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Running the G4 simulation in rel. 10.5.0 and later

Running the simulation with the 10.0.X branch

Masaya has written quite a good documentation on how to run the Simulation --> Digitization --> Read RDO chain with release 10.0.0 on this link ☑. Notice, that with release 10.0.1 and later you don't need to check out any extra packages. If using release 10.0.X with the new MuCTPI simulation, those instructions should be followed.

Running the simulation with 10.5.0

Setting up the simulation

I only tested running the G4 simulation with the following recipe with release 10.5.0. Nevertheless the brand new rel. 11.0.0 should work just the same. (However I've read some news on the software developers mailing list, that there are still some problems with some parts of the simulation in that release.)

update: I've verified, that release 11.0.3 works fine for the whole simulation --> digitization --> readRDO chain.

The general description of running the pythonized G4 simulation within Athena can be found here ☑.

For some quick studies, I was using the following 2 jobO files: ParticleGeneratorOptions.py and jobOptions.G4Atlas_Sim.py.

I ran into all kinds of trouble, when using `SimFlags.KinematicsMode.set_Value('SingleParticle')`, and it doesn't give quite the flexibility as having the generator set up separately does.

The most important flags in the jobOption files are the following:

- `ParticleGenerator.orders` in `ParticleGeneratorOptions.py`: The most useful orders for generating single muons can be found in the file. These should be self-explanatory. The complete description of the possible orders can be found in here ☑.
- `SimFlags.SimLayout.set_Value(' ')` in `jobOptions.G4Atlas_Sim.py`: I've currently have it set to 'Rome-Final'. Should be set to the same value in the whole analysis chain!
- `SimFlags.PersistencyHit.set_Value(' ')` in `jobOptions.G4Atlas_Sim.py`: Sets the name of the output file containing the hits.
- `theApp.EvtMax` in `jobOptions.G4Atlas_Sim.py`: Just listed for completeness...

Running the simulation

Here again, the general guidelines on the official page ☑ can be followed.

To wrap it up, one has to configure CMT correclty, and set up the offline running environment. I still used: `#>source /afs/cern.ch/atlas/software/dist/10.5.0/Control/AthenaRunTime/*/cmt/setup.sh`, however with the introduction of project builds, one should consider using the lighter weight runtime packages. Get the two jobOption files discussed previously together with PDGTABLE.MeV (`#>get_files PDGTABLE.MeV`) into a run directory.

The simulation can be started with: `#>athena.py jobOptions.G4Atlas_Sim.py`. In bash I like to use the following command however: `#>athena.py -s jobOptions.G4Atlas_Sim.py 2>&1 | tee log_file.log`.

-- AttilaKrasznahorkay - 15 Dec 2005

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