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Cosmic Simulation in rel 14: Samples

Overview

- The first production of simulated cosmic is starting now. for info on this please see CosmicSimFirstProduction wiki
- These samples are produced in 14.4.0 AtlasProduction on the batch system, although simulation step is also available with Simulation/SimuJobTransforms/scripts/csc_cosmics_sim_trf.py
- What we used for these samples is now included in SimuJobTransforms-00-07-99, which needs tags G4CosmicFilter-00-00-12 and CosmicGenerator-00-00-34.
- Tags for digitization: CommissionUtils-00-00-21, PixelDigitization-00-07-13-02, SiDigitization-03-05-04, SCT_Digitization-00-11-13 . jobOptions testdig.py attached.
- The size of the ATLAS-GEO samples will be ~50k events when first stage finished.
- To access the data use STAGE_SVCCLASS=atlasgroupdisk
- Two filters: CosmicGenerator constrains the production vertex and direction of generator-level tracks, G4CosmicFilter requires simulated hits inside a certain volume - more details on the settings for the generator can be found in the attached jobOptions_ConfigCosmicProd.py. Note that the CosmicGenerator settings for pixelbarrel-filtered samples are optimized for pixel studies and may not be appropriate for other detector studies.
- Some limitations:
 - ♦ Several questions lately: note that the mu+/mu- ratio in simulation (1.5) is not the same as in data. The simulation flux calculation uses this reference: A. Dar , Phys. Rev. Letters 51, 227 (1983)
 - ♦ Timing is wrong for the muons, trigger will not work correctly.
- Old twikis available through this link

List of geometries used:

- **ATLAS-GEO-03-00-00** (aligned, Solenoid On, Toroids On)
- **ATLAS-GEONF-04-00-00** (aligned, no magn field)
- **ATLAS-GEO-04-00-00** (aligned, Solenoid off, Toroids On)

List of simulation filter volumes used:

- **Muon** (all of Atlas, geant volume is MUONQ2::MUONQ2)
- **TRT barrel** (geant volume is TRT::BarrelOuterSupport)
- **Pixel barrel** (has to have hits inside geant volumes TRT::BarrelOuterSupport *and* Pixel::Pixel)
- **new inner detector** volume: (greant volume is OR of TRT::BarrelOuterSupport, TRT::WheelA, TRT::WheelB)
- **new muon** volume: (geant volume is CALO::CALO)

Please note that all subsystems are switched on in all samples; the naming refers just to the filtering on the track direction

Samples

Production with Muon Volume

ATLAS-GEO-03-00-00:

- 5000 events at
/castor/cern.ch/grid/atlas/atlasgroupdisk/proj-simcos/rel14/ATLAS-GEO-03-00-00/dig/dig.muon_B.70000x.ro
where x=1-5
- Test with new muon volume: 1873 events at
castor/cern.ch/grid/atlas/atlasgroupdisk/proj-simcos/rel14/ATLAS-GEO-03-00-00/dig/dig.muonentry.700000.r
and dig.muonentry.700005.root

ATLAS-GEONF-04-00-00:

- so far only a few thousand test events. Pixel hit timing not correct for these. Can be found at
~gencomm/w0/cosmicSim_rel14/NoField/dig.muon*.root .

Test with new Inner detector volume

- /castor/cern.ch/grid/atlas/atlasgroupdisk/proj-simcos/rel14/ATLAS-GEO-03-00-00/dig/dig.trt_B.900010.root,
dig.trt_B.900014.root, and dig.trt_B.900018.root

Production with TRT barrel Volume

ATLAS-GEO-03-00-00:

- 58666 events at
/castor/cern.ch/grid/atlas/atlasgroupdisk/proj-simcos/rel14/ATLAS-GEO-03-00-00/dig/dig.GEO-03-TRTBarre
- The corresponding hits files can be found in the ATLAS-GEO-03-00-00/sim directory

ATLAS-GEONF-04-00-00:

- 50327 events at
/castor/cern.ch/grid/atlas/atlasgroupdisk/proj-simcos/rel14/ATLAS-GEONF-04-00-00/dig.trtbarrel.200*.root
- The corresponding hits files can be found in the ATLAS-GEONF-04-00-00/hits directory

ATLAS-GEO-04-00-00:

- 57756 events at
/castor/cern.ch/grid/atlas/atlasgroupdisk/proj-simcos/rel14/ATLAS-GEO-04-00-00/dig
- corresponding hits files can be seen in ATLAS-GEO-04-00-00/sim directory

Production with pixel barrel Volume

ATLAS-GEO-03-00-00:

- Approx 46k events can be found at:
/castor/cern.ch/grid/atlas/atlasgroupdisk/proj-simcos/rel14/ATLAS-GEO-03-00-00/dig/dig.pixelbarrel_B.400*
- The corresponding hits files can be found in the ATLAS-GEO-03-00-00/sim directory

ATLAS-GEONF-04-00-00:

- Approx 48k events at
/castor/cern.ch/grid/atlas/atlasgroupdisk/proj-simcos/rel14/ATLAS-GEONF-04-00-00/dig.pixelbarrel.500*.root
- The corresponding hits files can be found in the ATLAS-GEONF-04-00-00/hits directory

ATLAS-GEO-04-00-00:

- 55368 events. Files are in
/castor/cern.ch/grid/atlas/atlasgroupdisk/proj-simcos/rel14/ATLAS-GEO-04-00-00/dig/dig.pixelbarrel_B.600*.root
- The corresponding hits files can be found in the ATLAS-GEO-04-00-00/sim directory

Instructions on how to run simulation / digitization / reconstruction

other useful info

- we can see how full our castor diskpool is by looking: [here](#) our limit is 5TB

-- ElseLytken - 23 Feb 2009

- testdig.py.txt: example of digitization jobOptions
- jobOptions_ConfigCosmicProd.py.txt: Cosmic generator settings

This topic: Main > CosmicSimulationSamplesRel14
Topic revision: r45 - 2009-04-16 - JamieBoyd



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