

Running RecExTB

We already got a run-time environment.

Now we have to:

- Modify RecExTB for our purpose
- Execute RecExTB
- Look at the ntuple.

LAr Software Tutorial

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Starting Point: Athena run time environment

- Following the slides from part 1, you should be in the RecExTB run directory. If not:

```
cd ~/Athena/Reconstruction/RecExample/RecExTB/  
RecExTB-00-00-52/run
```

- You can use `<tab>`

- Here you should find a copy of the RecExTB top level jobOption file. Open in with your preferred editor.

```
emacs RecExTB_Combined_2004_jobOptions.py
```

RecExTB top part. Lines you may want to edit (1)

```
#-----  
# TOP Job options file for Combined TB2004 reconstruction  
#-----  
# ----- # Set global flags # -----  
RunNumber = 2100100  
FilePrefix = "daq_SFI-51_combined"  
InputDirectory = "/castor/cern.ch/atlas/testbeam/combined/2004"  
#-----  
doSim=False  
doInDet=True  
doMuons=True  
doTile=True  
doLAR=True  
doBeamDetectors=True  
doTrigger = False  
doWriteESD=False  
readESD=False  
doJiveXML = False  
AtlantisGeometry = False
```

Defines file name and location

Major flags

RecExTB top part. Lines you may want to edit (2)

```
# -----  
# Cluster types in Calorimeters:  
# -----  
#Combined Sliding Window  
doCaloCluster=False  
#Topological Clustering on LAr and Tile  
doCaloTopoCluster=True  
#LAr SW and LAr 3x3 cluster  
if doLAr:  
    doEmCluster=True  
    doEMTBCluster=True
```

RecExTB bottom part. Lines you may want to edit

```
#-----  
# Set output level threshold (2=DEBUG, 3=INFO, 4=WARNING, 5=ERROR, 6=FATAL )  
#-----  
# Output level & events  
MessageSvc.OutputLevel = 3  
theApp.EvtMax = 100  
#EventSelector.SkipEvents = 160  
AthenaEventLoopMgr = Service("AthenaEventLoopMgr")  
AthenaEventLoopMgr.FailureMode=2  
#EventData2XML.OutputLevel = 1  
MessageSvc.defaultLimit=1000000
```

Number of events to be processed

Uncomment this line if you
want to skip some events

Number of messages to be
displayed

How to handle failing algorithms:
0 .. Exit immediately
2 .. Skip remaining algos
but don't break event loop

Modify RecExTB (1)

- Switch off Muons and Inner Detector
- Change run number to 2100180 (50GeV positrons)
- Switch on ESD writing

```
# ----- # Set global flags # -----  
RunNumber = 2100180  
FilePrefix = "daq_SFI-51_combined"  
InputDirectory = "/home1x/Othermounts/hep04/atlas/Tutorial/data"  
#-----  
doSim=False  
doInDet=False  
doMuons=False  
doTile=True  
doLAr=True  
doBeamDetectors=True  
doTrigger = False  
doWriteESD=True  
readESD=False  
doJiveXML = False  
AtlantisGeometry = False
```

Modify RecExTB (2)

- Switch off Sliding Window clustering & read from harddisk

```
# -----  
# Cluster types in Calorimeters:  
# -----  
# Combined Sliding Window  
doCaloCluster=False  
# Topological Clustering on LAr and Tile  
doCaloTopoCluster=True  
# LAr SW and LAr 3x3 cluster  
if doLAr:  
    doEmCluster=False  
    doEMTBCluster=True
```

```
# Reader type "Castor" or "Simple"  
ByteStreamEventStorageInputSvc = Service( "ByteStreamEventStorageInputSvc" )  
ByteStreamEventStorageInputSvc.ReaderType = "Simple";
```

Modify RecExTB (3)

- Change the number of event to be processed to 1000

RecExTB bottom part

```
#-----  
# Set output level threshold (2=DEBUG, 3=INFO, 4=WARNING, 5=ERROR, 6=FATAL )  
#-----  
# Output level & events  
MessageSvc.OutputLevel = 3  
theApp.EvtMax = 1000  
#EventSelector.SkipEvents = 160  
AthenaEventLoopMgr = Service("AthenaEventLoopMgr")  
AthenaEventLoopMgr.FailureMode=2  
#EventData2XML.OutputLevel =1  
MessageSvc.defaultLimit=1000000
```

Don't forget to save you changes!

Modify RecExTB (4)

- Changes to use the most current databases have to be made

add to RecExTB bottom part

```
#-----  
# point to the right database  
#-----  
RDBAccessSvc = Service( "RDBAccessSvc" )  
RDBAccessSvc.HostName = "devdb"      # // ----- IF you're running CTB
```

Don't forget to save you changes!

Excursus:

Where do the different files come from?

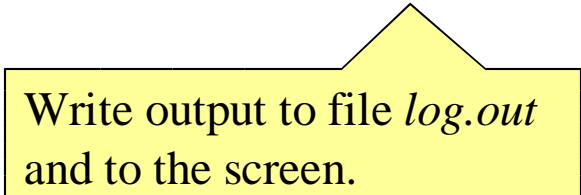
- Where are jobOption files taken from?
 - First looked for in run directory, second in the in the InstallAreas:
echo \$PYTHONPATH
\$HOME/Athena/InstallArea/python:/hepuser/atlas/atlas-kit/9.0.0/dist/9.0.0/
InstallArea/python:/hepuser/atlas/atlas-kit/9.0.0/Gaudi/0.14.6.7/InstallArea/python:
- Where are the libraries taken from ?
 - They are looked for at run time in InstallArea's, i.e.the directories listed in
echo \$LD_LIBRARY_PATH
\$HOME/Athena/InstallArea/i686-rh73-gcc32-opt/lib:
/hepuser/atlas/atlas-kit/9.0.0/dist/9.0.0/InstallArea/i686-rh73-gcc32-opt/lib:
/hepuser/atlas/atlas-kit/9.0.0/Gaudi/0.14.6.7/InstallArea/i686-rh73-gcc32-opt/lib:etc..
etc...
- The InstallArea is filled with jobOptions and libraries by the gmake command
- Packages are recompiled when fulfill both conditions, they are:
 - In the first directory listed in \$CMTPATH (which should be your working directory)
 - “used” (=there is a use statement in the requirements file) either directly or indirectly (transitively) by the package where the cmt broadcast command is run
 - cmt always compile the packages in the correct order

Running RecExTB

- Now everything should be ready to run:

```
athena RecExTB_Combined_2004_jobOptions.py | tee out.log
```

... and let the job finish....



Write output to file *log.out*
and to the screen.

Look at the resulting ROOT file

- You will find a file called `ntuple.root` in your run directory. Open it with `root`:
`root ntuple.root`
- Start a browser in `root`:
`TBrowser tb;`
- Go to ROOT files → `ntuple.root` → `TB` → `tree` to see list of entries.
- For example, double click on leaf `cl_ecluster_topo_em` to see histogram of cluster energies.