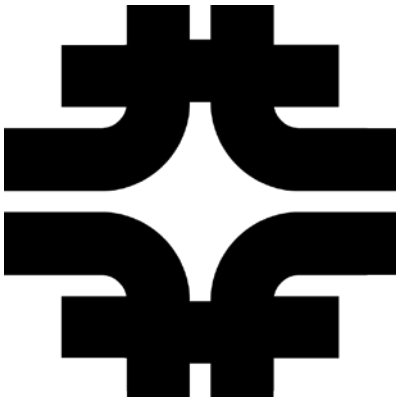
CMS and LHC Report

All Experimenters' Meeting

Kevin Pedro

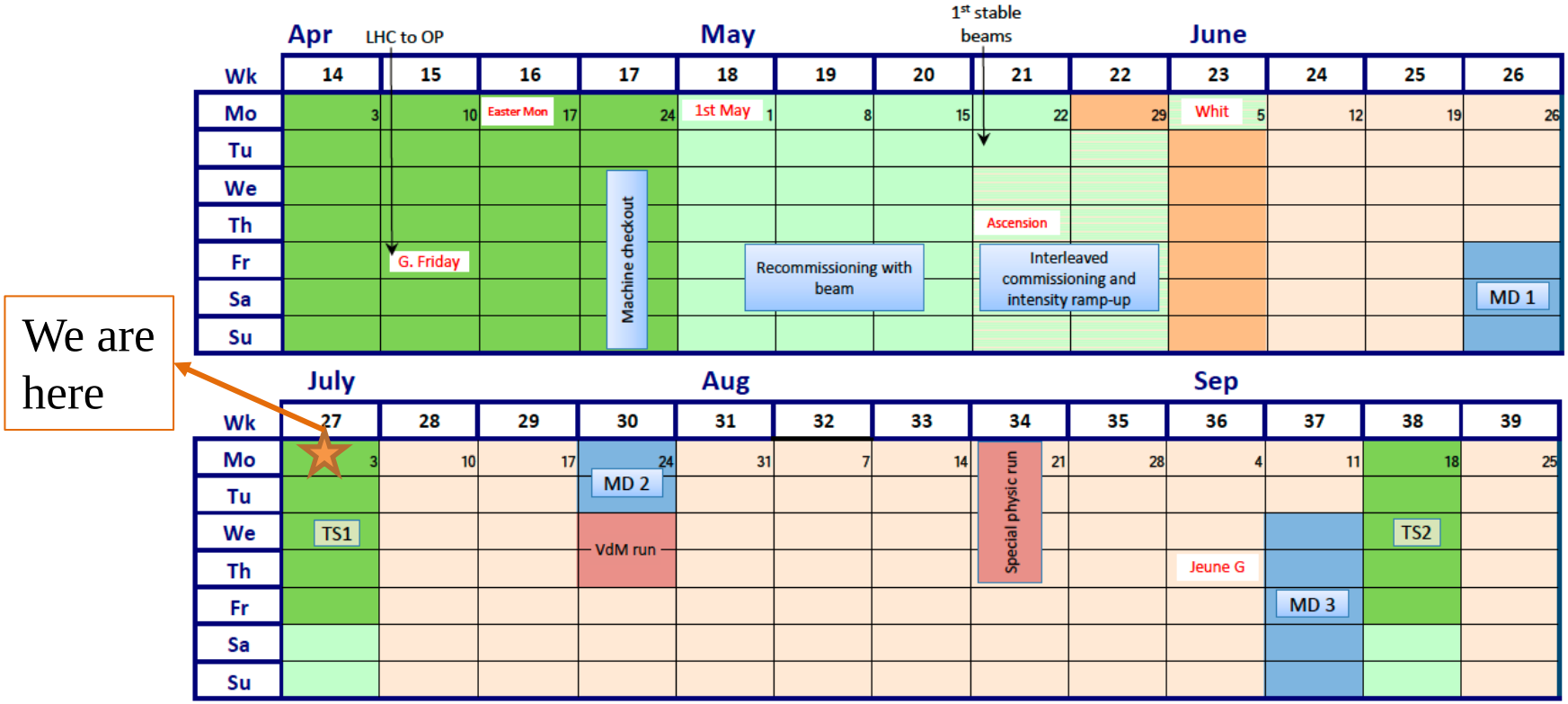
(FNAL)

July 3, 2017



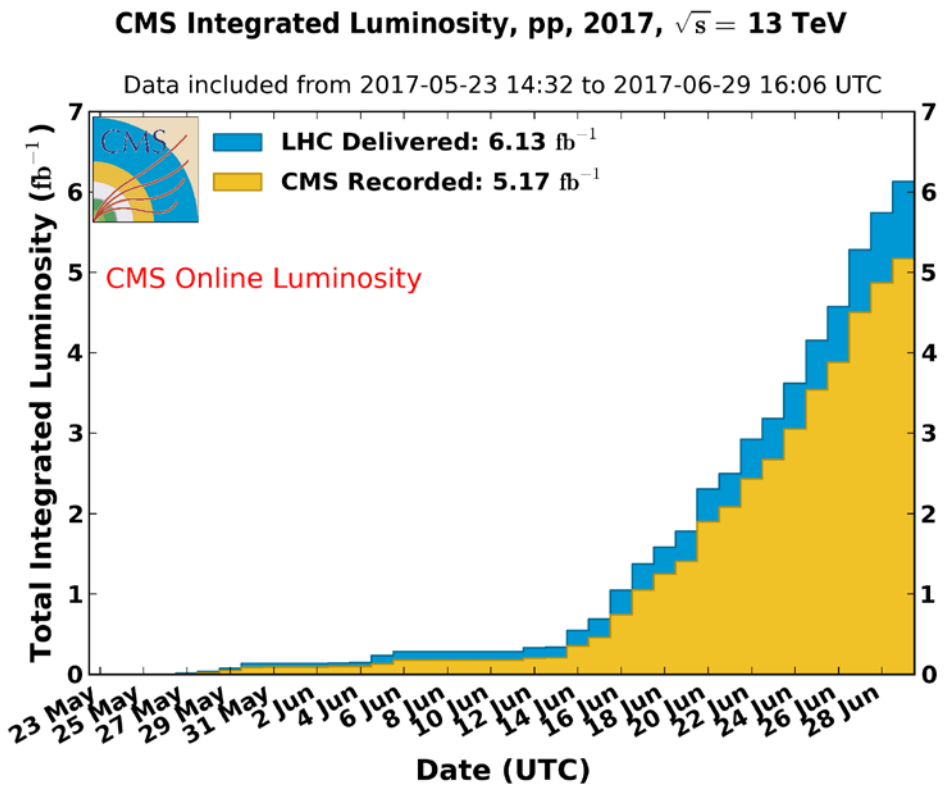
LHC Schedule

- Now in machine development / technical stop
- Last week:
  - Instantaneous luminosity > $1.5\times10^{34}/cm^2/s$! (→ pileup ~44)
  - Integrated luminosity > 6 fb^{-1}!
  - Completed last step of ramp: 2544 bunches colliding in CMS
- Soon: van der Meer scan

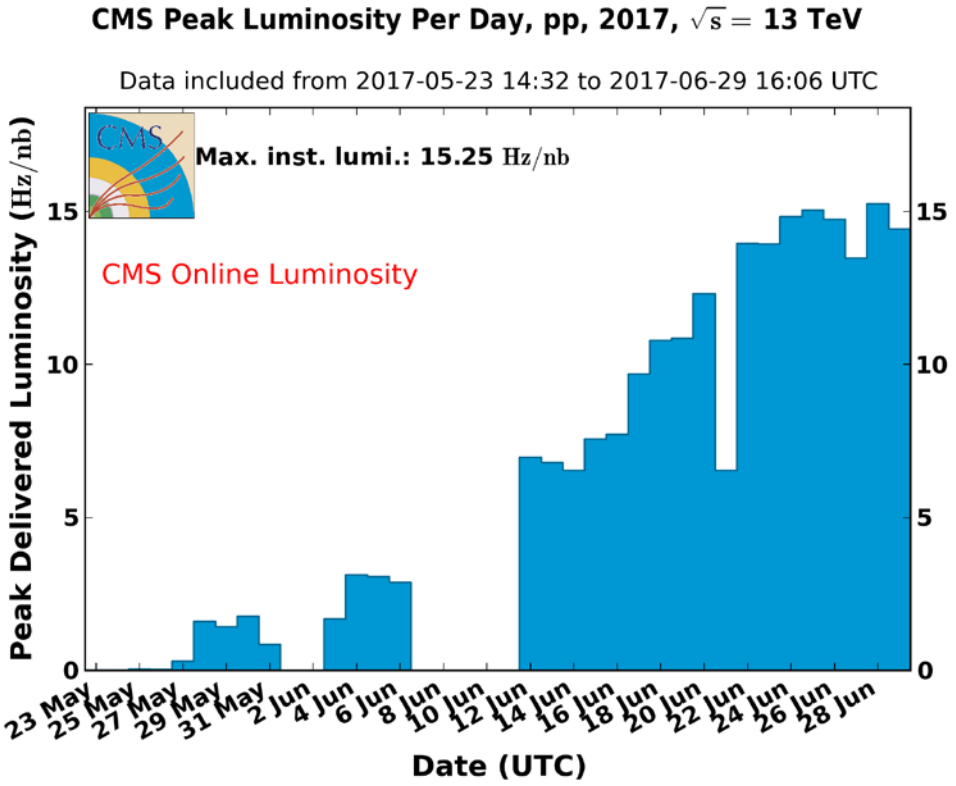


Luminosity Plots

[CMS LumiPublicResults]



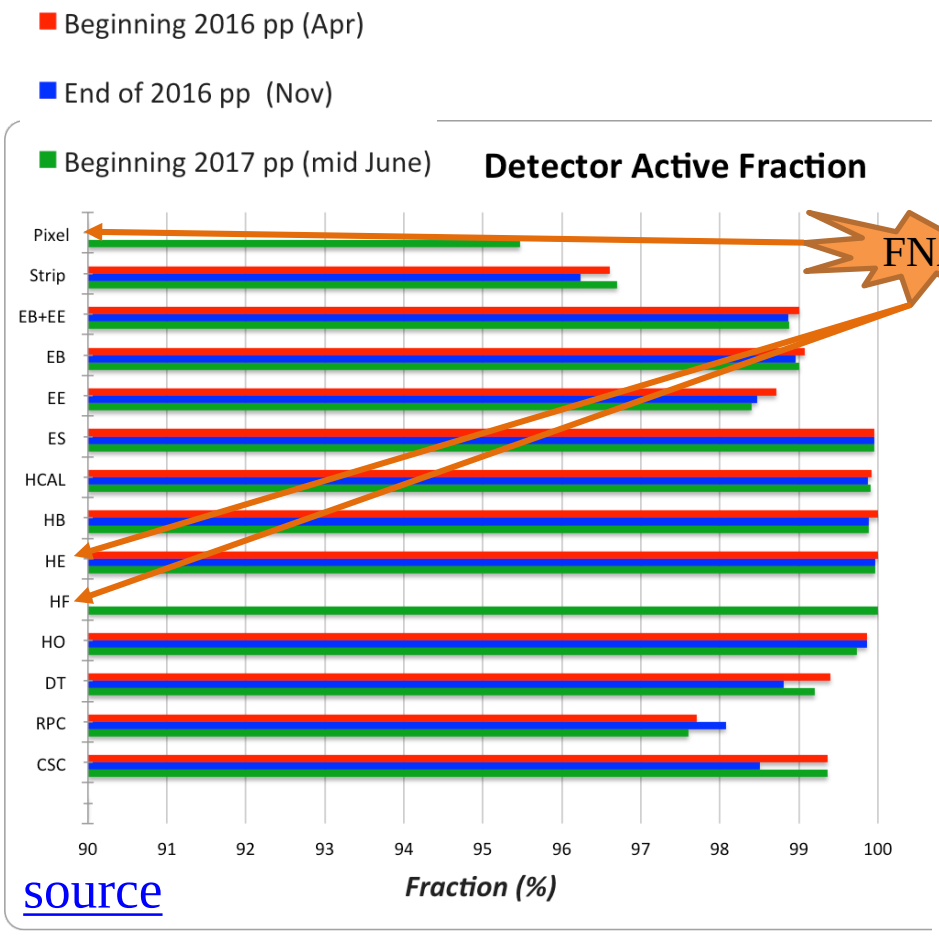
Maximum stored beam energy:
293 MJ (vs. 250 MJ in 2016)



June 26:
record 700 pb^{-1} delivered in 24hrs

CMS Status

- CMS had its 25th birthday!
- Taking physics data
- All systems performing well



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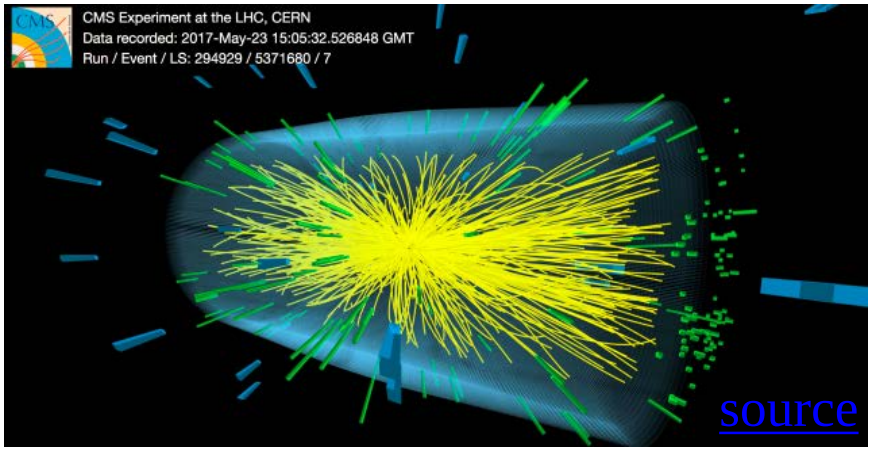
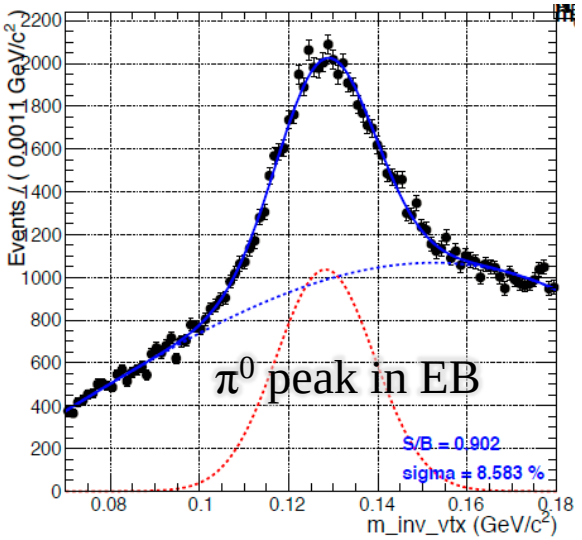
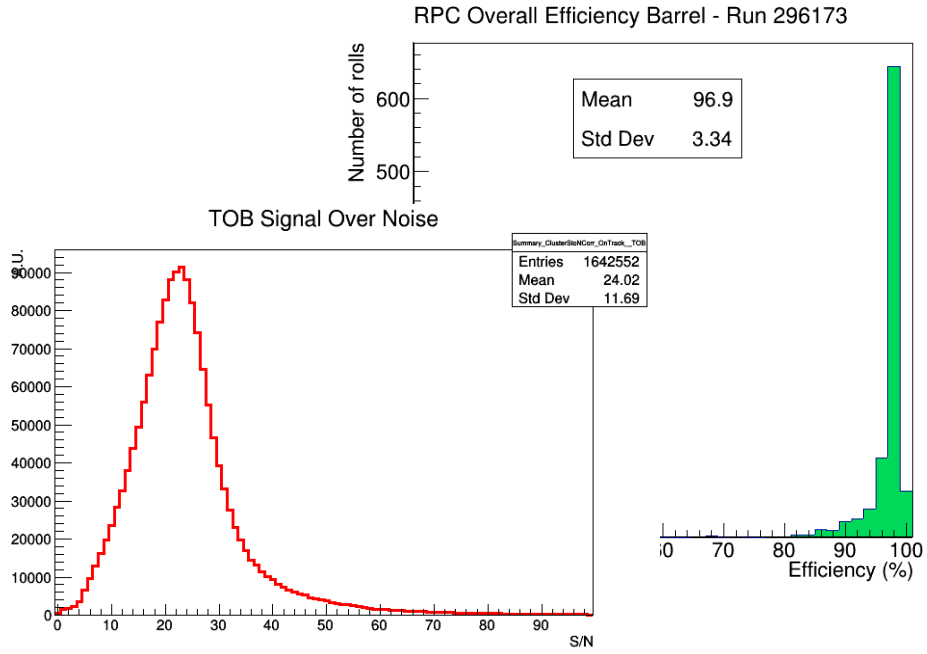
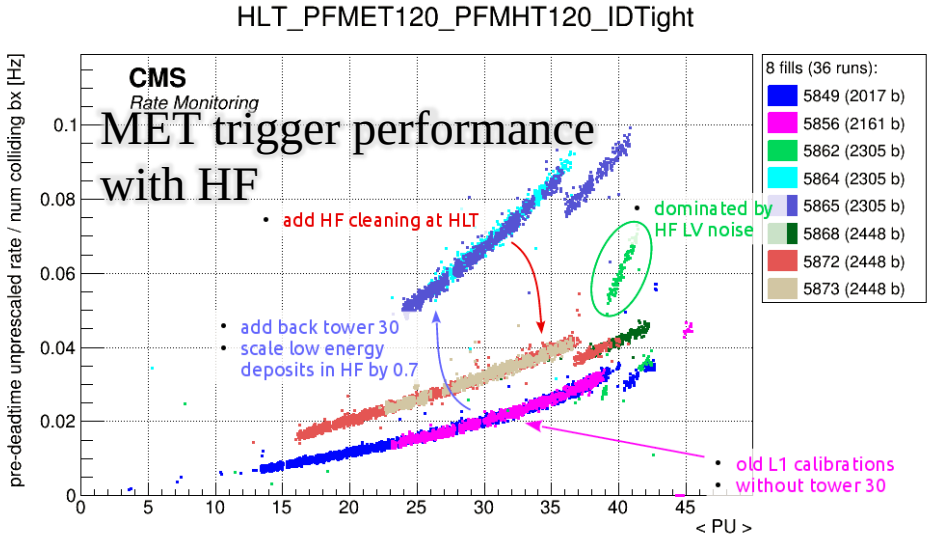


CMS Performance

- ECAL, strip tracker, muon systems maintaining good performance
- Developing HF noise filters using TDC and asymmetry information FNAL
- Refining operating parameters for BPIX and FPIX to improve efficiency FNAL
- Preparing new trigger menus based on initial data and expectations for higher luminosity





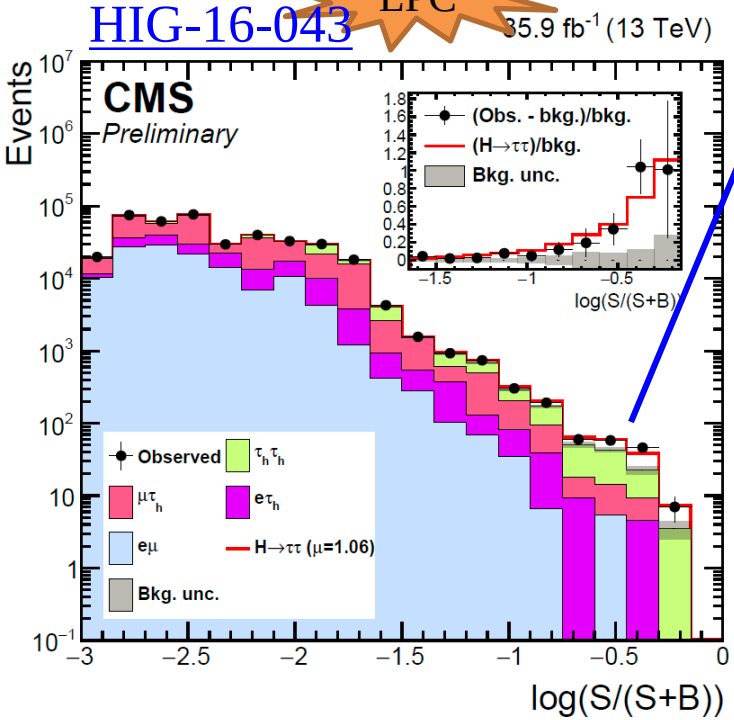


Physics & Computing

- HEP Software Foundation (HSF) workshop just finished – major contributions from Fermilab in Community White Papers (CWP) to guide software/computing
- Data and MC processing:
  - Legacy re-reco of 2016 data (36 fb^{-1}) almost finished
  - Preparing larger MC campaign for 2017
  - MC production for Phase 2 Muon + Barrel Calorimeter TDRs has begun
- Expect ~24 new results for EPS conference (post-LHCP)

LPC

HIG-16-043



H→ττ: 4.9σ

H→bb: 1.5σ

Z→bb: 5.1σ

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