Jet/MET/Calo expert on-call

Ricardo Gonçalo (LIP)

Weeks of 15 to 21 May

MET and Jet Trigger Meetings – 21 and 23 May 2018

Two-week summary:

Reprocessings:

ATR-18077	https://its.cern.ch/jira/browse/ATR-18077
ATR-18078	https://its.cern.ch/jira/browse/ATR-18078
ATR-18079	https://its.cern.ch/jira/browse/ATR-18079
ATR-18080	https://its.cern.ch/jira/browse/ATR-18080
ATR-18123	https://its.cern.ch/jira/browse/ATR-18123
ATR-18127	https://its.cern.ch/jira/browse/ATR-18127

Physics BULK:

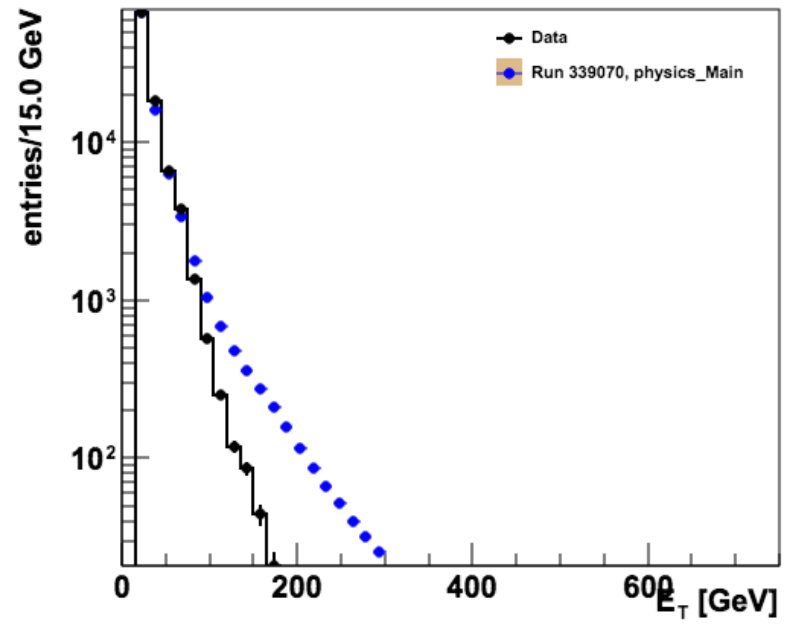
ATR-18067	https://its.cern.ch/jira/browse/ATR-18067
ATR-18073	https://its.cern.ch/jira/browse/ATR-18073
ATR-18074	https://its.cern.ch/jira/browse/ATR-18074
ATR-18074	https://its.cern.ch/jira/browse/ATR-18074
ATR-18085	https://its.cern.ch/jira/browse/ATR-18085
ATR-18098	https://its.cern.ch/jira/browse/ATR-18098
ATR-18099	https://its.cern.ch/jira/browse/ATR-18099
ATR-18100	https://its.cern.ch/jira/browse/ATR-18100
ATR-18106	https://its.cern.ch/jira/browse/ATR-18106
ATR-18117	https://its.cern.ch/jira/browse/ATR-18117
ATR-18117	https://its.cern.ch/jira/browse/ATR-18117
ATR-18149	https://its.cern.ch/jira/browse/ATR-18149
ATR-18150	https://its.cern.ch/jira/browse/ATR-18150
ATR-18158	https://its.cern.ch/jira/browse/ATR-18158
ATR-18161	https://its.cern.ch/jira/browse/ATR-18161
ATR-18162	https://its.cern.ch/jira/browse/ATR-18162
ATR-18164	https://its.cern.ch/jira/browse/ATR-18164
ATR-18165	https://its.cern.ch/jira/browse/ATR-18165
ATR-18166	https://its.cern.ch/jira/browse/ATR-18166

Express stream:

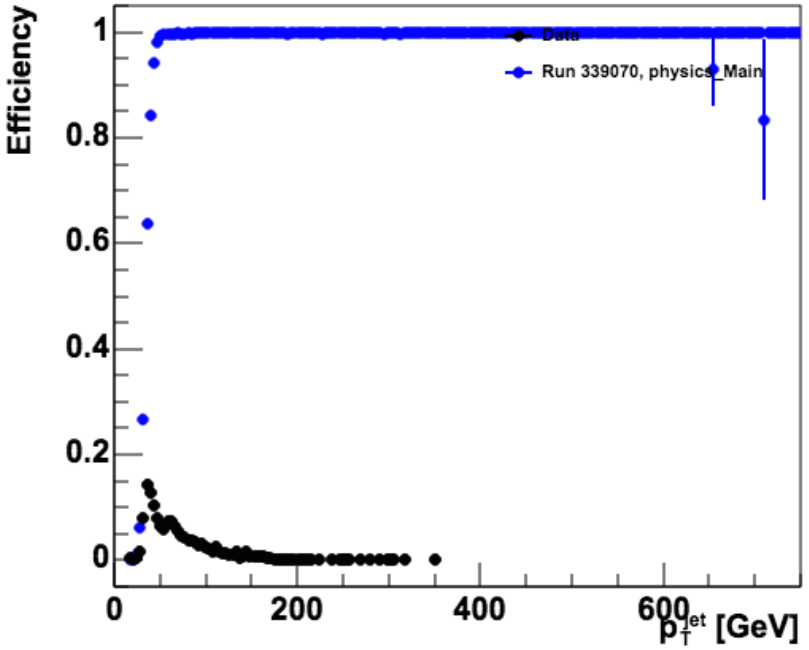
349646	https://its.cern.ch/jira/browse/ATR-18071
349693	https://its.cern.ch/jira/browse/ATR-18071
349841	https://its.cern.ch/jira/browse/ATR-18083
349842	https://its.cern.ch/jira/browse/ATR-18083
349944	https://its.cern.ch/jira/browse/ATR-18091
349977	https://its.cern.ch/jira/browse/ATR-18091
350013	https://its.cern.ch/jira/browse/ATR-18097
350067	https://its.cern.ch/jira/browse/ATR-18097
350121	https://its.cern.ch/jira/browse/ATR-18102
350144	https://its.cern.ch/jira/browse/ATR-18107
350160	https://its.cern.ch/jira/browse/ATR-18107
350180	https://its.cern.ch/jira/browse/ATR-18113
350220	https://its.cern.ch/jira/browse/ATR-18113
350310	https://its.cern.ch/jira/browse/ATR-18132
350361	https://its.cern.ch/jira/browse/ATR-18147
350431	https://its.cern.ch/jira/browse/ATR-18147
350440	https://its.cern.ch/jira/browse/ATR-18147
350479	https://its.cern.ch/jira/browse/ATR-18155
350531	https://its.cern.ch/jira/browse/ATR-18159
350676	https://its.cern.ch/jira/browse/ATR-18159
350682	https://its.cern.ch/jira/browse/ATR-18160
350749	https://its.cern.ch/jira/browse/ATR-18160
350751	https://its.cern.ch/jira/browse/ATR-18167
350803	https://its.cern.ch/jira/browse/ATR-18167

J35 Efficiency Mystery

- j35 efficiency looks weird – e.g. run 349693, express_express
- L1_RD0_FILLED -> HLT_j35 – prescales: 20-50k (L1) and 15 (j35)
- (TProfile in HLT/TRJET/SHIFTER/HLT/j35/j35_EffPt@Shifter)



Run 349693, 1/express_express
/HLT/TRJET/SHIFTER/HLT/j35/HLTJet_Et@Shifter



Run 349693, 1/express_express
/HLT/TRJET/SHIFTER/HLT/j35/j35_EffPt@Shifter

j35 Mystery - investigation

- Checked monitoring code here: https://gitlab.cern.ch/atlas/athena/blob/master/Trigger/TrigMonitoring/TrigJetMonitoring/src/HLTJetMonTool.cxx Around line 2594:

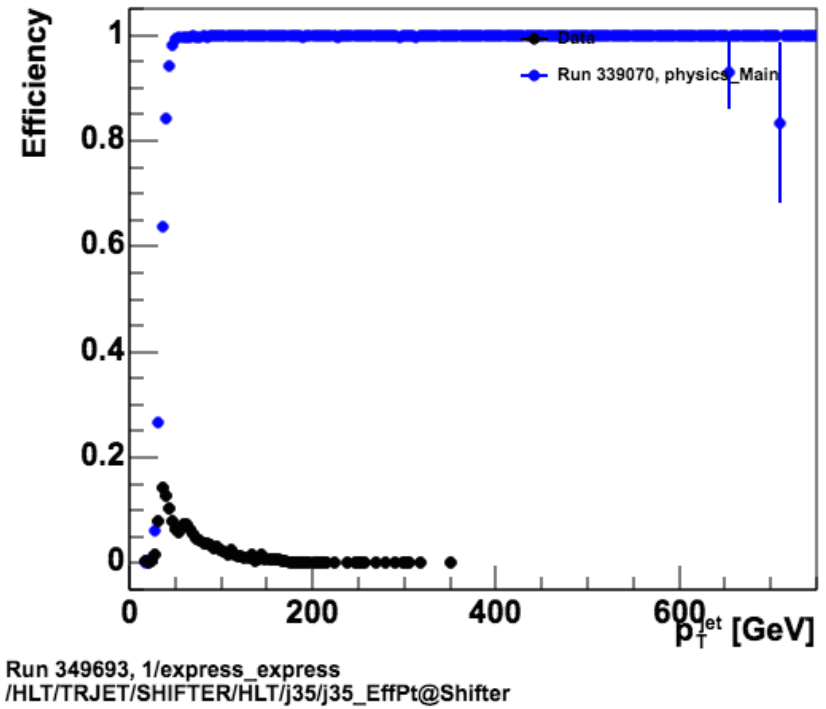
```
// fill num HLT eff
if(m_doHLTTrigEff) {
   if (isLeadingJet(jet,jetcoll,EtaLowThres,EtaHighThres,NJet)){ //OF leading jet in the same eta region
      if(getTDT()->isPassed(Form("HLT_%s",chainName.c_str()))) {
    if((p = profile(Form("%s_EffPt",chainName.c_str())))  p->Fill(jet->pt()/CLHEP::GeV,1.0,1.0);
      } if (! getTDT()->isPassed(Form("HLT_%s",chainName.c_str()))){
         if((p = profile(Form("%s_EffPt",chainName.c_str())))  p->Fill(jet->pt()/CLHEP::GeV,0.0,1.0);
```

- Checked prescales: https://atlas-trigconf.cern.ch/run2/smkey/2695/l1key/20513/hltkey/15168/

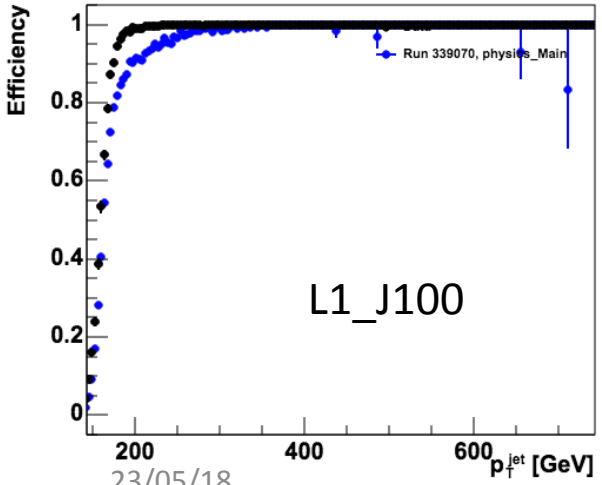
- Also looked at other efficiency plots for other chains
  - All seems normal: prescales give flat efficiency reduction

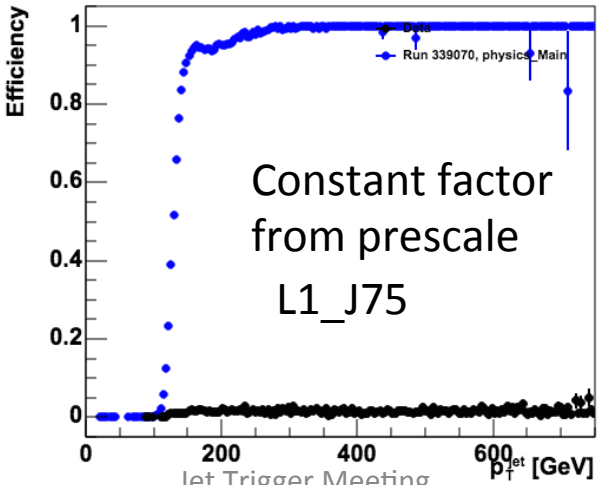
j35 Efficiency

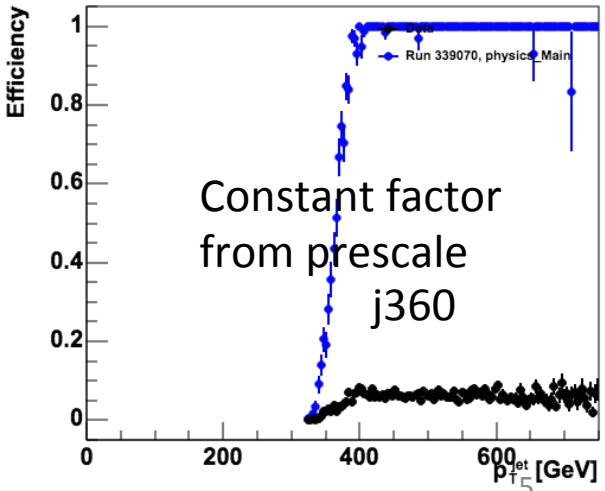
- Unlike high-pT jet chains, j35 is seeded from RD0_FILLED
- Low-energy jet response sculpts efficiency



Run 349693, 1/express_express

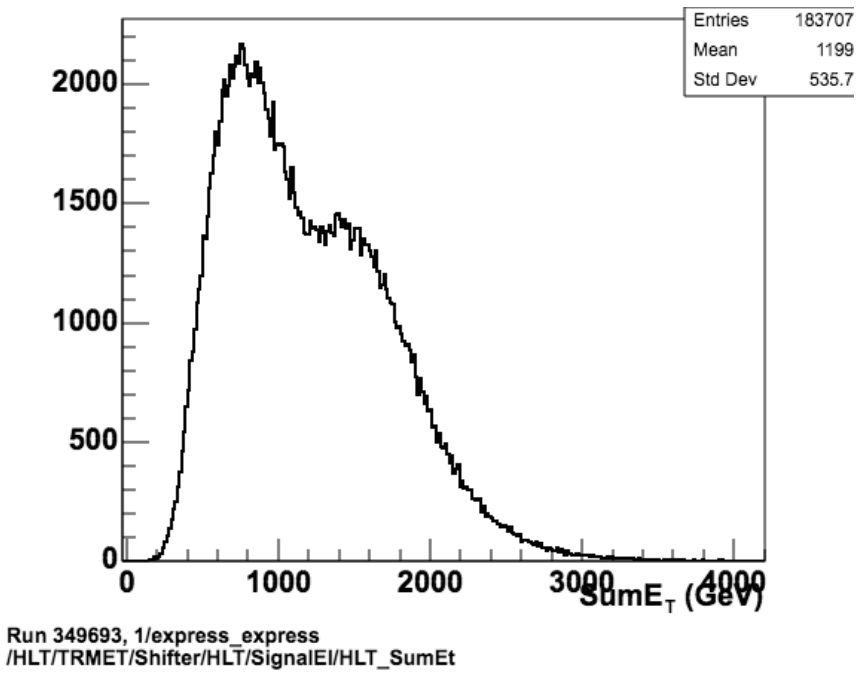




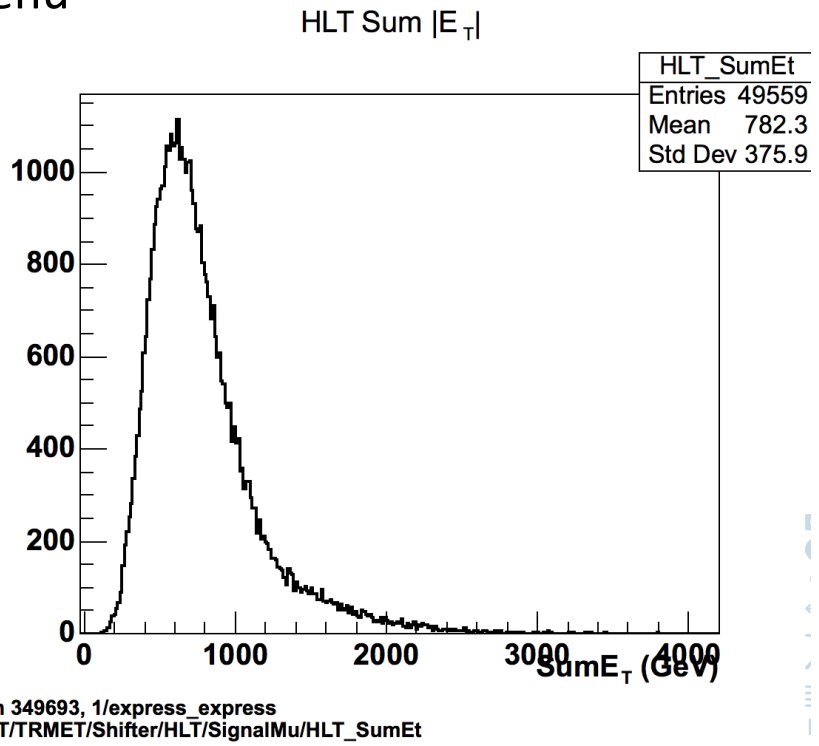


Bump in SumET

- E.g.: https://atlasdqm.cern.ch/webdisplay/tier0/1/express_express/run_349693/run/HLT/TRMET/Shifter/HLT/SignalEl/HLT_SumEt
- Visible in **SignalEl** and primary algorithm (left) but **not in SignalMu** (right)
- **Not** present in BULK
- Conclusion: feature of Express stream menu



Run 349693, 1/express_express
/HLT/TRMET/Shifter/HLT/SignalEl/HLT_SumEt



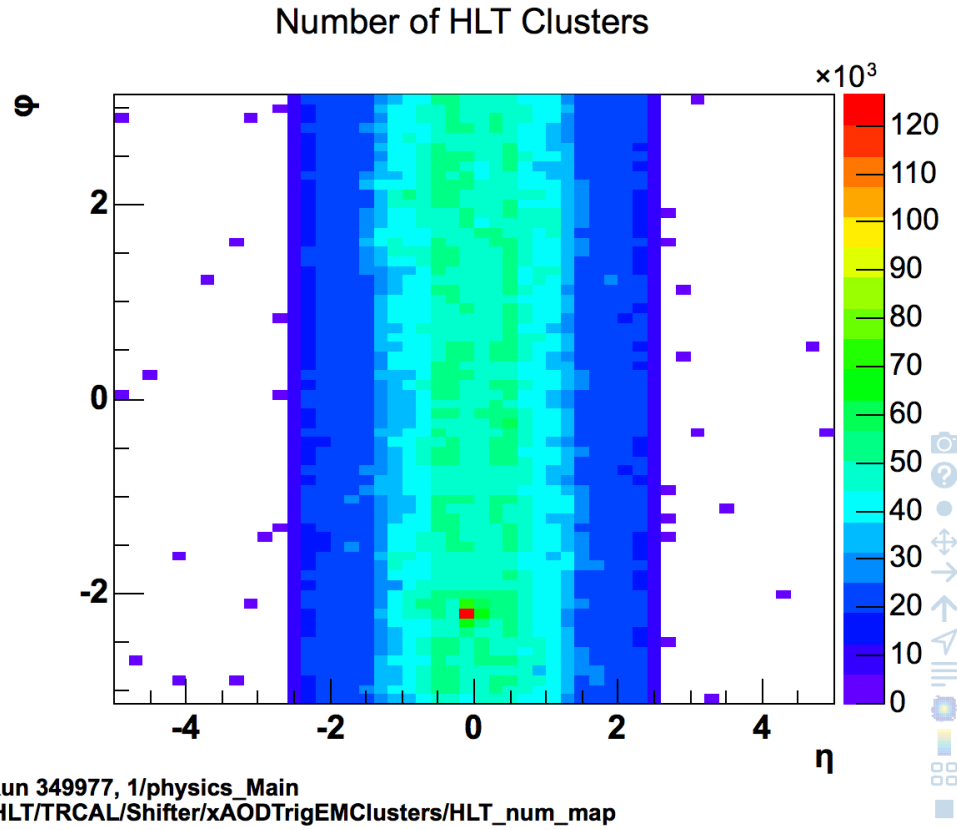
Run 349693, 1/express_express
/HLT/TRMET/Shifter/HLT/SignalMu/HLT_SumEt

Mystery calo spike

- Spike in TrigEMClusters at
  eta ~ 0; phi ~ -2

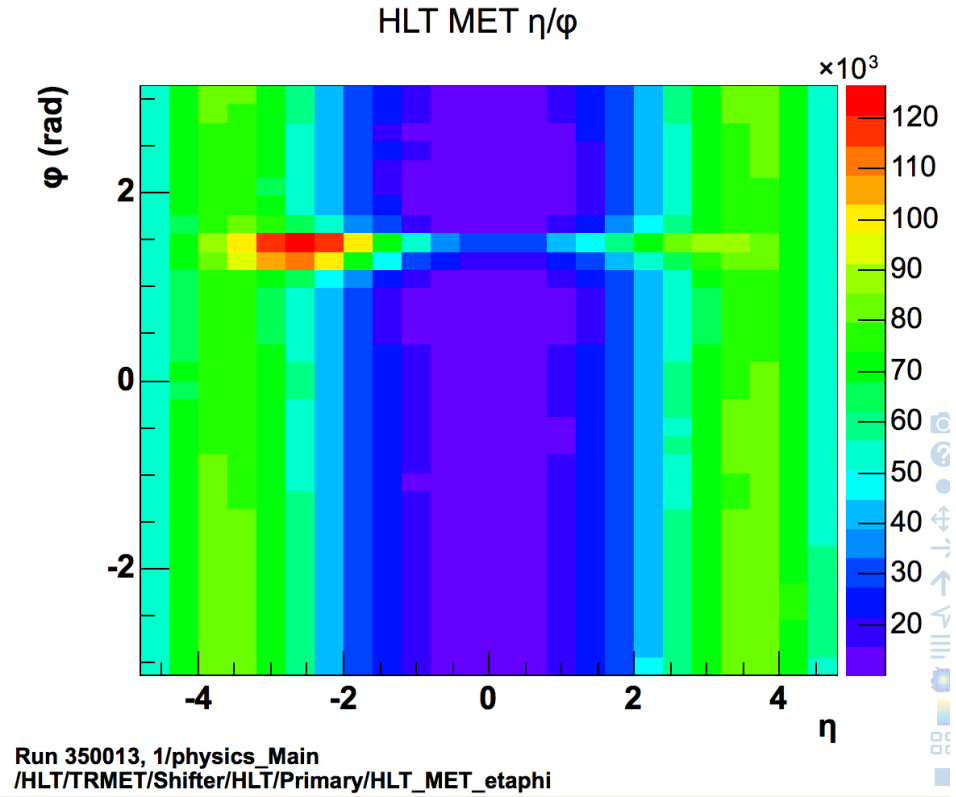
- Turns out was due to L1Calo miscalibration (gain turned from 1 to 1.929) see: https://its.cern.ch/jira/browse/ATLASDQ-562

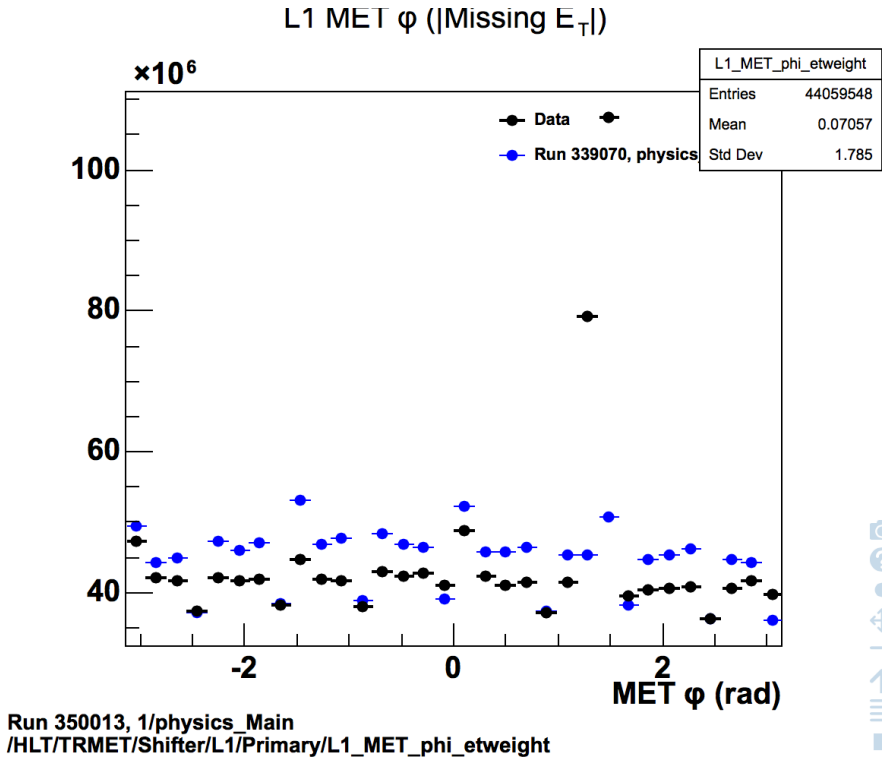
- Affected runs 349646, 349693, 349841, 349842, 349944, 349977, 350013, 350067, 350121, 350144, 350160, 350184
- Corrected in run 350220



MET Phi Hotspot

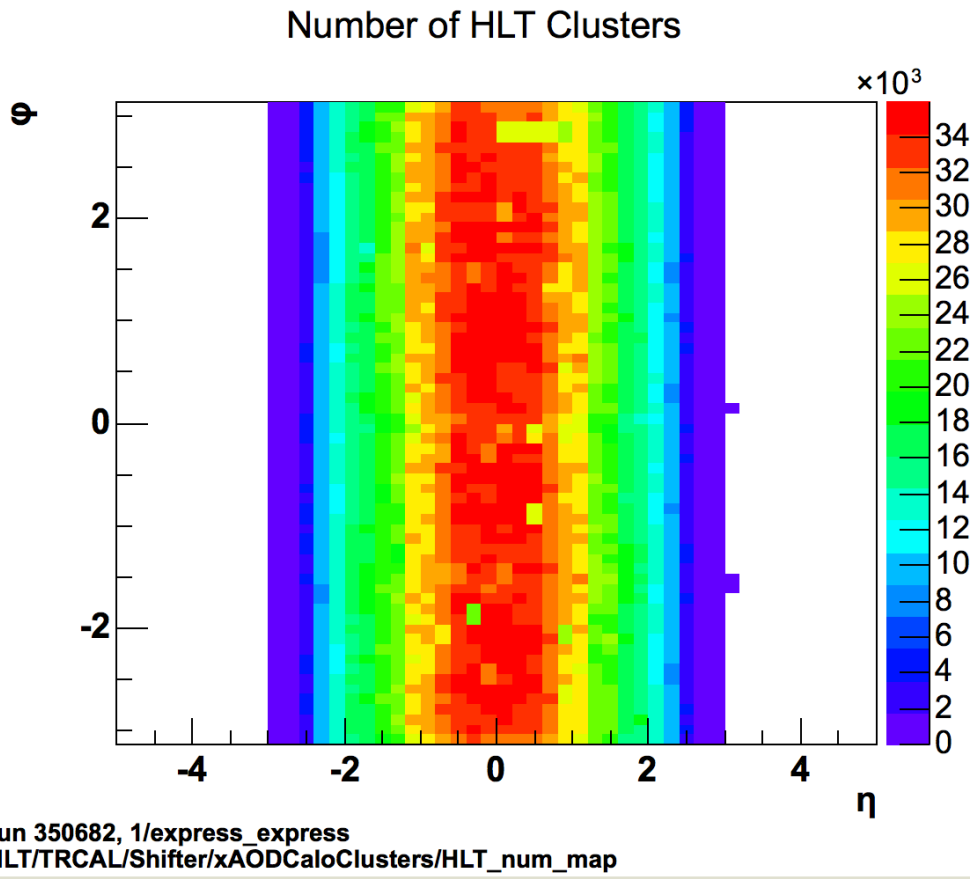
- MET spike appeared to be correlated with EM cluster hotspot: phi ~ -2 + 3.14 ~ 1.14 → turns out to appear in different set of runs
- Turns out to be already in L1 MET (thanks Kenji!)
- Runs affected: 350013, 350144, 350184, 350310, 350361, 350431
- Set defect MET phi spike tolerable





TileCal Hole

- Visible in jet and HLCalo
- Runs affected: 350310, 350440, 350361, 350431, 350682, 350749, etc
- Hard to see in Express stream: only in L1_J100 from run 350479 (thanks Ren-Jie!)
- Set defect TRIG_HLT_CAL_Tile_SourceMinor



Backup

Mystery calo spike Nr.1

- Mystery Jet spike appeared online at Eta = 2.2, phi=-2
- Affected runs 377981, 377982
- Not seen in offline plots