

SCT Data Quality Offline Monitoring

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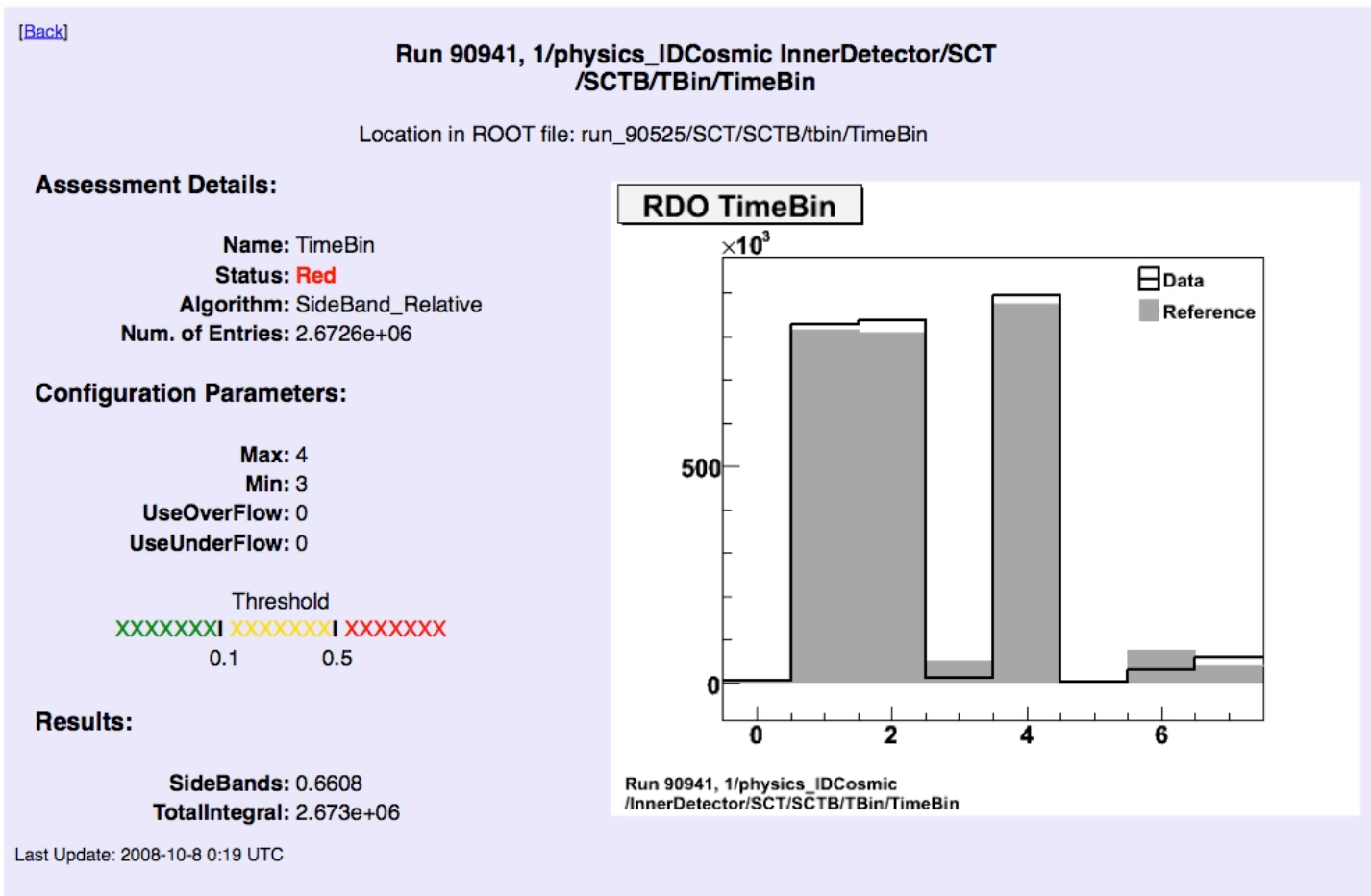


Offline Monitoring Topics

- Monitor run results produced at tier0
 - http://atlasdqm.cern.ch/tier0/Cosmics08/results_Cosmics08.html
- Status of module noise & exclusion
 - <http://pcphsctr02.cern.ch/monitoring/sctcomtool/sctresults.php>
- Currently produced at tier0 and displayed at the Data Quality web display
 - Errors
 - Noise
 - Time Bins
 - Efficiency
 - Track Pulls & Residuals
 - Track Time Bins *(New!)*
 - Track Hit Maps *(New!)*
 - SCT Track Hit count & χ^2 *(New!)*

Monitored Data Streams

- The data streams are defined by specific triggers.
 - physics_CosmicDownwardMuons (*New!*)
 - physics_CosmicMuons
 - physics_IDCosmic
 - physics_L1Calo
 - physics_RPCwBeam
 - physics_TGCwBeam
 - physics_MBTS_BCM_LUCID
 - physics_RNDM
- A subset of the streams is listed for each run, depending on the detector operation.



SCT Read Out Time Bins

- Horizontal Axis: Expected Binaries XX1 or X1X or 1XX
 - **New!**: Reference from run 90525, also in Cosmics Raw Data Output mode.

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Run 90941, 1/physics_IDCosmic InnerDetector/SCT /SCTB/Efficiency/summaryeff

Location in ROOT file: SCT/SCTB/eff/summaryeff

Assessment Details:

Name: summaryeff
Status: **Red**
Algorithm: Bins_LessThan_Threshold
Num. of Entries: 29670

Configuration Parameters:

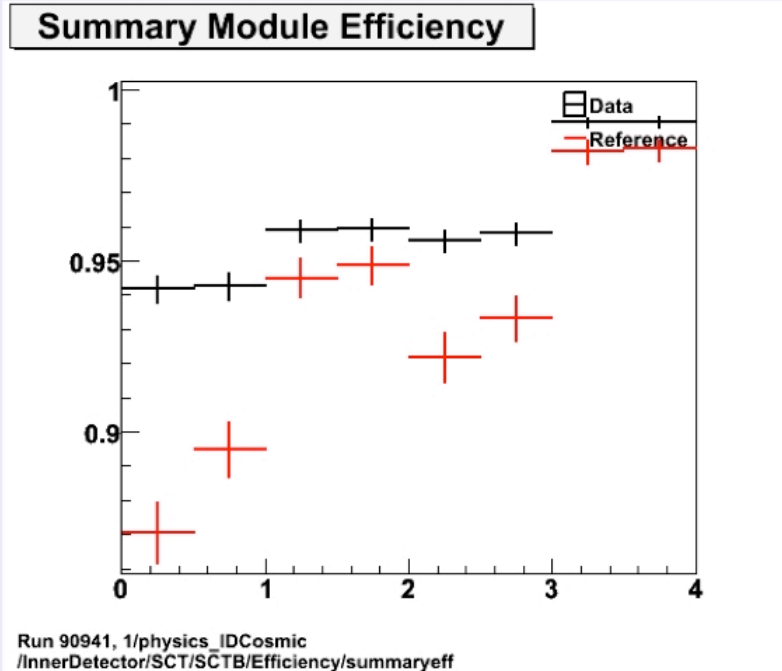
BinThreshold: 0.98
MinStat: 100

NBins
XXXXXXI XXXXXXI XXXXXX
1 4

Results:

NBins: 6

Last Update: 2008-10-8 0:19 UTC



SCT Barrel Hit Efficiency

- Horizontal Axis: Barrel Layer (0-3) and Module Side (0-1)
- Efficiency will continue to improve!
- References will be updated regularly.

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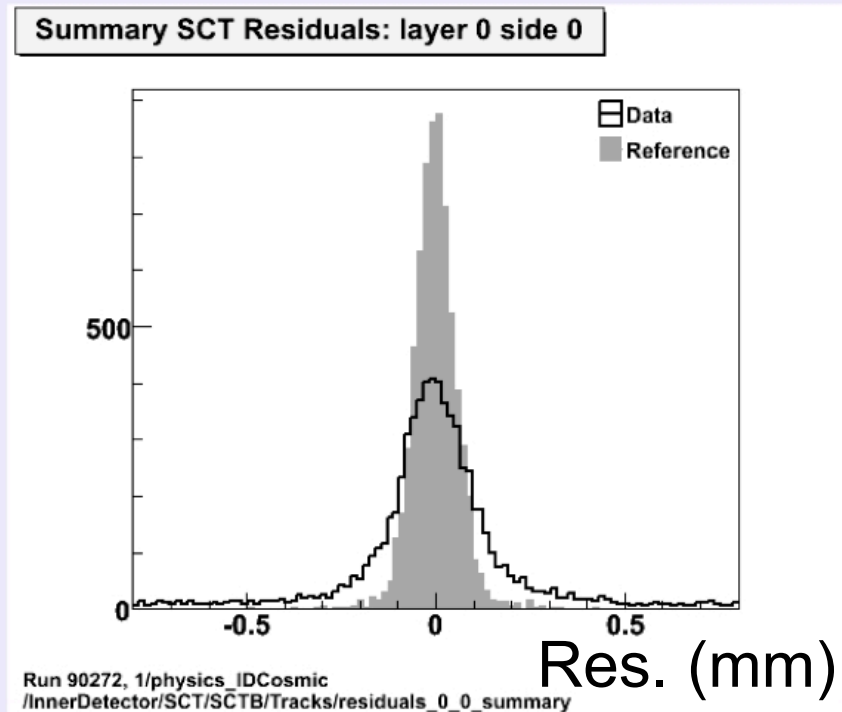
Run 90272, 1/physics_IDCosmic InnerDetector/SCT
/SCTB/Tracks/residuals_0_0_summary

Assessment Details:

Name: residuals_0_0_summary
Status: Undefined
Algorithm: GatherData
Num. of Entries: 8713

Results:

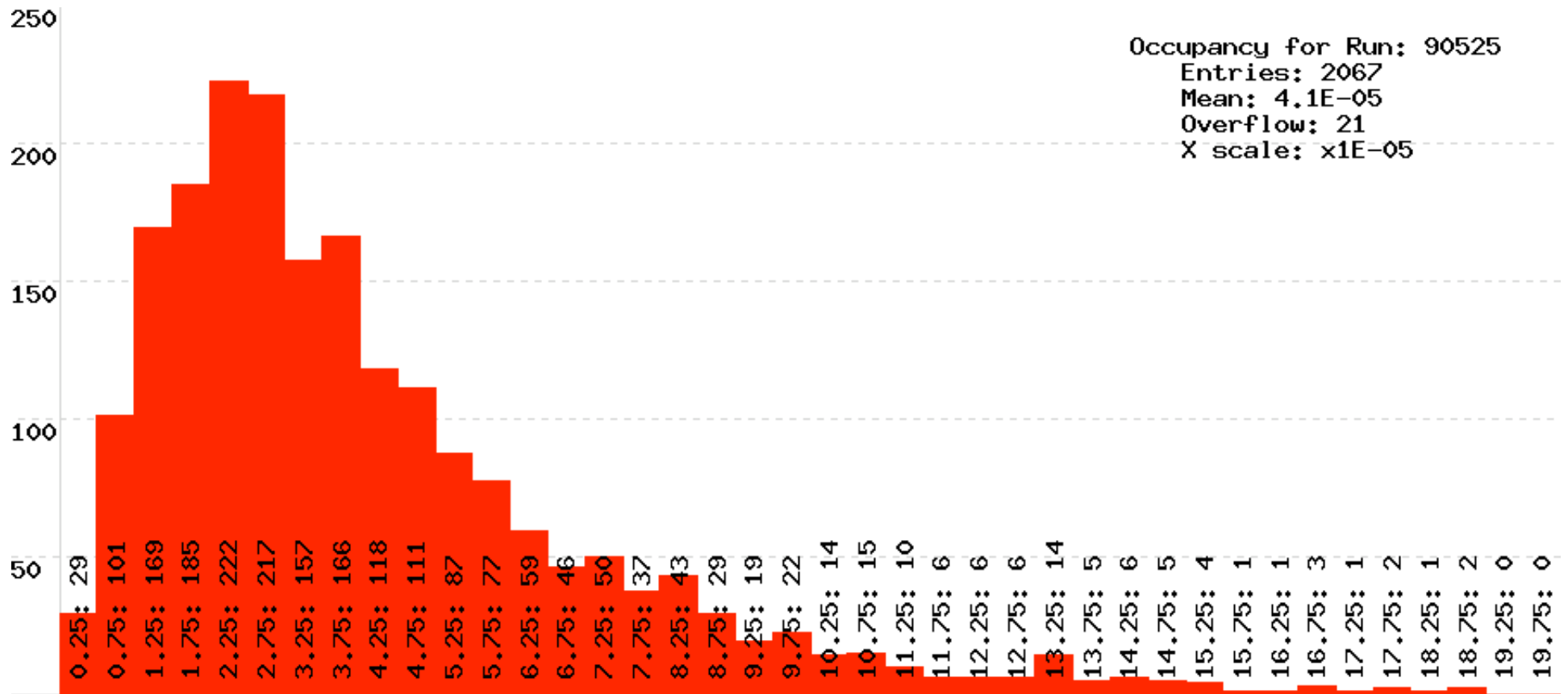
Mean: -0.002142
MeanError: 0.002516
RMS: 0.2072
RMSError: 0.001779



Last Update: 2008-9-29 2:7 UTC

SCT Barrel Residuals

- **Coming Soon!:** Combined Algorithms
 - Evaluate width & mean using independent algorithms
 - Reference shown here is from a collision simulation



Barrel Module Noise Occupancies

- Individual strip noise is also plotted for some modules.

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Run 90941, 1/physics_IDCosmic InnerDetector/SCT /SCTTracks/trk_sct_hits

Location in ROOT file: SCT/GENERAL/tracks/trk_sct_hits

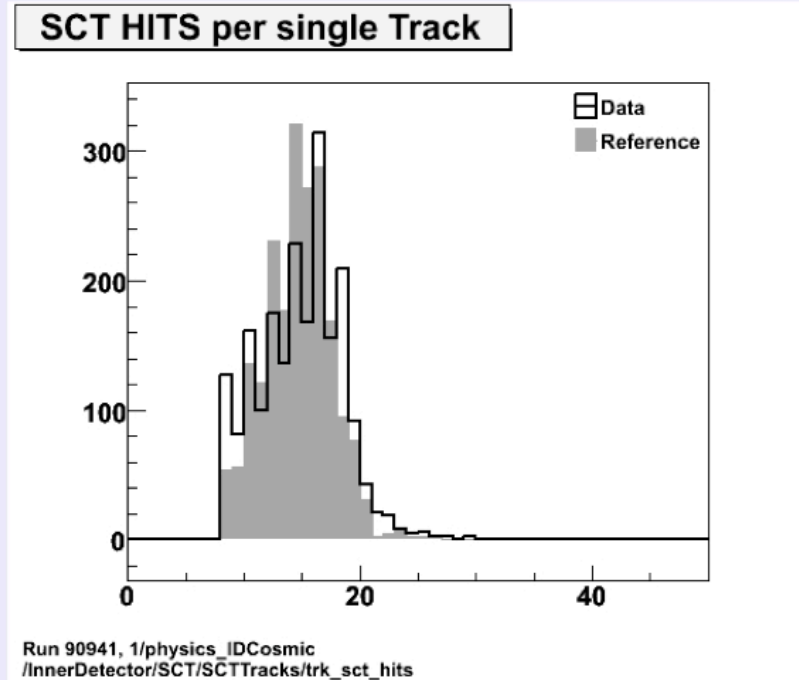
Assessment Details:

Name: trk_sct_hits
Status: Undefined
Algorithm: GatherData
Num. of Entries: 2052

Configuration Parameters:

Results:

Mean: 14.38
MeanError: 0.07812
RMS: 3.539
RMSError: 0.05524



Last Update: 2008-10-8 0:19 UTC

SCT Track Hits

- Horizontal Axis: number of strip hits per SCT track
- Histogram of χ^2 from the track fitting also added.

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Run 90525, 1/physics_IDCosmic InnerDetector/SCT
/SCTB/TrackHitMaps/trackhitsmap_3_1

Location in ROOT file: run_90525/SCT/SCTB/hits
/mapsOfHitsOnTracks/trackhitsmap_3_1

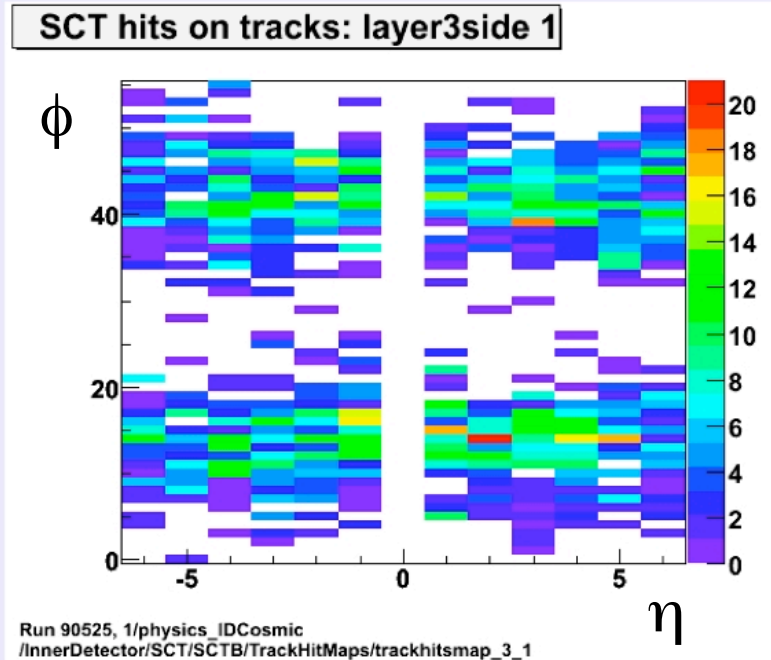
Assessment Details:

Name: trackhitsmap_3_1
Status: Undefined
Algorithm: GatherData
Num. of Entries: 2031

Configuration Parameters:

Results:

Mean: 0.1822
MeanError: 0.08271
RMS: 3.727
RMSError: 0.05848



Last Update: 2008-10-6 16:48 UTC

SCT Track Hit Map

- Total number of strip hits associated with tracks shown for each module.

Status & Future Work

- SCT DQ Offline Monitoring works well & effectively monitors the performance of the detector.
- New options for display and algorithm configurations are available and will be used soon.
 - Combined Algorithms
 - Root Display Options