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Cosmic Simulation in rel 13: Samples

Overview

- These samples are produced on the batch system
- Two filters: `CosmicGenerator` constrains the production vertex and direction of generator-level tracks, `G4CosmicFilter` requires simulated hits inside a certain volume.
- Details and instructions can be found here: `HowToSimulateCosmicIn13`
- Earlier samples/releases: `HowToSimulateCosmicIn1250`
- Future samples will likely be part of official production via `Simulation/SimJobTransforms/scripts/csc_cosmics_sim_trf.py`
- First Release 14 samples can be found at:
`CosmicSimulationSamplesRel14`

List of geometries used:

- **ATLAS- Comm(NF) - 01-00-00** (aligned, CSC-00-00-00)
- **ATLAS- Comm(NF) - 02-00-00** (misaligned, CSC-00-01-00)
- **ATLAS- Comm(NF) - 03-00-00** (M4/M5 setup)
- where NF means "no magnetic field"

List of simulation filter volumes used:

- **Mion** (all of Atlas, geant volume is `MUONQ2::MUONQ2`)
- **Inner Detector** (including end-caps, geant volume is `IDET::IDET`)
- **TRT barrel** (geant volume is `TRT::BarrelOuterSupport`)
- **SCT barrel** (geant volume is `SCT::ThShieldOuterCly`)
- **Pixel barrel** (has to have hits inside geant volumes `TRT::BarrelOuterSupport` *and* `Pixel::Pixel`)

Sampl es

Pr oduct i on wi th Muon Vol ume

- ATLAS- CommNF- 01- 00- 00, 57755 events at:
/ castor/ cern. ch/ user/ l/ lytken/ cosm ic_13010/ di gi ti za ti on/ NoFi el d/ MuonVol ume
- Simulation output can be found at:
/ castor/ cern. ch/ user/ l/ lytken/ cosm ic_13010/ muonexit - {100- 120}/ si m root

Pr oduct i on wi th Inner Det ect or Vol ume

- ATLAS- CommNF- 01- 00- 00, about 40k events for testing for TRT end cap calibration at:
/ castor/ cern. ch/ user/ l/ lytken/ cosm ic_13010/ di gi ti za ti on/ NoFi el d/ IDET/ di g. c

Pr oduct i on wi th TRTBarrel Vol ume

ATLAS- CommNF- 01- 00- 00:

- 2469 events at
/ castor/ cern. ch/ user/ l/ lytken/ cosm ic_13010/ di gi ti za ti on/ NoFi el d/ TRTBarrel /
- 950 events with 5 MeV cut for secondaries, at
/ castor/ cern. ch/ user/ l/ lytken/ cosm ic_13010/ di gi ti za ti on/ NoFi el d/ TRTBarrel /

FDR- 2 cosm ic s:

- Samples made with 13.0.40.3, ~52000 events, simulated with ATLAS- Comm 01- 00- 00 adding alignment tag CMCCOND- CSC- 00- 01- 00, in
/ castor/ cern. ch/ user/ l/ lytken/ cosm ic_13040/ di gi ti za ti on/ FDR2/ .
CaloNoise is on.
- Two old files: Digitized with same geometry:
dig. fdr2_trtbarrel100.root and dig. fdr2_trtbarrel125.root
- Digitized with ATLAS- CSC- 02- 01- 00: dig. csc. fdr2_trtbarrel*.root
- Location of bytesteam files:
/ castor/ cern. ch/ user/ b/ bvendapi / cosm ic_s_fdr2/

ATLAS- Comm 02- 00- 00:

- Large sample for ID alignment group: ~100k events
/ castor/ cern. ch/ user/ l/ lytken/ cosm ic_13010/ di gi ti za ti on/ TRTBarrel / mi salign

From dig. trtbarrel_ma_B600.root a new simulation option is tested. Please report any differences you find between 500 files!

- This has been re-digitized in 13.0.40.4 to pick up a better version of TileSimAlgs, and Calo noise has been turned on. Location:
/ castor/ cern. ch/ user/ l/ lytken/ cosm ic_13010/ di gi ti za ti on/ TRTBarrel / mi salign

ATLAS- CommNF- 02- 00- 00:

- Large sample for ID alignment group: 299806 events at
/ castor/ cern. ch/ user/ l/ lytken/ cosm ic_13010/ di gi ti za ti on/ NoFi el d/ TRTBarrel /

ATLAS-CommNF-03-00-00:

- 11477 events on
/castor/cern.ch/user/l/lytken/cosmic_13030/digitization/Mnew/dig.m4_trtba
, where $X=\{100,450\}$
- The same events (a little fewer) re-digitized with doCaloNoise =
True in
/castor/cern.ch/user/l/lytken/cosmic_13030/digitization/MwCaloNoise/dig.n
- (Be careful with similar but smaller files in /M/, this directory
also contains crashed files.)

samples, ATLAS-CommNF-03-00-00:

- Made by Francesc Vives, these were simulated+digitized with 13.0.40
and reconstructed with 13.0.30.20. The difference is in the time
between simulated hits, by changing SetDeltaTHit(stepsize) in
Simulation/G4Atlas/G4AtlasApps/python/SimAtlasKernel.py
- Step size 1ns: (default): /castor/cern.ch/user/v/vivesvaq/simulated
, aprox 64k events.
- Step size 0.2 ns: /castor/cern.ch/user/v/vivesvaq/step0.2, approx
73k events.

Production with SCT Barrel Volume

ATLAS-CommNF-02-00-00:

- Large sample for ID alignment group: (in progress)
/castor/cern.ch/user/j/jboyd/cosmic_13020/digitization/NoField/SCTBarrel/n

Production with Pixel Barrel Volume

- Filtering on the overlap between TRTBarrel and full Pixel volume.
- ATLAS-CommNF-01-00-00, 4643 events at:
/castor/cern.ch/user/l/lytken/cosmic_13010/testNoField/dig.sctandpix100.ro
and dig.sctandpix108.root (sorry about the naming ...)
- More samples from Lauren Thompson/Berkeley:
<https://twiki.cern.ch/twiki/bin/view/Sandbox/LaurenCosmicsSamples>

ATLAS-CommNF-02-00-00:

- 2234 events at
/castor/cern.ch/user/l/lytken/cosmic_13010/testWithField/dig.trtandpix_wfi

ATLAS-CommNF-02-00-00:

- 2396 events at
/castor/cern.ch/user/l/lytken/cosmic_13010/testNoField/dig.trtandpix100.ro

Small list of samples outside of castor:

- /afs/cern.ch/atlas/maxidisk/d17/dig.m4_trtbarrel270.root,
dig.trtbarrel_ma100.root, and dig.trtbarrel_ma_B100.root

Planned Samples

- Please find a list at this wiki: [CosmicSamplesToDoList](#)

-- ElseLytken - 17 Jan 2008

This topic: [Main > CosmicSimulationSamples](#)

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