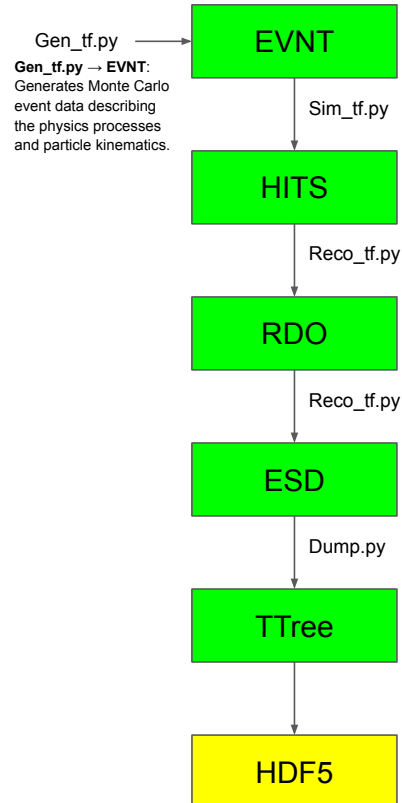


Dataset Simulation Progress

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- **Sim_tf.py** → **HITS**: Simulates particle interactions with the detector geometry, producing simulated detector hit information.
- **Reco_tf.py** → **RDO**: Converts simulated hits into raw detector output format, mimicking real data readout.
- **Reco_tf.py** → **ESD**: Reconstructs high-level physics objects (tracks, clusters, etc.) from raw detector data.
- **Dump.py** → **TTree**: Extracts and organizes reconstructed event information into ROOT TTree format for analysis.
- **TTree** → **HDF5**: Converts the ROOT tree data into an HDF5 file for machine learning and further processing.

Progress

- Went through all GEANT4 Simulation processes for Calorimeter data.
- Used a typical Run3 tag to generate several samples.
- Dump the ESD file to readable root file with customization.

Upon to solve

- Correct geometry tag for simpler dataset.
- Optimize efficiency (time)
- Determine the appropriate size and where to do it.

Dataset

s4430

view / edit

Clone Tag

History

URL

Flat

productionStep	simul
tagType	s
tagNumber	4430
groupName	AthSimulation
cacheName	24.0.42
baseRelease	AthSimulation_24.0.42
transformationName	Sim_tf.py
description	MC23e with Calibration Hits
created	2024-10-31 15:16:56
createdBy	cyoung
modified	2024-10-31 15:16:56
modifiedBy	cyoung
transformation	Sim_tf.py
SWReleaseCache	AthSimulation_24.0.42
CA	"all:True"
conditionsTag	"default:OFLCOND-MC23-SDR-RUN3-04"
geometryVersion	"default:ATLAS-R3S-2021-03-02-00"
multithreaded	True
postInclude	"default:PyJobTransforms.UseFrontier"
preInclude	"EVNTtoHITS:Campaigns.MC23eSimulationMultipleIoCalibrationHits"
simulator	FullG4MT_QS

r16198

view / edit

Clone Tag

History

URL

Flat

productionStep	recon
tagType	r
tagNumber	16198
groupName	Athena
cacheName	24.0.52.4
baseRelease	Athena_24.0.52
transformationName	Reco_tf.py
description	MC23e with Calibration Hits in ESD without pile-up
created	2024-11-20 17:45:30
createdBy	cyoung
modified	2024-11-20 17:45:30
modifiedBy	cyoung
transformation	Reco_tf.py
SWReleaseCache	Athena_24.0.52.4
CA	"all:True"
autoConfiguration	everything
conditionsTag	"default:OFLCOND-MC23-SDR-RUN3-05-03"
deleteIntermediateOutputfiles	True
geometryVersion	"default:ATLAS-R3S-2021-03-02-00"
multithreaded	True
postExec	content
postInclude	"default:PyJobTransforms.UseFrontier"
preInclude	"all:Campaigns.MC23e"
steering	"doRDO_TRIG" "doTRIGtoALL"

```

root [15] t->Print()
*****
*Tree :cells : CaloCells from ESD (per-event vectors) *
*Entries : 5 : Total = 15018840 bytes File Size = 5802140 *
* : : Tree compression factor = 2.59 *
*****
#Br 0 :run : run/I
*Entries : 5 : Total Size= 568 bytes File Size = 91 *
*Baskets : 1 : Basket Size= 32000 bytes Compression= 1.00 *
*****
#Br 1 :evt : evt/L
*Entries : 5 : Total Size= 596 bytes File Size = 104 *
*Baskets : 1 : Basket Size= 32000 bytes Compression= 1.07 *
*****
#Br 2 :ncell : ncell/I
*Entries : 5 : Total Size= 582 bytes File Size = 93 *
*Baskets : 1 : Basket Size= 32000 bytes Compression= 1.00 *
*****
#Br 3 :incident_energy : incident_energy/F
*Entries : 5 : Total Size= 628 bytes File Size = 103 *
*Baskets : 1 : Basket Size= 32000 bytes Compression= 1.00 *
*****
#Br 4 :layer : vector<int>
*Entries : 5 : Total Size= 3753968 bytes File Size = 20530 *
*Baskets : 5 : Basket Size= 32000 bytes Compression= 182.83 *
*****
#Br 5 :eta : vector<float>
*Entries : 5 : Total Size= 3753946 bytes File Size = 2498365 *
*Baskets : 5 : Basket Size= 32000 bytes Compression= 1.50 *
*****
#Br 6 :phi : vector<float>
*Entries : 5 : Total Size= 3753946 bytes File Size = 1685645 *
*Baskets : 5 : Basket Size= 32000 bytes Compression= 2.23 *
*****
#Br 7 :e : vector<float>
*Entries : 5 : Total Size= 3753940 bytes File Size = 1596006 *
*Baskets : 5 : Basket Size= 32000 bytes Compression= 2.35 *
*****

```

N_{cell} per event = 187650

```

root [16] t->Scan("e", "Entry$==2");
*****
* Row * Instance * e *
*****
* 2 * 0 * 347.94485 *
* 2 * 1 * 353.31152 *
* 2 * 2 * -577.7276 *
* 2 * 3 * -749.6426 *
* 2 * 4 * -428.1759 *
* 2 * 5 * 555.55712 *
* 2 * 6 * -472.5457 *
* 2 * 7 * 0 *
* 2 * 8 * -639.7152 *
* 2 * 9 * -131.9287 *
* 2 * 10 * 347.94485 *
* 2 * 11 * 188.95230 *
* 2 * 12 * -485.7630 *
* 2 * 13 * 963.15722 *
* 2 * 14 * 302.06033 *
* 2 * 15 * -121.0537 *
* 2 * 16 * 152.49285 *
* 2 * 17 * -492.4631 *
* 2 * 18 * -398.2447 *
* 2 * 19 * -306.9544 *
* 2 * 20 * -492.4631 *
* 2 * 21 * 69.901519 *
* 2 * 22 * -631.7354 *
* 2 * 23 * 492.46310 *
* 2 * 24 * 96.516304 *

```

