

PHENIX Run-15 Status

Douglas Fields

PHENIX Run-15 Run Coordinator

University of New Mexico

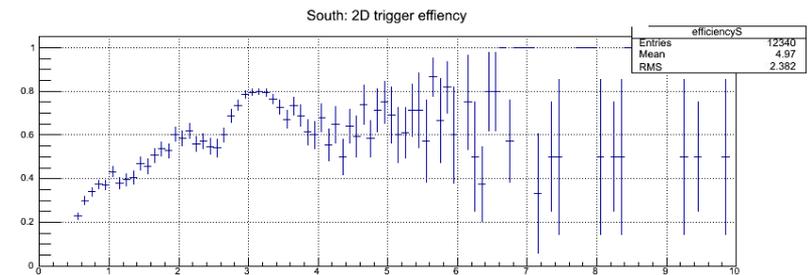
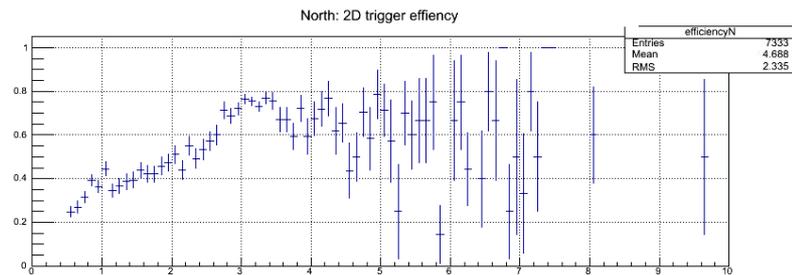
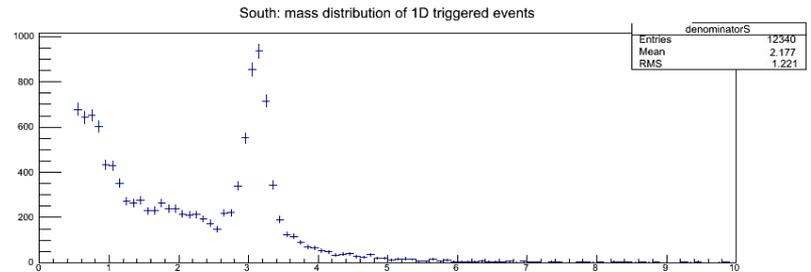
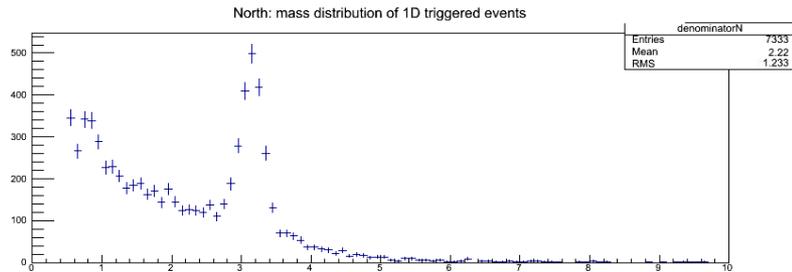
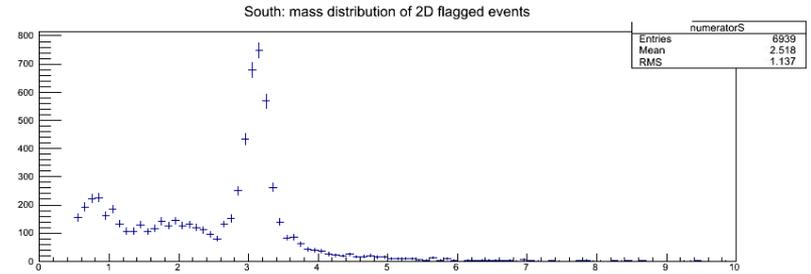
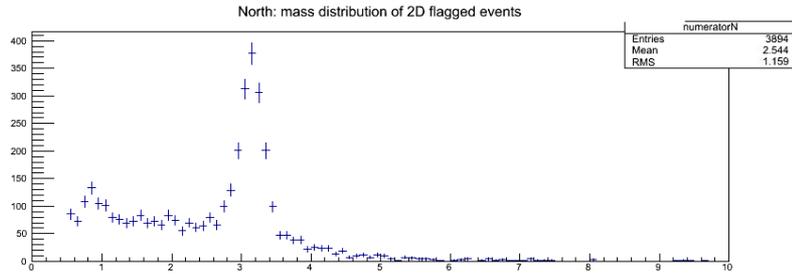


Out of Gas (Ethane)

- We ran out of Ethane on Sunday.
- This means we have to turn off HV to our central tracking detectors (Drift Chamber, Pad Chamber), so lose our central HF physics, but we continue with our forward HF and continue commissioning MPC-EX (our two primary goals).
- Normally, we buy enough gas for the entire run before it starts, but the vendor changed the gas purity, and we wanted to verify that this wouldn't negatively impact running, so we got a late start.
- We had an order placed (in time) for an emergency (expedited) delivery on the 4th.
- It appears that a miscommunication was made in the purchasing process that changed this to a normal delivery.
- Airgas found a few more cylinders. We will be getting two today from NJ, two on Thursday and 9 by end of week from TX. The rest (7) will come from TX next week, followed by the tube trailer.
- Should be back in business after APEX on Wed.



Meanwhile... J/Psis in Forward Arms



FVTX Multiplicity Trigger

Game Change: the “ridge” in pp collisions

Opportunity of studying novel QCD phenomena opened up by the LHC

September, 2010



PUBLISHED FOR SISSA BY SPRINGER

RECEIVED: September 22, 2010

ACCEPTED: September 23, 2010

PUBLISHED: September 27, 2010

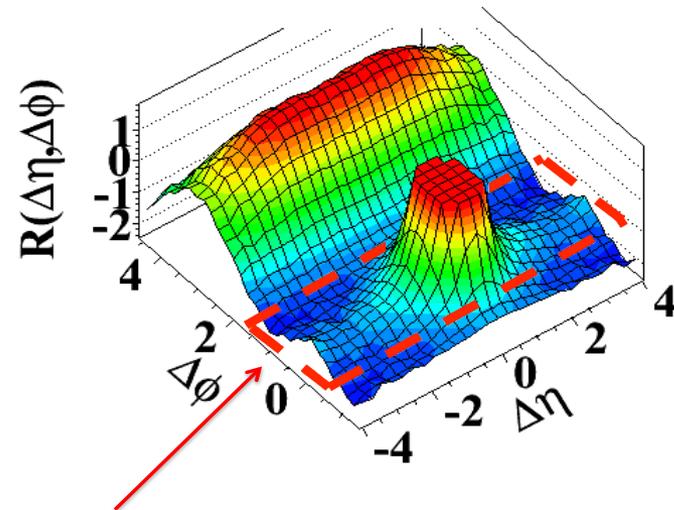
Observation of long-range, near-side angular correlations in proton-proton collisions at the LHC

The CMS collaboration

ABSTRACT: Results on two-particle angular correlations for charged particles emitted in proton-proton collisions at center-of-mass energies of 0.9, 2.36, and 7 TeV are presented, using data collected with the CMS detector over a broad range of pseudorapidity (η) and azimuthal angle (ϕ). Short-range correlations in $\Delta\eta$, which are studied in minimum bias

Two-particle $\Delta\eta$ - $\Delta\phi$ correlation

pp $N > 110$, $1 < p_T < 3$ GeV/c



Unexpected ridge-like correlations in high multiplicity pp!

Slide from Wei Lei, Rice University

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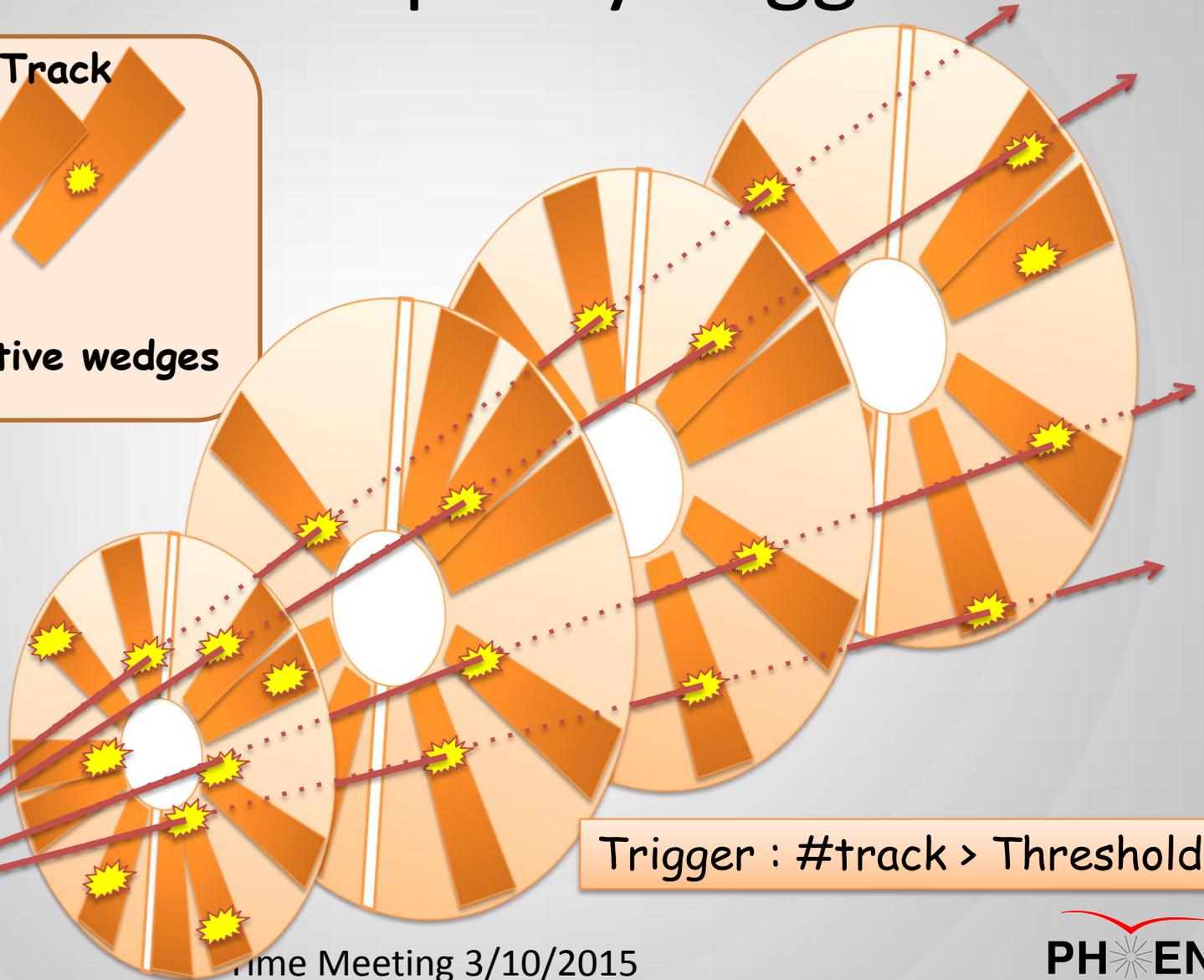


FVTX Multiplicity Trigger

Online Coarse Track



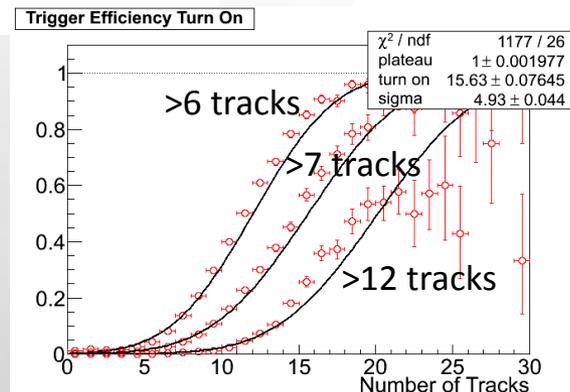
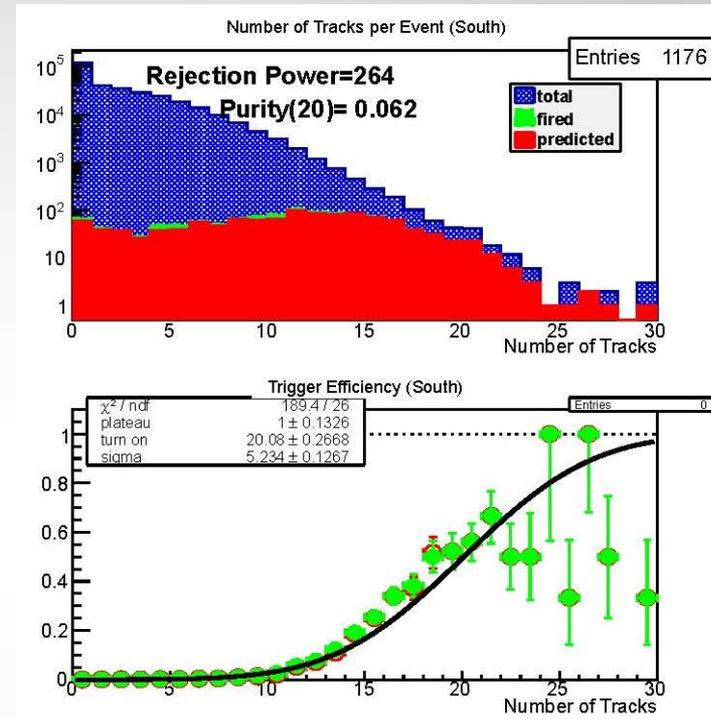
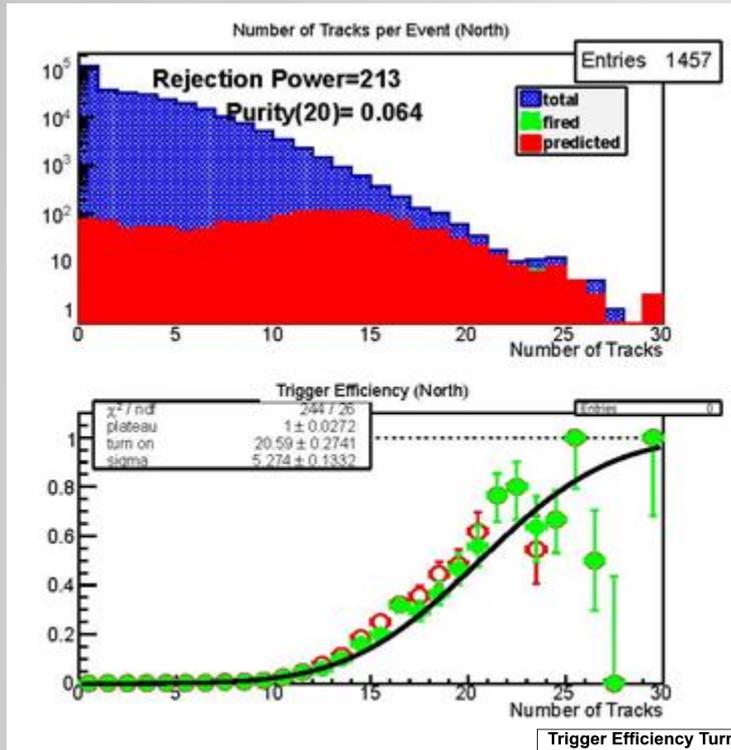
~ 3/4 active wedges



Trigger : #track > Threshold



Trigger performance



Time Meeting 3/10/2015

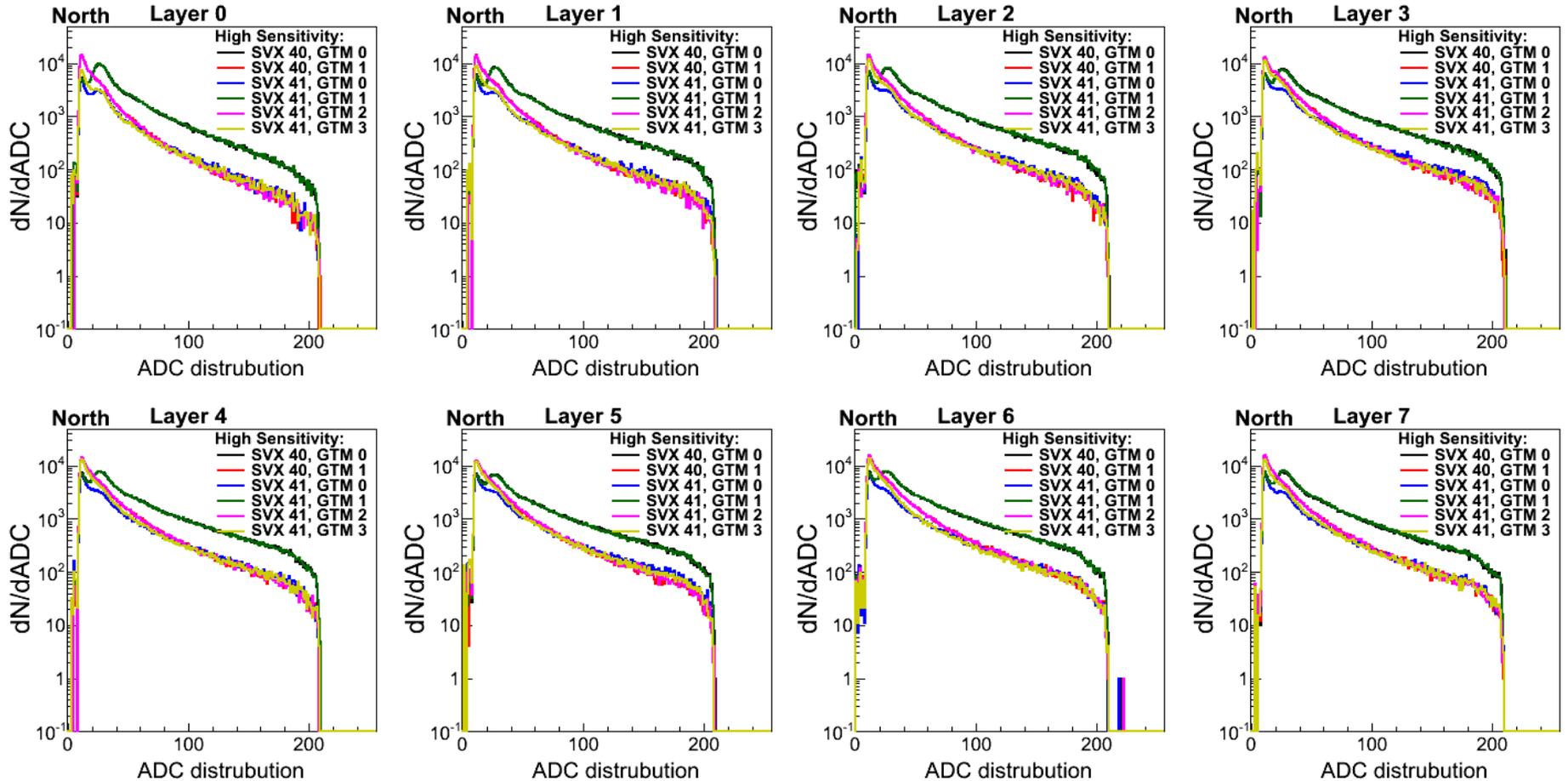


MPCEX update

- Progress last week
 - Updated firmware to solve start run issue (now reliable)
 - Integrator reset properly located in abort gap
 - First timing scan in north completed - clear MIP signal (next slide)
 - Zero suppression in DCM's (north and south) fully commissioned
 - Both North and South MPC-EX run successfully in big partition, analyzing data from extended timing scan
- Issues Remaining to be Addressed
 - Fine timing setup (with one BCLK)
 - Finalize setup of detector gains by layer
 - Commission multi-event buffering



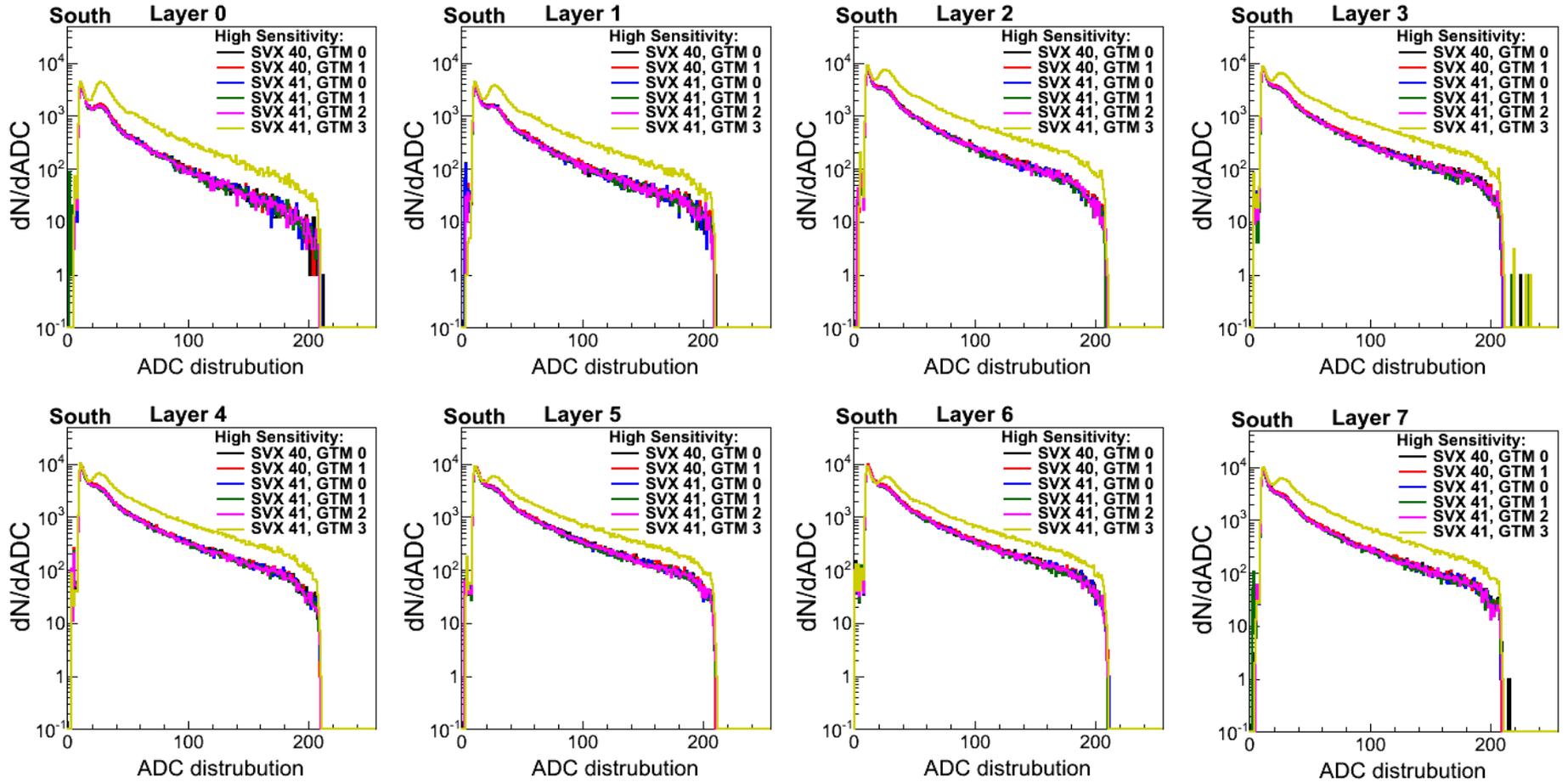
ADC “Distrubutions” by layer in different timing runs (North)



More hits in one configuration – narrows down the North timing to one beam clock



ADC “Distrubutions” by layer in different timing runs (South)



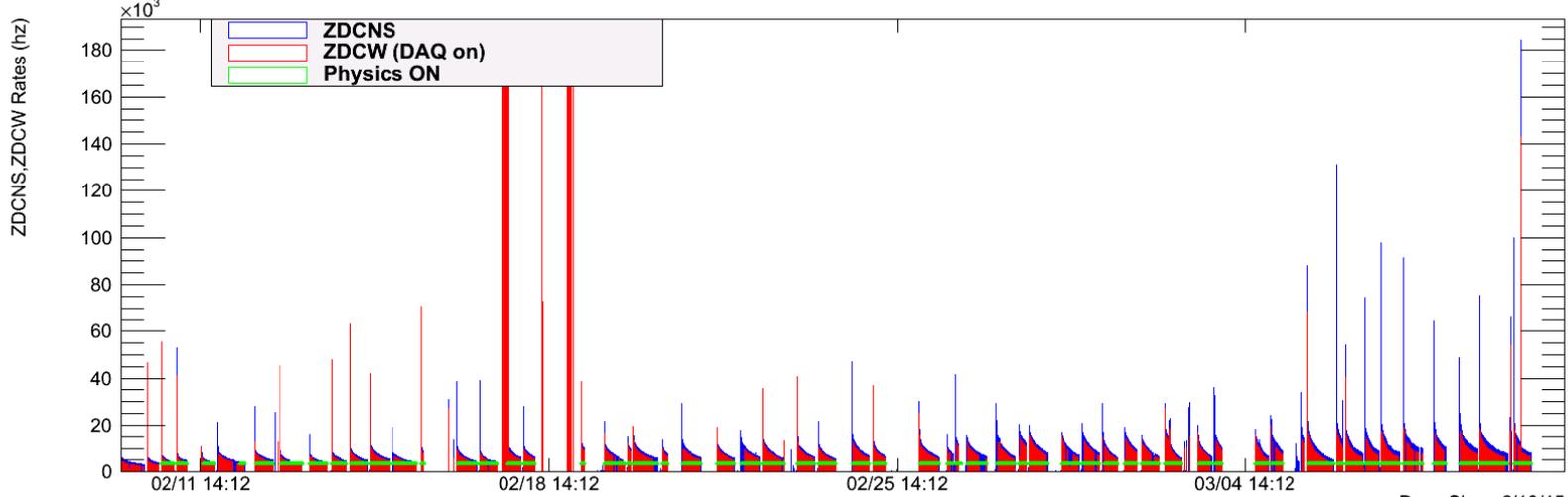
More hits in one configuration – narrows down the South timing to one beam clock



PHENIX Efficiency

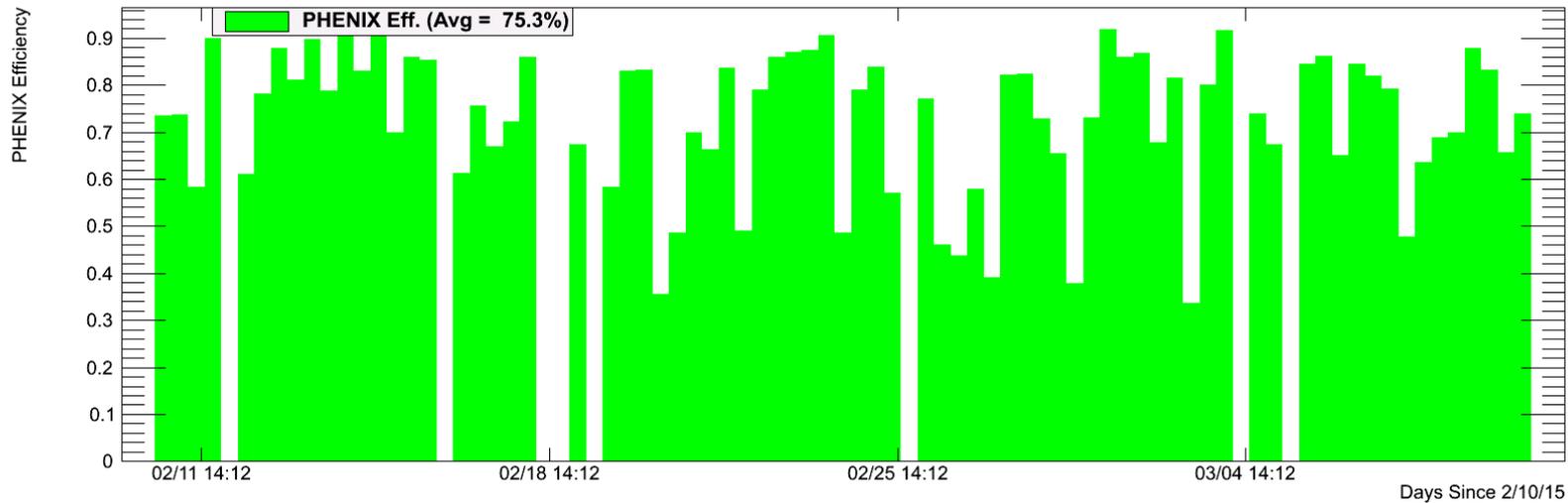
2015 200 GeV pp

Tue Mar 10 08:00:34 2015



PHENIX Efficiency vs Day

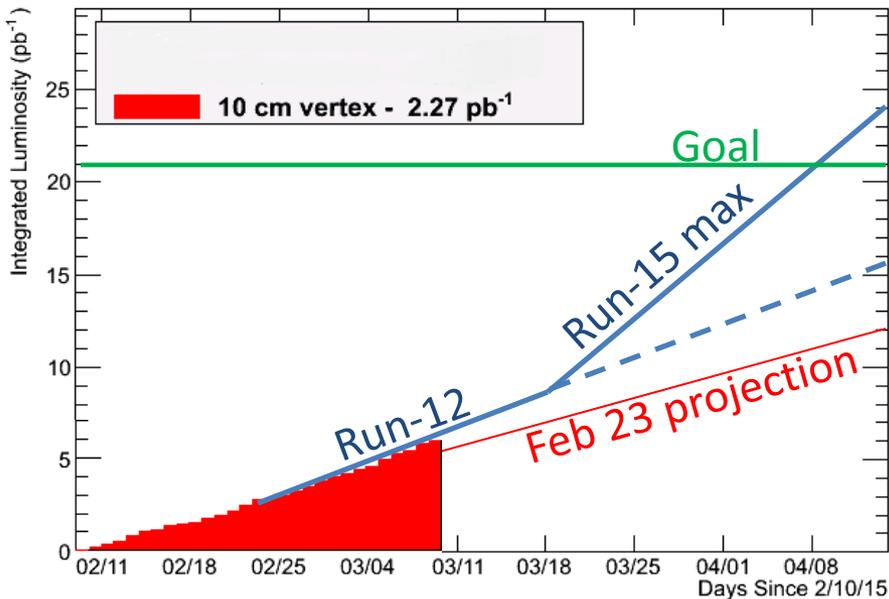
Tue Mar 10 08:00:44 2015



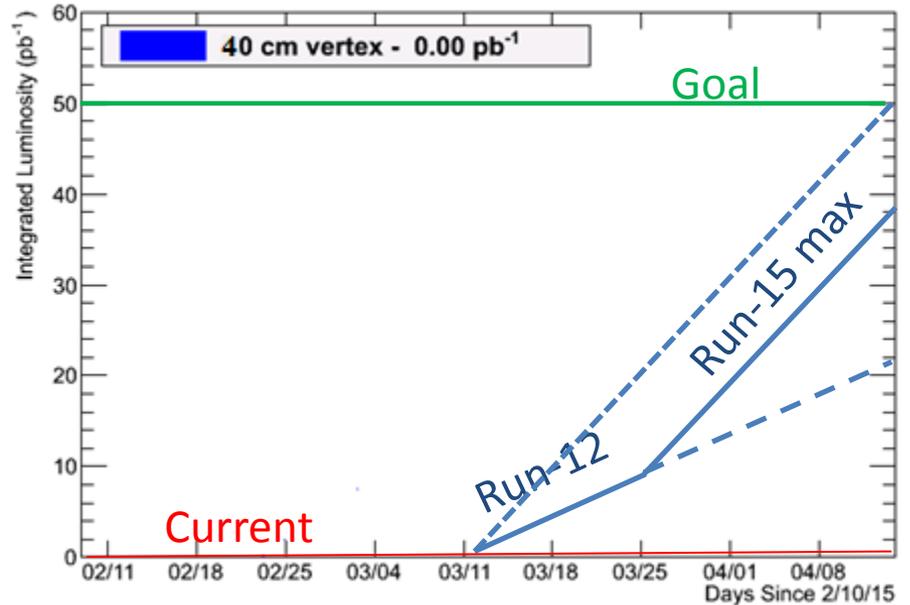
Luminosity Progress

- RHIC projections (<http://www.rhichome.bnl.gov/RHIC/Runs/RhicProjections.pdf>) gave Run-12 achieved delivered luminosity as **$9.3 \text{ pb}^{-1}/\text{week}$** and **$22 \text{ pb}^{-1}/\text{week}$** max expected in Run-15 (after 5 weeks running).
- Converting to our recorded luminosity: **$4.5 \text{ pb}^{-1}/\text{week}$** and **$10.1 \text{ pb}^{-1}/\text{week}$** (for the $|z| < 40\text{cm}$ program) and **$1.6 \text{ pb}^{-1}/\text{week}$** and **$3.85 \text{ pb}^{-1}/\text{week}$** (for the $|z| < 10\text{cm}$ program)

PHENIX Integr. Sampled Lumi vs Day Mon Feb 23 18:00:09



MPC-EX Integr. Sampled Lumi vs Day Mon Feb 23 18:00:09



Summary

- Taking physics data for HF in Muon and ~~Central~~ arms.
- Should have central tracking back after APEX on Wed.
- New High Multiplicity trigger now in physics mode.
- MPC-EX could begin physics data taking (with single-event buffering) in the coming few days.



Backup



Progress Towards Physics Goals (p+p)

- Two physics programs:
 - Forward direct gamma physics with the MPC-EX
 - p+p @ 200 GeV with transverse polarization for 9 weeks [Physics driven goal is **50 pb^{-1}** recorded within $|z| < 40 \text{ cm}$ and $\langle P \rangle = 60\%$]
 - Heavy Flavor physics using the F/VTX
 - p+p @ 200 GeV with transverse polarization for 9 weeks [Physics driven goal is **21 pb^{-1}** recorded within $|z| < 10 \text{ cm}$ and $\langle P \rangle = 60\%$]
- In our BUP,
<https://indico.bnl.gov/getFile.py/access?resId=0&materialId=0&confId=764>) we state that we assume PHENIX uptime 70%, fraction of events within +/- 10 cm (25%) and +/- 40 cm (70%).

