Full Chain Testing
ATLAS Software Week

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Introduction

> **Motivation**
>
> The purpose of the FCT is to uncover errors in the full production chain so that the production system does not have to deal with them.

The process runs through the entire production chain including:

- Event Generation
- Simulation
- Digitization
- Reconstruction

Package is in Tools/FullChainTests

Implementation (i)

The running is greatly simplified by the use of the Run Time
Testing environment

- The FCT runs each night on the Run Time Testing (RTT)
  queues at CERN. (Thanks to the RTT people for their help)
- FCT itself is steered through an xml configuration file
  (FullChainTests_TestConfiguration.xml):
  - Containing a number of chains
  - Each with a number of jobs (EVGEN, SIMUL, etc)
  - Tests typically have 10 events going through the entire chain.
- There are tests in 15.6.X.Y, 16.0.X.Y, dev (and their VAL)
- Test results can be viewed using
  https://atlasrtt.cern.ch/fct/query.php

Implementation (ii)

Some tests have been moved to a more automated procedure:

- Using a python script *digireco.py*:
    - Takes a reconstruction tag rXYZ as input and sets up the job using the info from there.
    - Allows one to easily update all the parameters (geometry, conditions, etc) at once
- Jobs which run off a script on AFS:
    - Allows changes to the tests without the need to put in a new tag
    - Allow said changes to be made by the person who requested the test whenever they want

Current tests

There are a currently 9 chains, with a total of 39 jobs:

- Top job including:
  - Pile up Event generation and simulation
  - Cavern Event generation and simulation
  - Beam gas Simulation

- Top with Digitization and Reconstruction only, having 500 events

- Higgs to 4 leptons and Higgs to $\gamma\gamma$

- Z to $\tau\tau$

- Minimum Bias

- Various tests for individual users

Work in progress

In the near future we plan to:

- Move all the tests to use digireco.py
- If required, we can introduce new tests (just send me an e-mail - alan.tua)