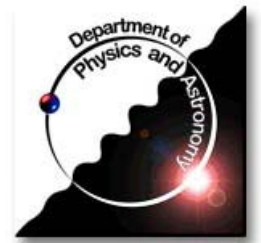
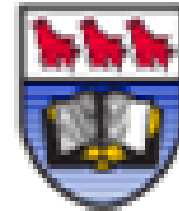


Possible code modifications for real online environment use of LArNoiseMonToolBase

- LArNoiseMonBase
- MonitorToolBase
- THistSvc streams
- LArNoiseMonToolBase histograms
 - stream assignments
- Histograms reset

Monitoring meeting
18 September 2006

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University of Victoria



LArNoiseMonToolBase

■ Updated wiki

- https://twiki.cern.ch/twiki/bin/view/Atlas/NoiseAndPedestalMonitoring#LAr_Noise_Pedestal_Monitoring

■ LArNoiseMonToolBase inherits from MonitorToolBase

■ Two implementations

- LArDigitNoiseMonTool
- LArRawChannelNoiseMonTool

■ All histograms are booked on demand

■ Classes of histograms

- histograms filled every event
 - available anytime for online use
 - in general, different for each event
- histograms filled at checkHists (derived histograms)
 - available anytime for online use
 - in general, modified only after calls to checkHists

■ Which histogram gets filled is jobOption driven

Top-level histogram path and THistSvc stream

■ The top-level histogram path is set in the jobO

- ToolSvc.digitNoiseMon.histoPathBase = "/LArDigit0Noise"
- This sets the variable m_path of MonitorToolBase

■ THistSvc stream

- Currently, one stream is used
- MonitorToolBase:
`declareProperty("THistSvc_OutputStream",m_THistSvc_streamname="/MonitorOutPut");`
- Reco jobO file: `THistSvc.Output = ["MonitorOutPut DATAFILE="" + RootHistOutputFileName + " OPT='New'"]`
- LArNoiseMonToolBase: histograms are registered with
 - `fullPath = m_THistSvc_streamname + m_path + directory + hName;`

Online histogram categories

■ We have the following online histograms categories

- /SHIFT
 - for basic monitoring histograms
 - automatically updated online with short interval
- /EXPERT
 - for histograms useful for experts
 - automatically updated online with longer interval
- /RUNSTAT
 - for all the histograms which may be useful in tracing problems off-line
 - published online at the end of run only
- /DEBUG
 - for those which are never published online automatically
 - currently, we call these histograms “for experts”

Possible software modifications

■ Much discussions ongoing

- just learned that THistSvc stream name is to be used for online histogram update frequency tag

■ Latest idea (Haleh, Rolf)

- One could modify MonitorToolBase and define 4 streams
 - `declareProperty("THistSvc_SHIFTStream",m_THistSvc_SHIFTstreamname="/MonitorOutPut");`
 - `declareProperty("THistSvc_EXPERTStream",m_THistSvc_EXPERTstreamname="/MonitorOutPut");`
 - `declareProperty("THistSvc_RUNSTATStream",m_THistSvc_RUNSTATstreamname="/MonitorOutPut");`
 - `declareProperty("THistSvc_DEBUGStream",m_THistSvc_DEBUGstreamname="/MonitorOutPut");`
- Default to “/MonitorOutPut”, so if not modified in jobOptions all streams point to the same file
- For online use, set the streams to different ROOT files
- Monitoring tools need to be modified so that each histogram is registered to the appropriate stream
 - could be hard-coded or done in a configurable way
 - for offline use, all histograms in same file, no macro changes required
 - for online use, histograms split into four different files

LArNoiseMonToolBase histograms

■ One could consider the following histogram directory assignments for LArNoiseMonToolBase

- initially these histo-stream assignments would be hard-coded
- eventually, one could consider creating a jobO for each histogram type to associate it to the desired stream
- directory names with a * are produced by the default jobO
- the meaning of these directory name are on the wiki

■ SHIFT

- | | |
|-----------------------------|----------------------|
| ▪ *allChannels | filled every event |
| ▪ *perFeb | filled every event |
| ▪ *summary | filled at checkHists |
| ▪ *perCryostatEndTotalNoise | filled at checkHists |

LArNoiseMonToolBase histograms

■ EXPERT

- perFeedthrough filled every event
- perRegion filled every event
- perFeedthroughRms filled at checkHists
- perRegionRms filled at checkHists

■ RUNSTAT

- perFebChannel filled every event
- perFebTotalNoise(nnn) filled at checkHists
- perFeedthroughTotalNoise(nnn) filled at checkHists
- perRegionTotalNoise(nnn) filled at checkHists
- perFebCorrCoef(nnn) filled at checkHists
- perFeedthroughCorrCoef(nnn) filled at checkHists
- perRegionCorrCoef(nnn) filled at checkHists
- perFeb2dCorrCoef/(N)channelGroup filled at checkHists

LArNoiseMonToolBase histograms

■ DEBUG

- perFebSums(nnn) filled every event
- perFeedthroughSums(nnn) filled every event
- perRegionSums(nnn) filled every event
- perFeedthroughNorms filled every event
- perRegionNorm filled every event
- perCryostatEndSums filled every event
- perFebSumsGroup/(N)channelGroup filled every event
- perFebSumsGroup2/(N)channelGroup filled every event

Histograms reset

- Bob asked if it would be possible to reset all histograms at checkHists
- For LArNoiseMonToolBase this would be relatively easy to do. At checkHists:
 - first, derived histograms would be filled as usual
 - second, all histograms filled every event would be reset
 - this feature could be triggered by a (boolean) jobO
 - drawback: all histograms filled every event are empty at the end of job (since chekHists is also called by finalHists), unless checkHists' boolean flag fromFinalize is used not to reset histos in this case
- Is this a desirable feature?