Overview of the work done

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TileCal Valencia meeting

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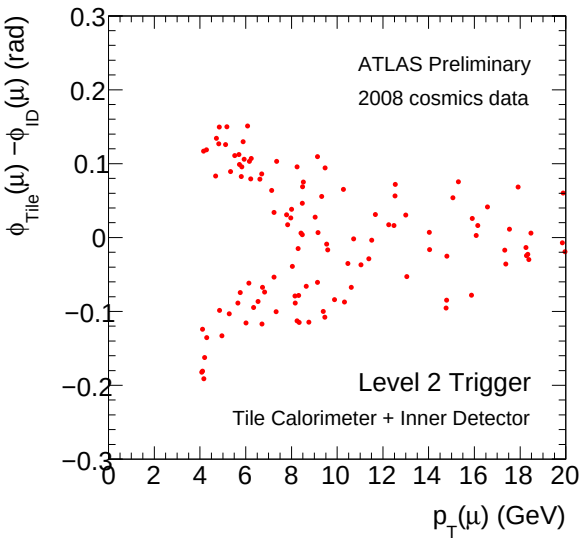
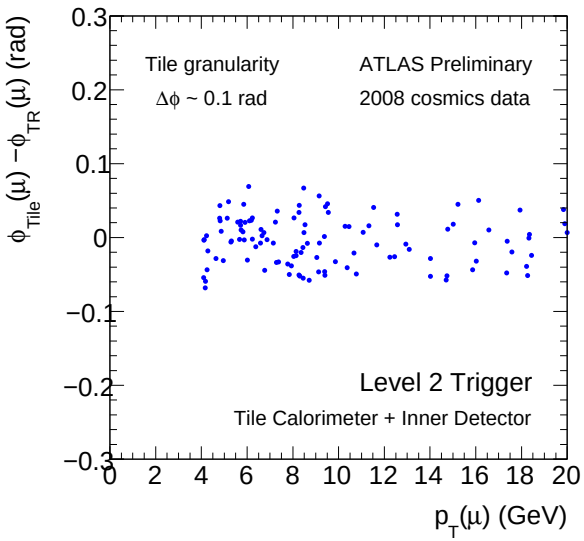
Trigger news

- Talk given in the Trigger Meeting (Open) on May 27:
  http://indico.cern.ch/conferenceDisplay.py?confId=44746
  Plots approved:





- Talk given in the Muon Week on May 28:
  http://indico.cern.ch/conferenceDisplay.py?confId=59615

TileMuId status and recent developments

- A task force has been created within the Muon Trigger WG to follow up the Beatenberg actions regarding the trigger validation:
  - What offline reference will be used for determining the muon trigger performance
  - The procedure for determining that a muon chain is ready to be run online actively selecting events
- TileMuId deliverables for rel 15.X.0:
  - New monitoring histograms to compare TileMuId trigger results wrt offline reconstructed muons has been implemented in TrigHLTMonitoring-00-03-20
  - New monitoring histograms for BS error handling has been implemented in TrigTileMuId-00-02-00
  - New instances TrigSiTrack_Tile has been added to be used for track-matching commissioning
  - Request made through savannah to include new trigger chains to combine TileMuId with TrigSiTrack in TriggerMenuPython package (for Cosmic2009_v2 menu)

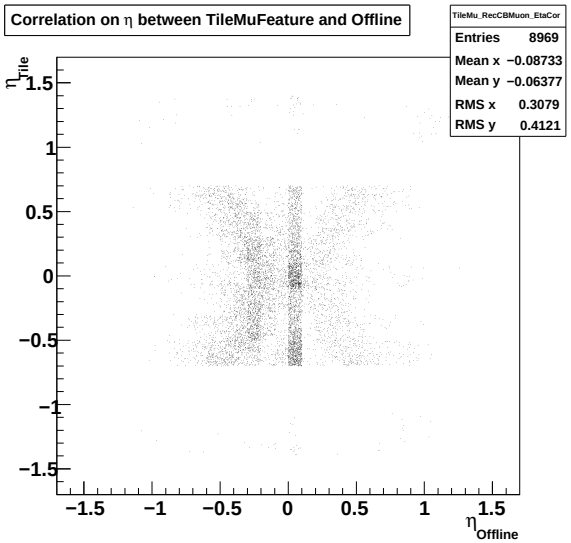
Monitoring to compare HLT and offline

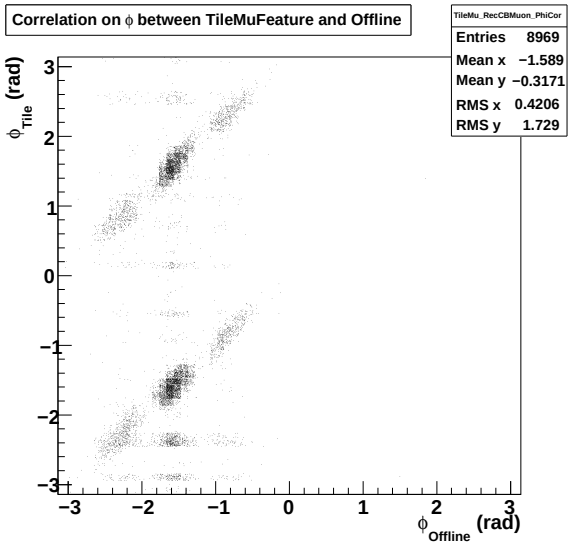
- Comparison between muTile trigger results and offline reconstructed muons implemented in TrigHLTMonitoring package
- Containers used:
  - TileMuFeatureContainer $\longrightarrow$ TileMuId standalone
  - TileTrackMuFeatureContainer $\longrightarrow$ TileMuId combined with ID
  - MuonContainer $\longrightarrow$ using combined muons
- 15 new histograms added:

TileMuFeature	**TileTrackMuFeature**
Correlation in η	Correlation in η
Correlation in ϕ	Correlation in ϕ
	Correlation in p_T
Residuals $\Delta\eta$	Residuals $\Delta\eta$
Residuals $\Delta\phi$	Residuals $\Delta\phi$
	Residuals Δp_T
Efficiency in η	Efficiency in η
Efficiency in ϕ	Efficiency in ϕ
	Efficiency in p_T

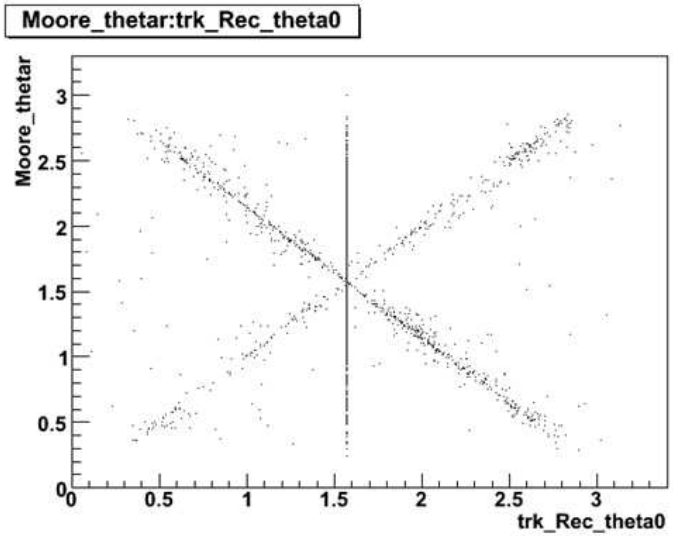
Online-Offline correlation

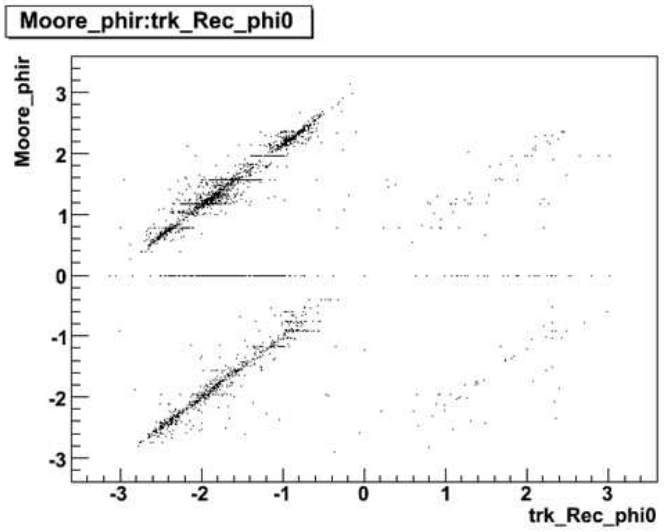
Run 91060





B. Resende (run 90272)





Online-Offline correlation

- Found similar results in talk by Bernardo Resende (page 14): http://indico.cern.ch/conferenceDisplay.py?confId=44572
- Correlation in η:
  - The "/" shaped line, corresponding to a perfect correlation - and indeed it's there
  - The "\" line also corresponds to that good correlation, and is due to different θ angle definitions in the top and bottom part of the detector
  - The "|" line corresponds to ID tracks which only have TRT information, then they do not have θ measurements and their value is set to $\theta = \pi/2$ rad ($\eta = 0$)
- Correlation in ϕ:
  - The two trends found corresponds again to the conventions used
- For a correct efficiency computation, these conventions should be taken into account

New error monitoring implemented in TileLookForMu

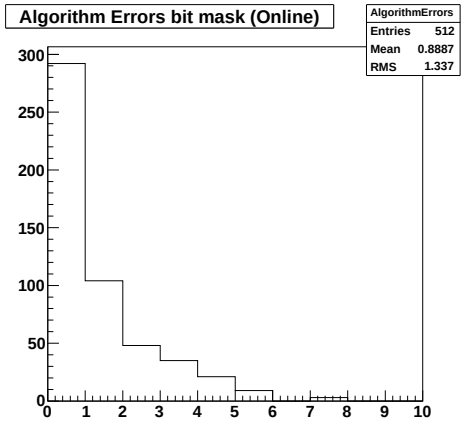
- Error monitoring:
  - Algorithm errors $\longrightarrow$ provided by TrigDataAccess (requested ROBs are not received, empty ROD fragments with less than 3 words)
  - Conversion errors $\longrightarrow$ provided by TileROD_Decoder (incorrect ROD fragment size, unknown fragment type)
- Six new monitoring histograms implemented in TileLookForMu (next implementation foreseen for TileRODMu):

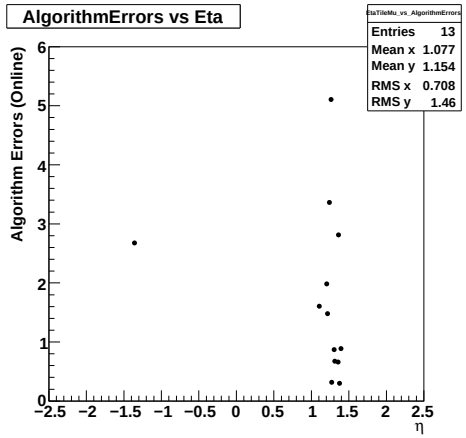
Number of algorithm errors	Number of conversion errors
Algorithm errors vs η	Conversion errors vs η
Algorithm errors vs ϕ	Conversion errors vs ϕ

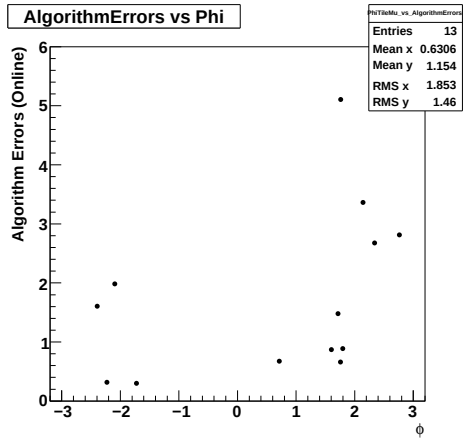
- Similar implementation in the egamma, jet and tau slices
- More information in Denis talks:
  - http://indico.cern.ch/conferenceDisplay.py?confId=32638
  - http://indico.cern.ch/conferenceDisplay.py?confId=57822
- We can define a muon quality flag depending on the errors found

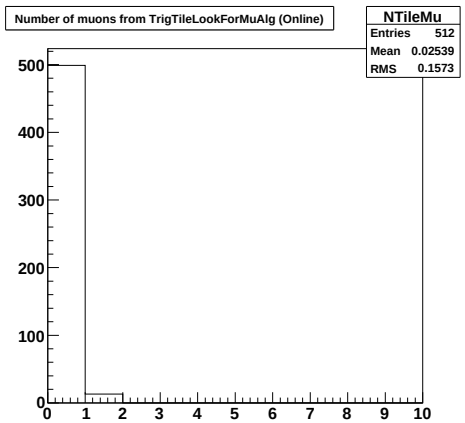
Testing new error monitoring

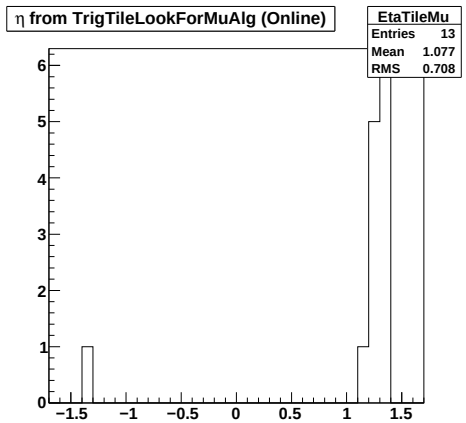
- Tests done using rel 15.2.0, runHLT_standalone.py
- Cosmics run 114464 (TileCal barrel not in the run)

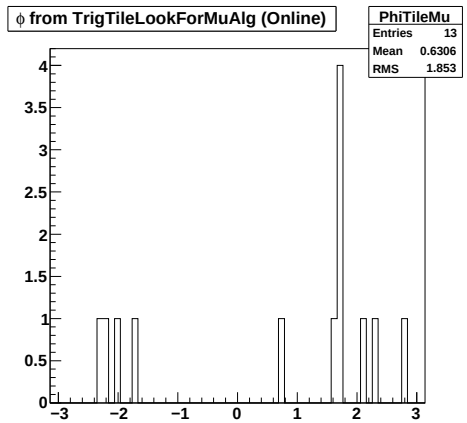






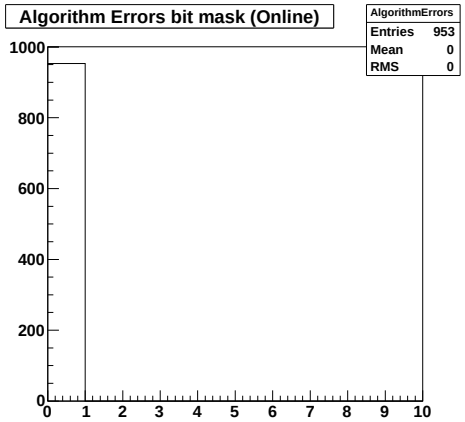


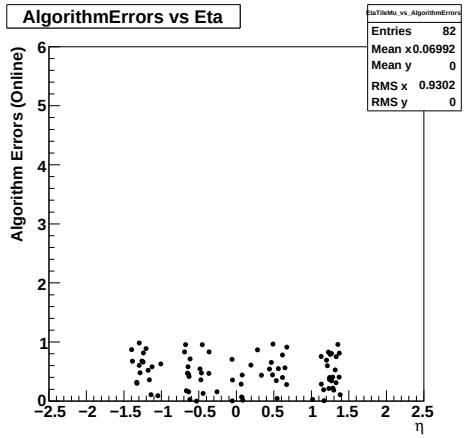


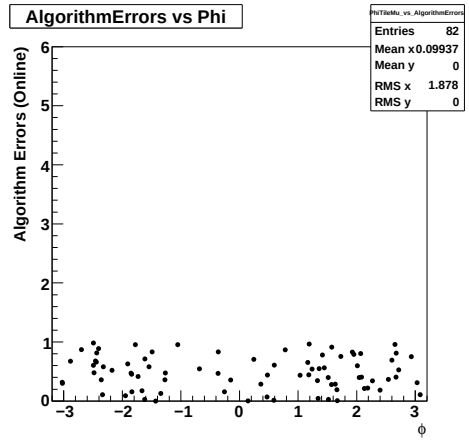


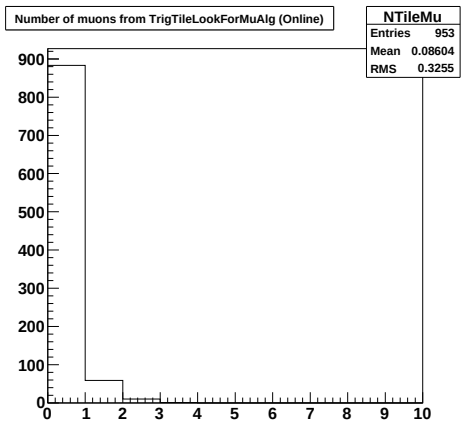
Testing new error monitoring

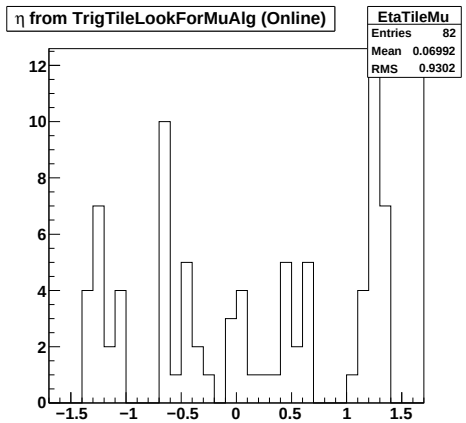
- Tests done using rel 15.2.0, runHLT_standalone.py
- Cosmics run 114592 (whole TileCal in the run)

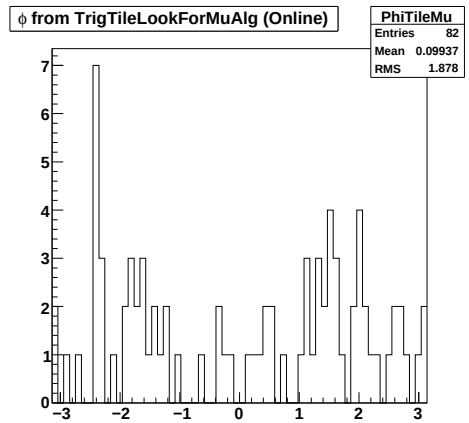












Results from recent cosmic runs

- Results from TileMuId seeded by L1 Muon RoIs extracted from the monitoring histograms during the combined cosmic runs (22 June - 5 July):