Table of Contents

Welcome to the LHCb Muon DAQ analysis page

This page contains an introduction for reading and analyzing Muon real data acquired during the commissioning phase.

LHCb Online Page

Useful links & documentation

Talks

- Software week Mar 08 talk A. Satta

Links

- Writing data at the pit

Data location

Data files acquired by the LHCB DAQ are written locally (in the online network) to the following directory:

/daqarea/lhcb/data/2008/RAW/ *partition* / *recipe* / *#runnumber*

where

- *partition* is LHCb for global data taking; MUON, MUONC or MUONA for standalone muon daq;
- *recipe* is usually PHYSICS

data are automatically migrated to castor (within about one hour) as

/castor/cern.ch/grid/lhcb/data/2008/RAW/ *partition* / *recipe* / *#runnumber*

Beware that files smaller than a few Mbytes could not be copied to Castor.

Early data from the first semi--manual detector DAQ of December 2007 are available for posterity under the local folder /group/muon/testdata and on castor under /castor/cern.ch/user/g/ggiacomo/testdata

Runs

Details on the DAQ conditions during Commissioning are available on the MUON and L0 Trigger electronic logbooks. Here is a short summary of the most important runs

Run type	Run number	Partition
Tell1 high-rate tests	24602, 24611	MUON
PDM	24278	LHCb
Cosmics (trigger : MUON M3 or CALO)	24080, 24109, 24113	LHCb
Cosmics (trigger : muon M3)	23872	MUON
Cosmics (trigger : MUON M4-M5 or CALO)	23837	LHCb
Cosmics (trigger : MUON M4-M5)	23606	LHCb
Cosmics (trigger : CALO)	23604	LHCb
Noise	22902	MUONC

Cosmics (trigger : CALO)	22788	LHCb
Cosmics (trigger : MUON M4-M5 or CALO)	22688	LHCb
Cosmics (trigger : CALO)	22670, 22678, 22684	LHCb
Cosmics (trigger : MUON M4-M5 or CALO)	22617	LHCb
PDM	22553	MUONC
PDM	21422	MUONC
Cosmics (trigger : MUON M4-M5)	21396	LHCb
Cosmics (trigger : MUON M4-M5 or CALO)	21394, 21395	LHCb
First Cosmic run (trigger : CALO)	20989	LHCb

Tips and Tricks for data analysis

Environment

you can use lxplus, where the LHCb environment is set up by default, to analyze data from castor. This is the recommended way for offline data analysis.

For quick and more online-related jobs, you can also use the machines on the online network:

- ssh lbgw (only from cern network)
- import your code using "cvs co"
- ssh plus
- setup LHCb environment:
  - *tcsh shell:* source /group/muon/scripts/lhcbsetup.csh
  - *bash shell:* . /group/muon/scripts/lhcbsetup.sh
- choose your preferred environment (setenvBrunel, setenvOnline, ...)
- access the data from the /daqarea

Data Access

Your job.options file should include the following:

```
EventPersistencySvc.CnvServices      = {"LHCb::RawDataCnvSvc/RawDataCnvSvc" };
ApplicationMgr.SvcOptMapping    += { "Gaudi::IODataManager/IODataManager" };
#include "$STDOPTS/DstDicts.opts"
EventSelector.Input = {
 "DATA='PFN:rfio:/castor/cern.ch/grid/lhcb/data/2008/RAW/LHCb/PHYSICS/22688/022688_0000011673.raw
}
```

The Muon/MuonOnlineMonitor package provides, in the options directory, two scripts for getting quickly the list of files related to a given run or a run range:

- runoptions.pl for data on the online network
- runsOnCastor.pl for data on Castor

usage is (default partition is LHCb ; default recipe is PHYSICS):

```
./runsOnCastor.pl [-p partition] [-r recipe] Run
```

to get the file list from the given Run

```
./runsOnCastor.pl [-p partition] [-r recipe] Runmin Runmax
```

to get the file list from the given Run interval.

The output is a file called "dynamicRun.opts" that you can include in your options files

Running the Muon Monitoring offline

The code that is used for Muon Online data monitoring is available in the cvs repository and can be run offline from your favorite environment (Online, Brunel, Moore, ...), providing an example of analysis. Packages are:

Muon/MuonMonKernel
: common tools used by the other packages. This includes an "ad-hoc" fast decoding/reconstruction tool for online monitoring. Note that offline analysis should use the official tools under Muon/MuonDAQ rather than this one;

Muon/MuonMonitor
: algorithm for general muon monitoring histograms. The options folder provides some scripts and option files for running the algorithm. Output can be found in the monitor.root file;

Muon/Cosmics
: provides a tool for standalone cosmic track reconstruction, using a neural network;

Muon/CosmicMonitor
: algorithm for muon monitoring using cosmics;

Muon/MuonOnlineMonitor
: provides scripts, configuration files and utilities for running the online monitoring. The options directory includes the "runGaudi" script for running the previous algorithms offline. Here is a sample session on lxplus:
    - ◊ setenvOnline *(default recommended)*
    - ◊ getpack Muon/MuonMonKernel head
    - ◊ getpack Muon/MuonMonitor head
    - ◊ getpack Muon/Cosmics head
    - ◊ getpack Muon/MuonCosmicMonitor head
    - ◊ getpack Muon/MuonOnlineMonitor head
    - ◊ cd Muon/MuonOnlineMonitor/v*/cmt
    - ◊ cmt config
    - ◊ source setup.csh
    - ◊ cmt br make *(takes some time...)*
    - ◊ cd ../options
    - ◊ ./runsOnCastor.pl 22688
    - ◊ ./runGaudi

you will find the monitoring histograms in the monitor.root file

-- AlessioSarti , GiacomoGraziani - 23 Jun 2008

This topic: LHCb > MuonDaqAnalysis
Topic revision: r6 - 2008-06-25 - GiacomoGraziani