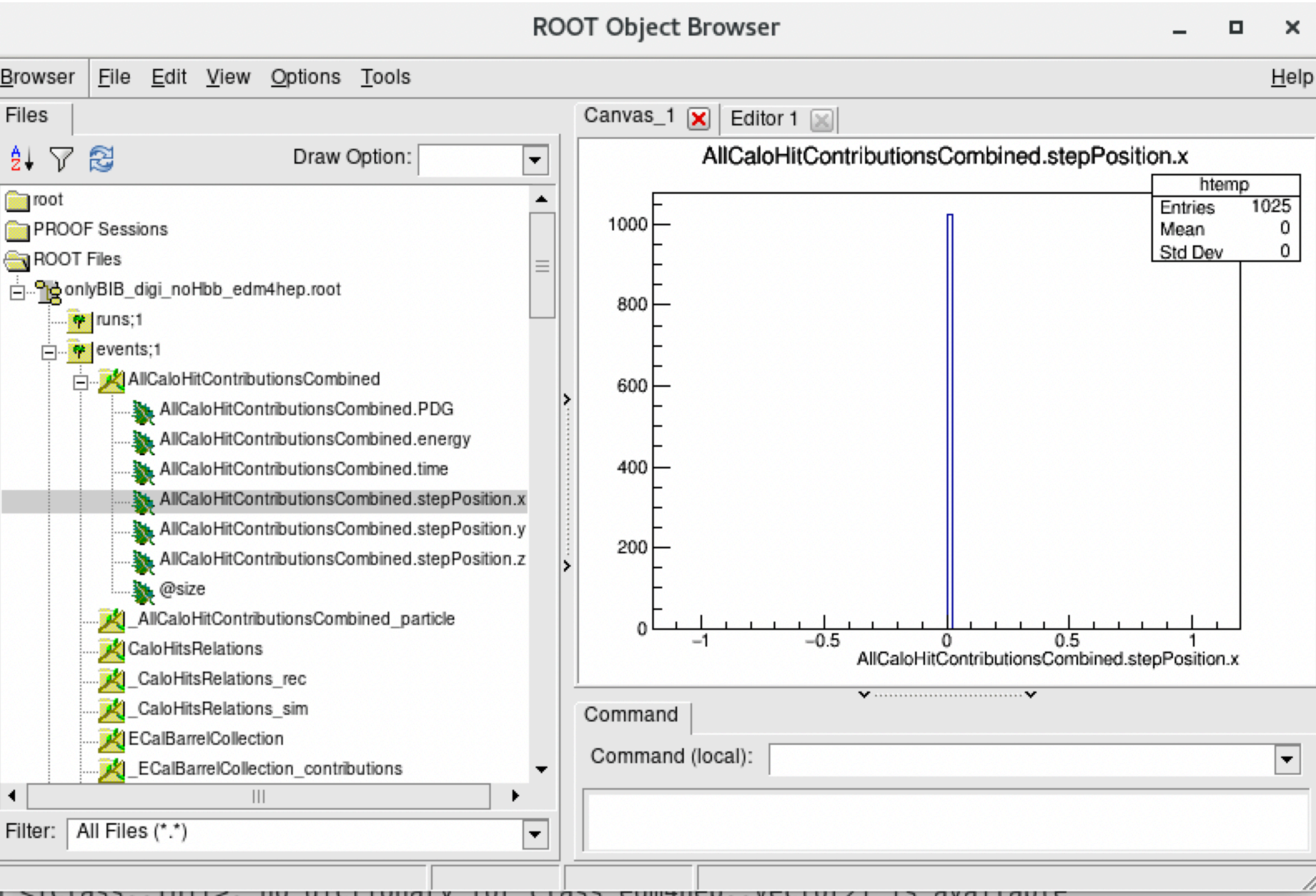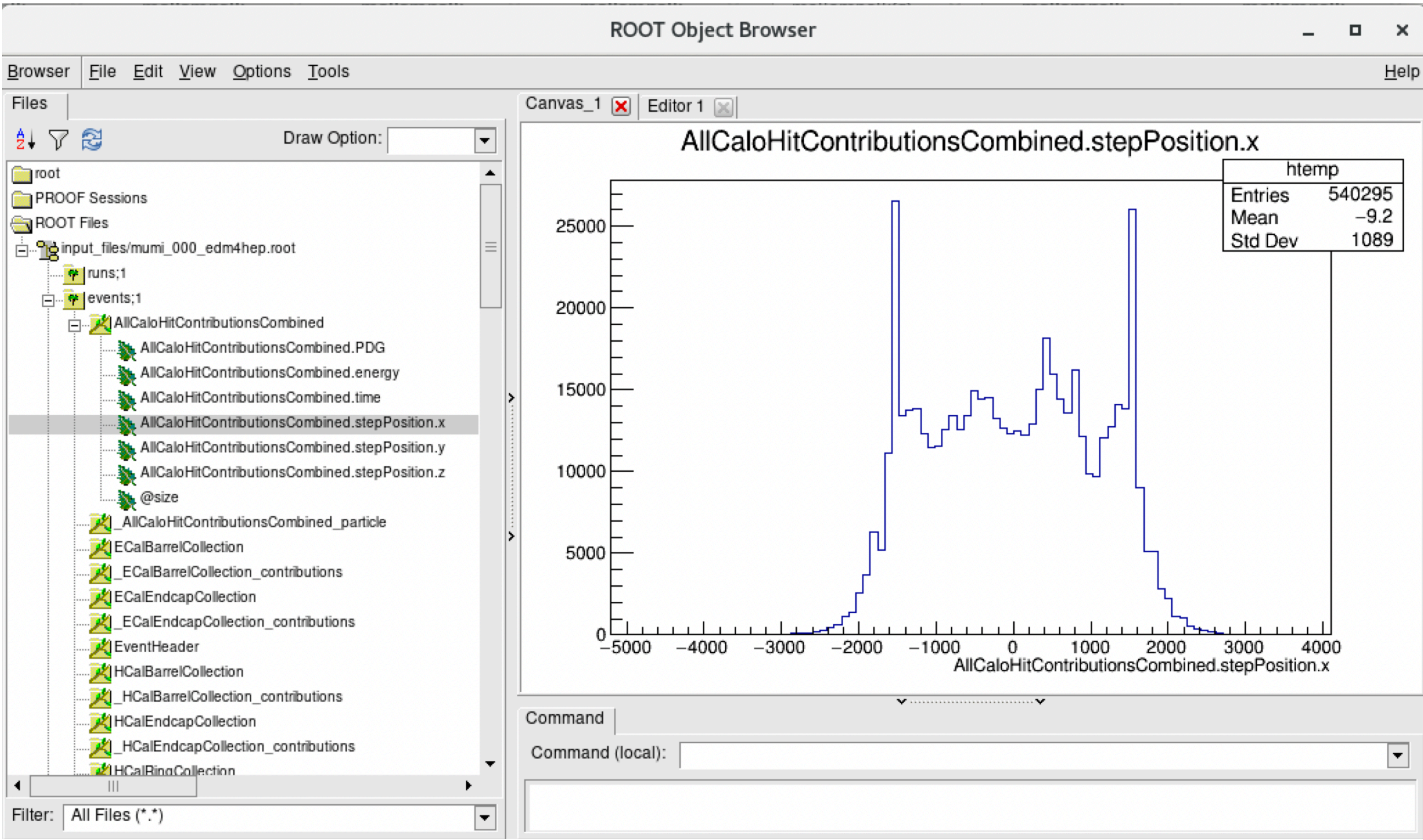
To work on

- Not sure, maybe things were fixed for the suggested files in 2023 cern tutorial? But have to solve that missing collection error if we want to use these files for overlay.

- How are BIB events simulated? The tutorial just provides paths to files with a few BIB events but I wasn't able to find how these are produced incase we need larger statistics.

Playing around with geant
Photon hitting a beryllium target..

- Will be really helpful if there are any resources to get started.