TRT Dataquality
in the Fall Reprocessing 2010

Steffen Schaepe
for the TRT DQ team

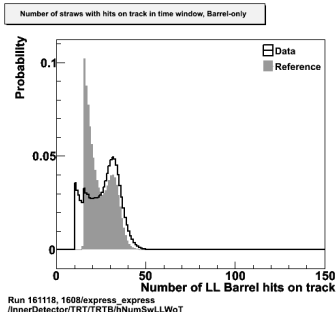Physikalisches Institut
Universität Bonn

PHYSIKALISCHES
INSTITUT

October 15, 2010

Some introductory words

- Reprocessing of all 7 TeV runs with stable beam collisions up to period G4
- 102 runs in total
- For each run:
  1. Express stream is reprocessed (last week)
  2. DQ assessment on Express stream data (now)
  3. Signoff for bulk processing (next Monday)
  4. Bulk processing starts for all streams and all runs up to Oct 20th (Oct 25th)
  5. DQ assessment of physics streams (as soon as finished)
  6. Signoff for physics stream, handover to collaboration (Nov 29th)
- Nice improvements in release 16
- Some things we still have to understand
- (References show a recent pp run)

Combined tracks

Number of straws with hits on track in time window, Barrel-only

Run 161118, 1608/express_express
/InnerDetector/TRT/TRTB/hNumSwLLWoT

- Using Combined Tracks collection
- Mix of Inside-Out, Outside-In and Standalone tracks
- Much higher percentage of "good" (hence useful for analysis) tracks)
- Leads to improvements in nearly all track related histograms
- Will be even better with cuts on silicon hits

Combined tracks

Number of Silicon hits vs TRT hits

- Using Combined Tracks

- ...age
- ...eful

- ...ts in
- ...ed

- Will be even better with cuts on silicon hits

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Introduction

Improvements
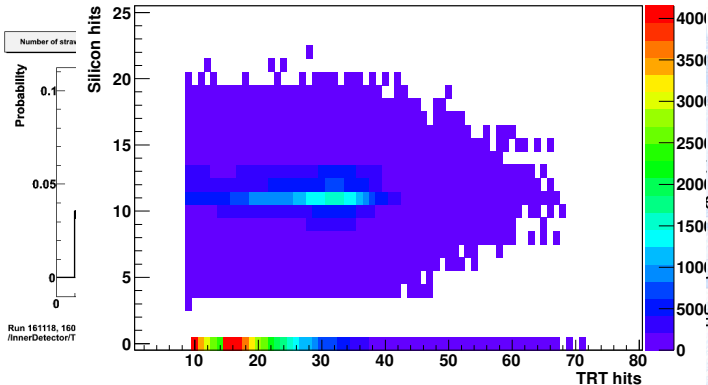
Persistent
"Features"

Isolated
"Features"

Conclusions

Residuals

Time residuals
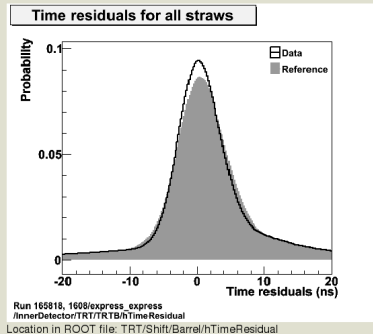
Status: Green
Algorithm: IterativeGaussianFit
Num. of Entries: 97275374.0

Configuration Parameters:

MeanNominal: 0.0
MinStat: 1000.0
SigmaRange: 1.5

MeanDeviation
XXXXXXXI XXXXXXXI XXXXXXX
1.0   2.0

Sigma
XXXXXXXI XXXXXXXI XXXXXXX
5.0   10.0

Results:

Chi2NDF: 952.5
Constant: 0.09311 ± 1.59e-05
Mean: 0.4483 ± 0.0005522
MeanDeviation: 0.4483
Probability: 0.0
Sigma: 3.317 ± 0.0007037

Last Update: 2010-10-12 14:28 CEST

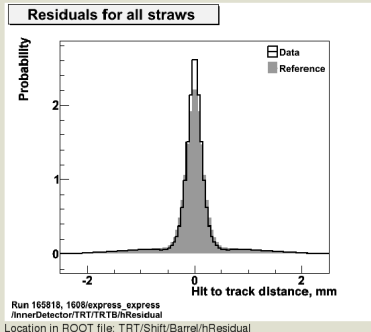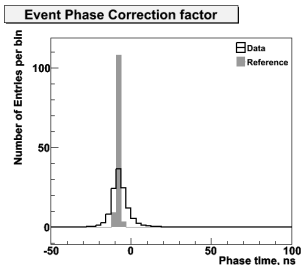Was $\sigma = 3.8\,\text{ns}$

Residuals

Spacial residuals

Was $\sigma = 150\,\mu m$

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Event phase distribution

Event Phase Correction factor
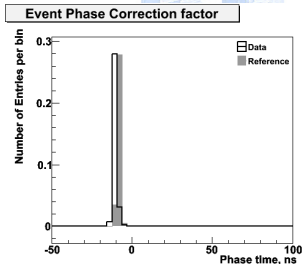
Run 162690, 1608/express_express
/InnerDetector/TRT/TRTB/hEvtPhase

- Event phase distribution much wider than before
- Also seen in "per phi" plot
- Doesn't seem to have impact on other quantities
- BUT:

- Running monitoring on reprocessed ESD (thanks Taiki) yield different result
- Event phase as expected
- Cross check with running full Reco_trf on RAWs is ongoing this moment

Event Phase Correction factor

Run 152345, 42/express_express
/InnerDetector/TRT/TRTB/hEvtPhase

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Event phase distribution

- Event phase distribution much wider than before

- ...plot

- ...es

- R... re... T...

- E...

- C... fu... ... on ... is ongoing at this moment

Event Phase Correction factor

Run 162690, 1608/
/InnerDetector/TRT...

Phase time, ns

Run 152345, 42/express_express
/InnerDetector/TRT/TRTB/hEvtPhase

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Event Phase Correction factor

Run 162690, 1608/express_express
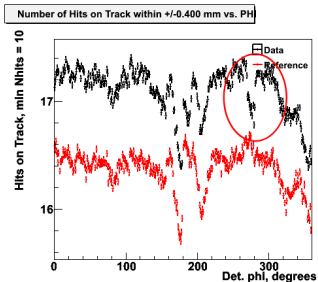/InnerDetector/TRT/TRTB/hEvtPhase

- Event phase distribution much wider than before
- Also seen in "per phi" plot
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- Running monitoring on reprocessed ESD (thanks Taiki) yield different result
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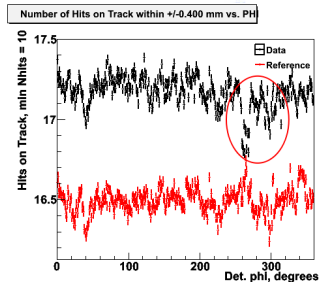- Any ideas anyone?

Event Phase Correction factor
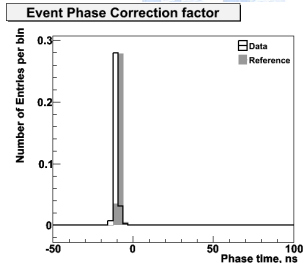
Run 152345, 42/express_express
/InnerDetector/TRT/TRTB/hEvtPhase

Number of hits on tracks

- Dip in number of hits on tracks distribution seen
- ... in all runs
- ... in both Endcaps
- ... at around the same phi

Particle ID

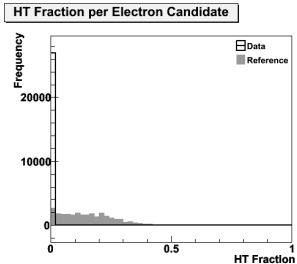HT Fraction per Electron Candidate
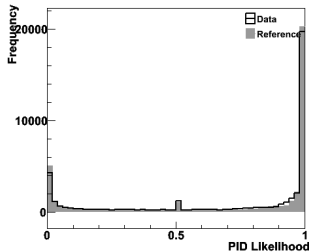
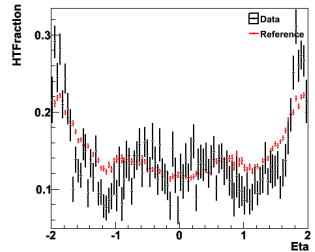Run 160954, 1608/express_express
/InnerDetector/TRT/TRTTR/hHTFracElectron

- HT fraction for electron candidates in TR overview is "empty"
- Same for muon candidates
- Pions are filled correctly, though
- BUT:

Particle ID

PID Likelihood per Electron Candidate

Run 160954, 1608/express_express
/InnerDetector/TRT/_HTMonitoring/ParticleCandidates/hPIDProbElectron

HT Fraction per Electron Candidate vs. Eta

Run 160954, 1608/express_express
/InnerDetector/TRT/_HTMonitoring/ParticleCandidates/pHTFracEtaElectron

- PID output and HT fraction per eta look good
- Seems to be a problem with this specific histogram
- Asked Ben, waiting for response

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Structure in Number of Hits on Track Endcap C

Number of Hits on Track within +/-0.400 mm vs. PHI

Run 160472, 1608/express_express
/InnerDetector/TRT/TRTEC/hNumHoTDetPhi_C
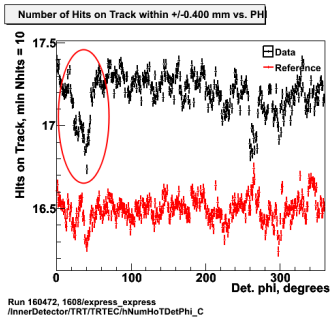
- Structure seen during ~ 10 runs in periods D and E
- Visibility changes from run to run
- Coincides beautifully with trips of HVC S7S8 WA3 1T

- From HV trip record we learn this cell is mapped to a group of straws in sector 4
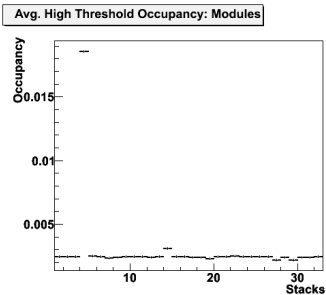- Feature disappears some days after fuse was burned (masked?)

Hot stack in Barrel A

Avg. High Threshold Occupancy: Modules

Run 162526, 1608/express_express
/InnerDetector/TRT/TRTB/hAvgHLOcc_A

- Our old friend from August
- We thought this was masked off for the reprocessing
- Do we want to get rid of this for the Bulk?

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Structure in "per Lumiblock" histos
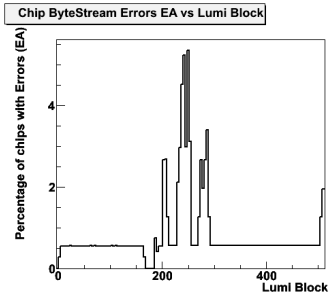
Run 155697, 1608/express_express
/InnerDetector/TRT/Summary/hChipBSErrorsVsLB_EA
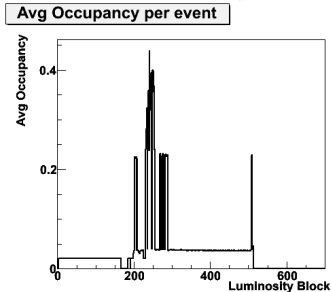
Run 155697, 1608/express_express
/InnerDetector/TRT/TRTB/hNHitsperLB

- Structure seen in ALL per LB histograms in these runs
- Looks like our old bug
- . . . but this should be fixed
- . . . but shows only up in four runs so far
- Maybe some "physics" reason?
- . . . still investigating

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Conclusions

- Reprocessing started and in full swing
- So far no real show stoppers found (in $\sim \frac{2}{3}$ of all runs)
- . . . but things we would like to understand
- Input from software people needed how "bad" things are
- Are we going for green inspite what we see?
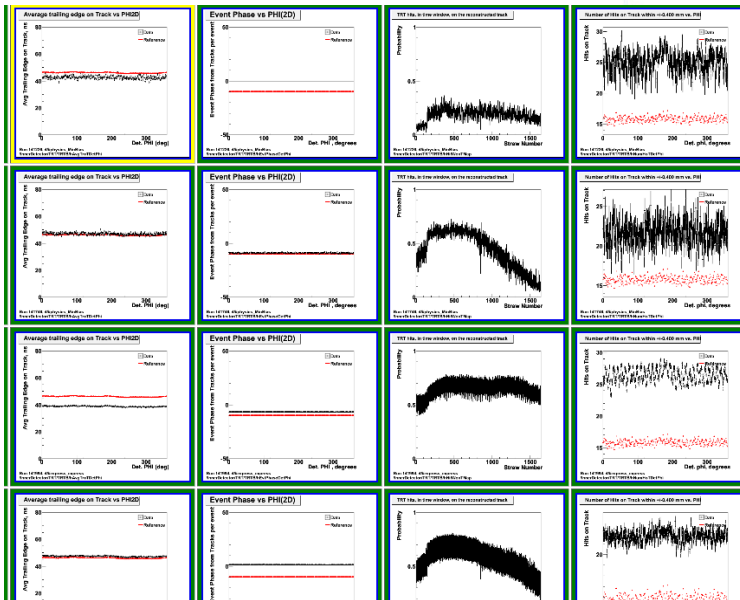- Do we want to change something for the bulk processing?
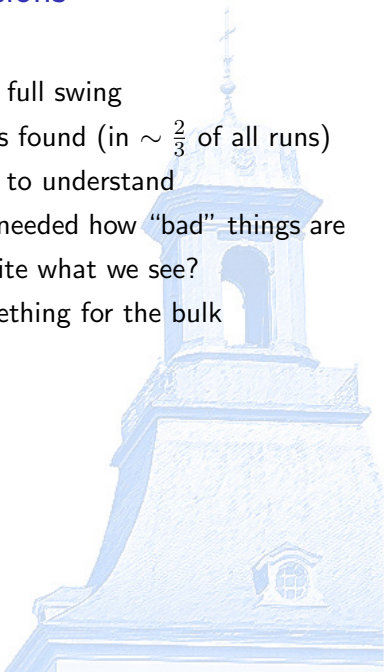
Conclusions

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- Do we want to change something for the bulk processing?

You can look forward to nicely improved data for your analysis

Discussion!