Trigger Offline Monitoring Report

Many thanks to Valeria Bartsch for presenting these slides!

Expert 21-27 July: Ricardo Gonçalo (RHUL)
Shifters: Gustavo Otero y Garzon, Chris Potter
Trigger General Meeting – 28th July 2010

From Last Week

- Jets: saw excess of forward jets online, not present in express stream. Due to L1Calo under-calibration of FCAL thresholds were effectively reduced, should be fixed after the technical stop.

- Muon is seeing a strange shape in muIso p_T distribution, still investigating.

- HLT ID sees a drop in efficiency at high pt for muons, experts are investigating. Dip at $\phi=0.5$ for run 159224 from removed SCT ROD.

- MinBias needs to update monitoring chains in express stream.

- HLT Calo has a spurious algorithm error at L2 from Tau.

- T0 monitoring comments from shifter noticed events ended in EfdProcTimeout fail to recover with a MISSING_FEAUTURE(EF) error (affected mu4/6_Msonly and m4/6_NoIDTrkCut)

- Missing documentation for T0 histograms – need to know what to do!

Under Investigation...

Jets:

- Excess of forward jets online – waiting for new run with updated calibration

- Spike in forward jets (different from above): under investigation (https://savannah.cern.ch/bugs/index.php?70014)

Muons:

- Strange shape in muIso p_T distribution: under investigation

- Events in EfdProcTimeout (mu4/6_MSonly) fail to recover with a MISSING_FEATURE(EF) error
  - Seen for at least 2 weeks – see run 159835

- Cosmic run 159183 had ~80 EF muon timeouts/hour
  - Reason is that it had 1179 active bunches instead of the usual 8 colliding bunches...
  - Doesn't account for rate of timeouts in normal running: ~25 timeouts / h for 8 filled bunches with beam

HLT ID:

- Drop in efficiency for muon chains: solution found (variable-width RoI) will implement online

- Excess in number of tracks in tauNoCut at $\eta \approx -0.2$ and $\eta \approx -2$
  - The excess comes from an excess of RoIs at those η regions

MinBias needs to update monitoring chains in express stream

- Changes went in: reduce InDetMon_FS to 0.4 Hz and include a

ZDC trigger, EF_mbZdc_eff at 0.1 Hz to give an alternate low-bias monitoring sample

HLT Calo:

- Spurious algorithm error at L2 from Tau

- Pilar and Denis testing possible solution

Missing documentation for T0 histograms (ongoing...)

tauNoCut_NoIDTrkCut_tauNoCut_NoIDTrkCut_eta_EF_par
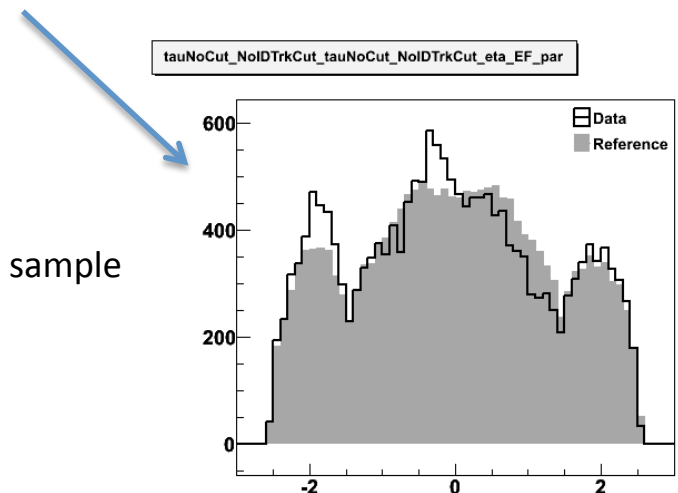
Run 159224, 2/physics_L1Calo
/HLT/TRIDT/EFID/tauNoCut_NoIDTrkCut_tauNoCut_NoIDTrkCut_eta_EF_par

Timeline

- Until Friday: technical stop
  - Several tests, including Physics_pp_v1 menu tested on enhanced bias
- Friday: wrap up technical stop tests
  - ATLAS ramps up solenoid – toroid off until Sunday
  - Plan is to have test runs during Friday night:
    - LAr test with 32 samplings and 8 colliding bunches: collect $20nb^{-1}$
      - Special prescale set, deadtime 2500 BCs, 1.5 GB/s, 12 SFOs…
    - Afterwards switch to test for TRT with LAr in 7 samplings: collect $10nb^{-1}$
  - After that, move to 25 bunches (L ≈ $3x10^{30}$ cm^{-2}s^{-1})
  - But problem in SPS dipole – no beam before Saturday
- Saturday:
  - SPS magnet repaired but potential issue with vacuum at extraction kicker
  - RF problem in the PS - requires access
- Sunday:
  - Beam back in the LHC but still problems:
  - 30% loss of intensity during ramp at 10A/s ("snap-back" from SC magnets…?!)
  - Will need to re-test ramp with nominal bunch

- Monday
  - LHC still struggling to establish good beams again
  - Various problems meant that there were significant deviations from nominal orbit and beams lost several times
- Tuesday
  - Pilot bunches only since yesterday; LHC expects to run with 13 bunches
  - Plans:
    - LHC expects to run with 13 bunches today
    - Wait with toroid ramp-up until the special run is done
    - After that continue ATLAS run with settings of special run (special trigger menu, standby key, 32 samples, 12 SFOs, long lumi-blocks)
    - Start new run at the start of injection for the 13b physics fill

Reprocessing

AMI Tag	Release	Menu Keys	Run/Stream	Reason
c270 (HLT) c271 (Rec)	AtlasCAFHLT, 15.6.X.Y.Z,rel_3	Test_pp_v1 smk=399 lvl1ps=275 hltps=307	158258/ physics_Enhanced Bias	Test latest muFast update tag TrigMuonHypo-00-01-29 to test both the update of muFast threshold plus the functionality of the mu20_slow chain with no prescales
c271	AtlasProduction-15.6.11.1	Test_pp_v1 smk=399 lvl1ps=275 hltps=307	158258/ physics_Enhanced Bias	

Data Quality

- Cosmics runs done mostly with non-standard conditions or HLT off/ complete slices off

- Asked experts to set flag to black whenever the non-standard conditions made it difficult to assess data quality

- Only a few cases are clear red, green or blue/grey

				Data quality (SHIFTOFL)								
Run	**TRCAL** (SHIFTOFL)	**TRBJT** (SHIFTOFL)	**TRBPH** (SHIFTOFL)	**TRCOS** (SHIFTOFL)	**TRELE** (SHIFTOFL)	**TRGAM** (SHIFTOFL)	**TRJET** (SHIFTOFL)	**TRMET** (SHIFTOFL)	**TRMBI** (SHIFTOFL)	**TRMUO** (SHIFTOFL)	**TRTAU** (SHIFTOFL)	**TRIDT** (SHIFTOFL)
159950	B	B	B	n.a.	R	G	B	B	B	B	R	B
159835	B	B	U	n.a.	B	B	B	B	B	G	B	B
159831	B	B	B	n.a.	B	B	B	B	B	B	B	B
159821	B	B	B	n.a.	B	B	B	B	B	B	B	B
159814	B	B	B	n.a.	B	B	B	B	B	B	B	B
159810	B	B	B	n.a.	B	B	B	B	B	B	B	B
159796	B	B	B	n.a.	B	B	B	B	B	B	B	B