PHENIX status

Ralf Seidl (RIKEN)

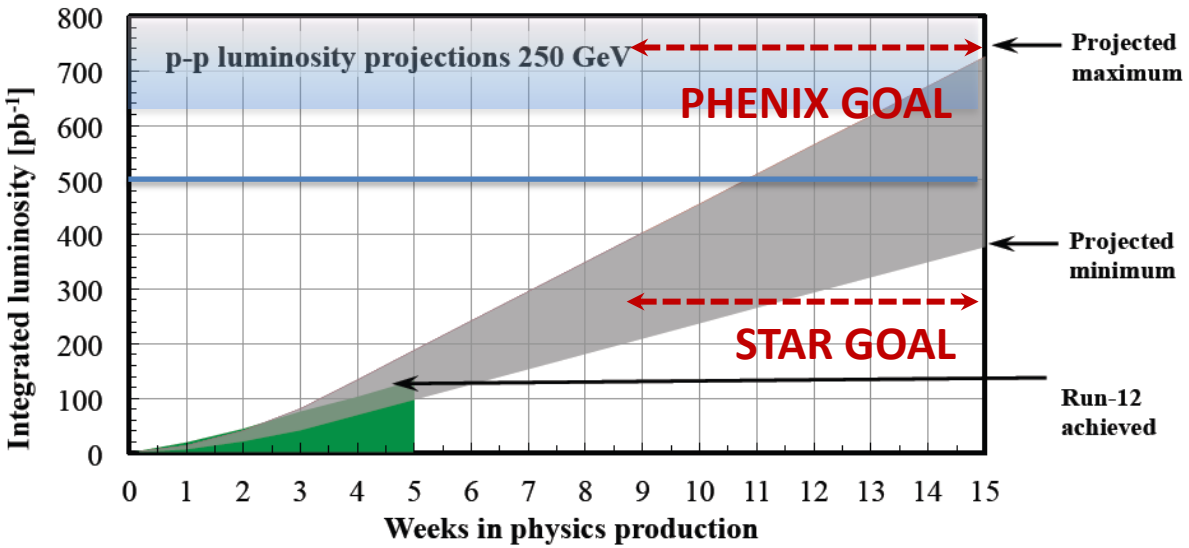
PHYSICS Goals

- W→mu A_L
- W→e A_L
- A_{LL} of forward clusters and central pions

FOM: LP^2 , muon arms

FOM: LP^2, central arms

FOM LP^4 , MPC, central arms, relative luminosity



From spin write-up:
Goal 500 pb^{-1} delivered
STAR goal: 275 pb^{-1} delivered
PHENIX goal: 300-(run11+12 lumi) pb^{-1}
recorded: 750 pb^{-1} delivered

http://www.bnl.gov/cad/esfd

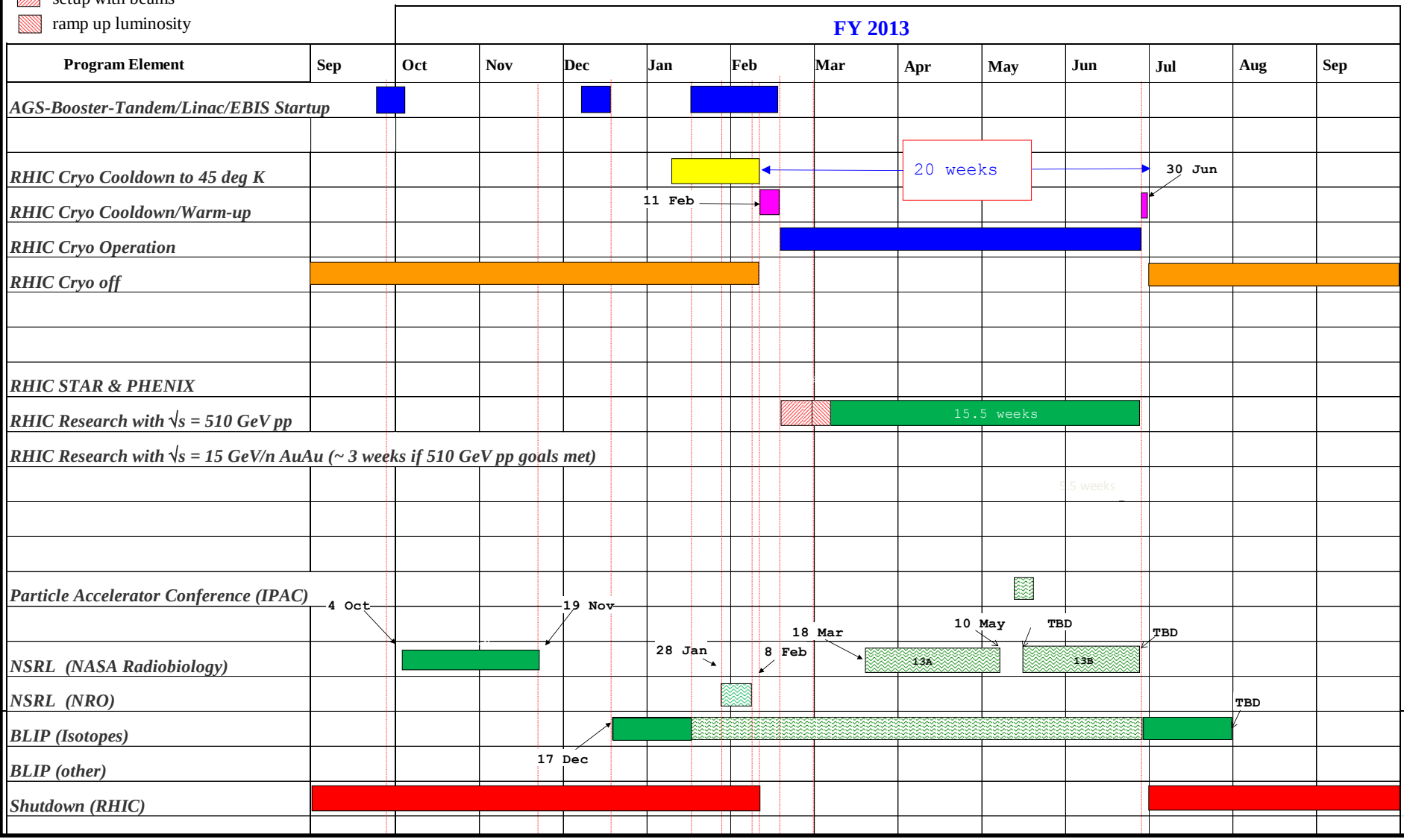
Scheduling Physicist: Andrei Poblaguev

C-A Operations-FY13

4 Feb 13

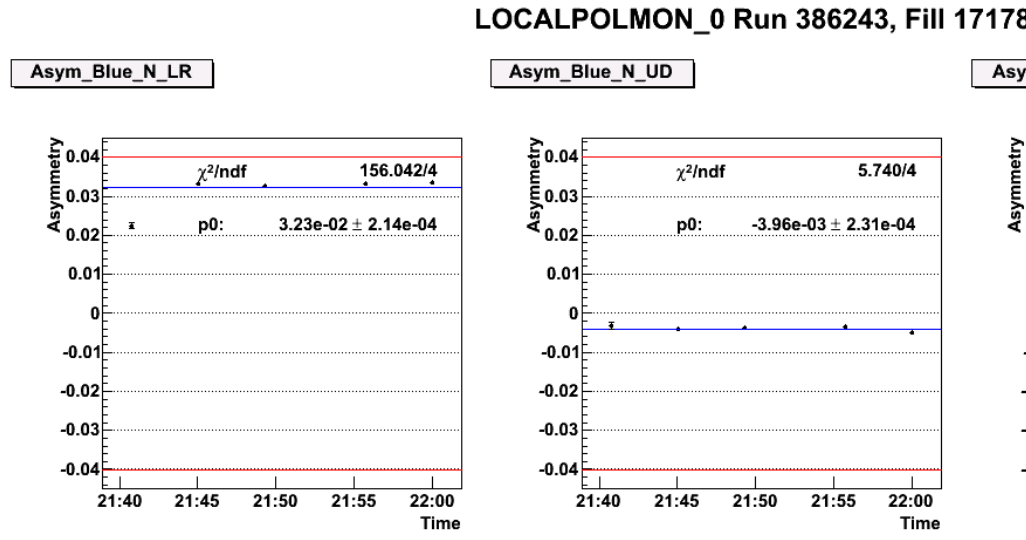
planned, budget permitting, Preliminary

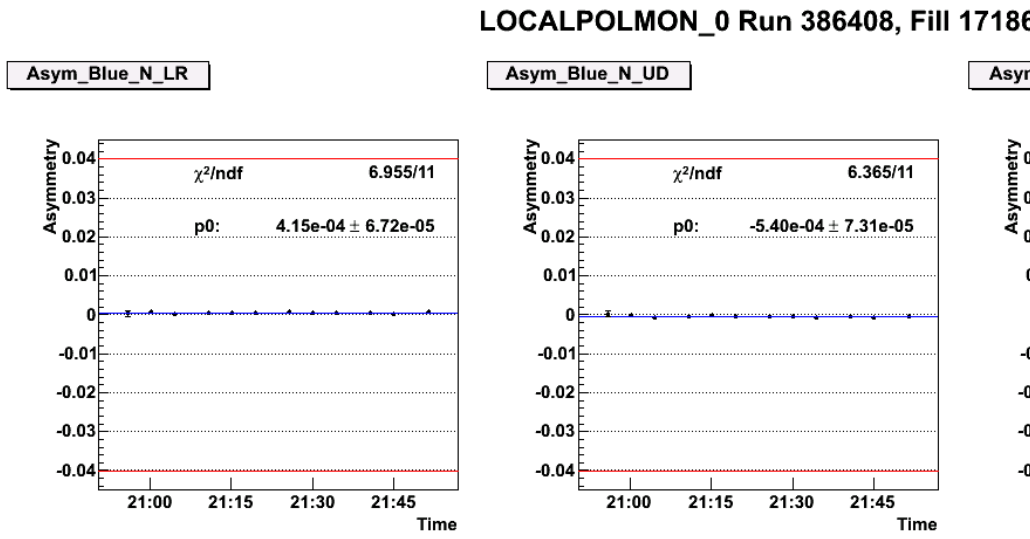
concurrent with RHIC
setup with beams
ramp up luminosity



Lpol scalers working

- Some hiccups at the beginning in monitoring
- Operational for Rotator commissioning Wednesday night
- Dedicated transverse and longitudinal stores for offline ZDC numbers taken

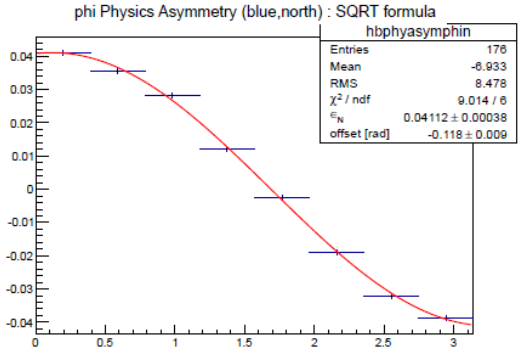


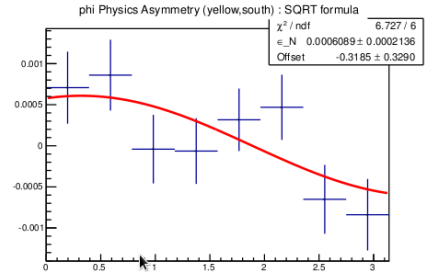


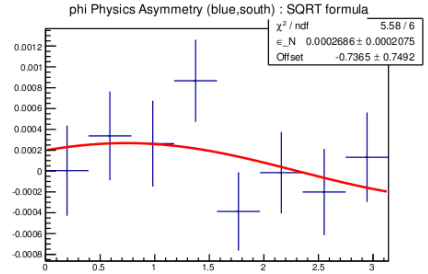
Spin rotator commissioning

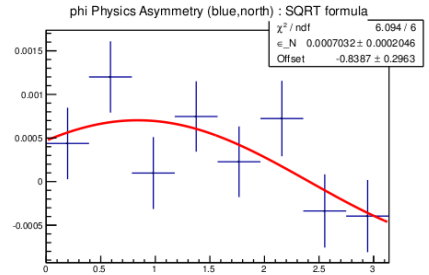
Sanghwa Park, Minjung Kim, Ciprian Gal

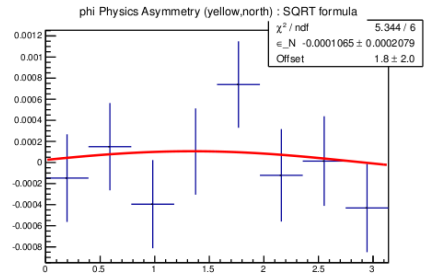
Setting	inner	outer	Fill#	Run#	RT_B	dRT_B	RT_Y	dRT_Y	angle offset blue [deg]	angle offset yellow [deg]
transverse			17178	386224						
setting 1	0	0	17178	386227	0.06	0.01	0.01	0.01	107.60	81.30
setting 2	+5	0	17178	386229	0.04	0.01	0.06	0.01	167.82	90.03
setting 3	-5	0	17178	386230	0.11	0.01	0.08	0.01	82.30	-51.04
setting 4	0	+5	17178	386235	0.09	0.01	0.09	0.01	24.40	26.87
setting 5	0	-5	17178	386239	0.10	0.01	0.07	0.01	146.67	-163.13
setting 6	+5	+5	17178	386240	0.07	0.01	0.11	0.01	-1.26	52.36
setting 7	-5	-5	17178	386241	0.15	0.01	0.07	0.01	120.02	-122.03
transverse			17178	386243						











Offline ZDC numbers from last night's fill (17186):

Yellow transverse component:

0.019 +- 0.007 (Jet:1.52E-2 +- 5.84E-3)

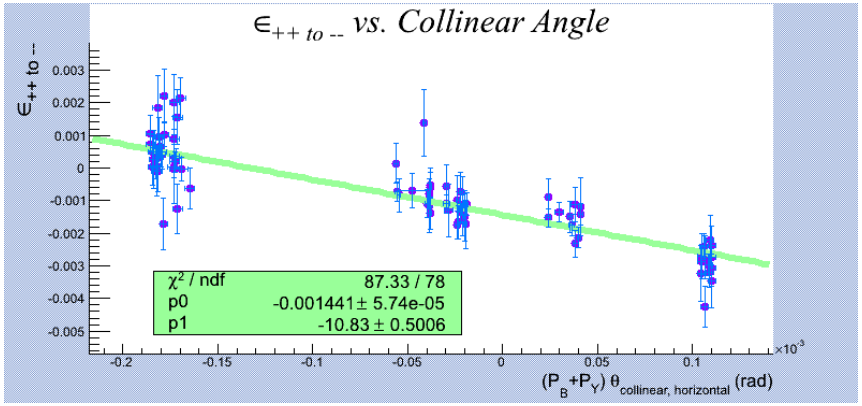
Blue transverse component:

0.018 +- 0.006 (Jet:2.71E-2 +- 1.30E-2)

Run13 RelLumi Studies with the Star Scalers

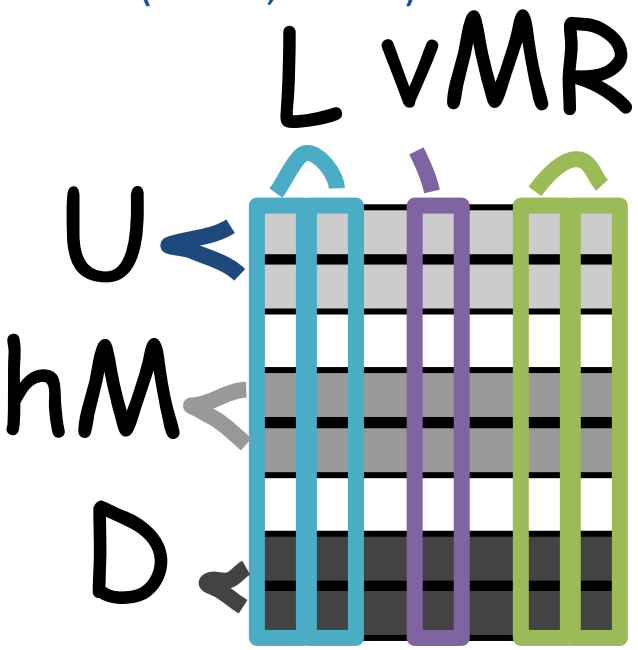
Andrew Manion, Nils Feege, Kieran Boyle

- In Run12, did angle scan w/ CAD
  - saw false ZDC/BBC asymmetry dependence on beam geometry
  - Partial explanation as ($A_N \oplus$ geometry) in ZDC



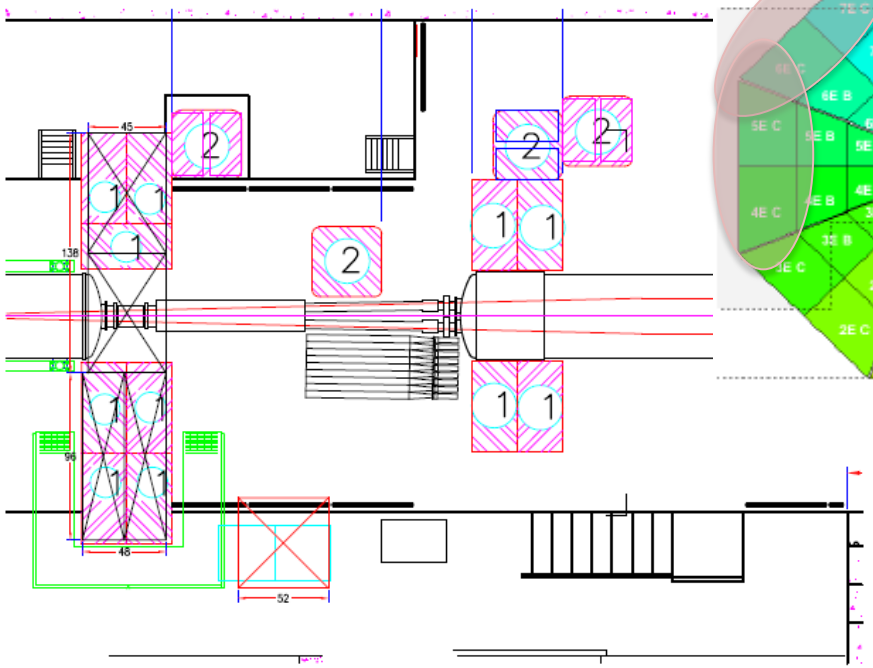
- Idea: make the entire Run13 a geometry study
  - Scalers for individual SMD strips
  - Can get any N,S arm correlation (and thus detector "angled/offset" w.r.t. the beam) using Star Scalers
  - Study geometry effect w/ various offset/angle combinations
    - in vertical and horizontal

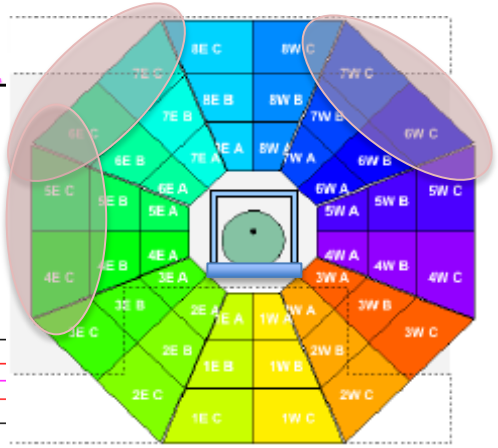
- Design parameters:
  - Use Shower Max Detector (SMD)
  - Typical neutron shower ~2 strips wide
    - 1 strip buffer zones
  - Available space on scaler board for 10 signals
    - (L,R,U,D, vM||hM)
    - x (North, South)



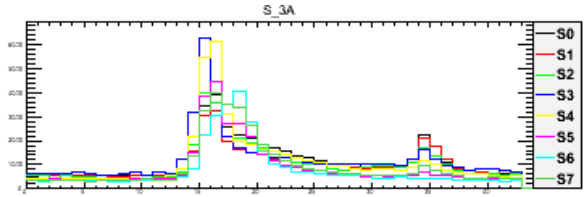
RPC shielding in tunnel/backgrounds

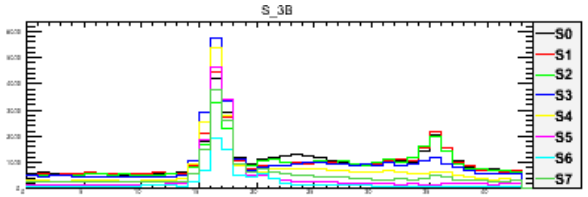
Daniel Jumper, Martin Leitgab, RCS

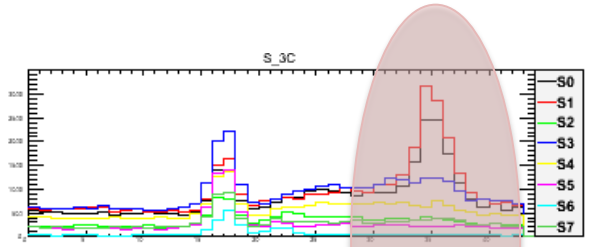


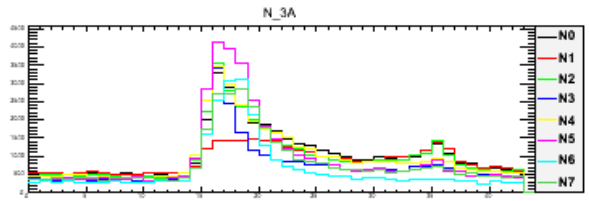


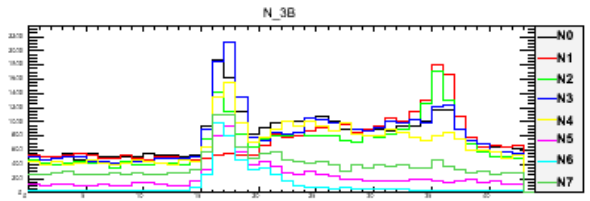
- Two sources of Backgrounds in RPCs in tunnel:
  - Incoming beam Background
  - Backscatter form DX magnet
- Additional shielding installed:
  - Improvement in incoming beam BG seen
  - DX shielding needs more data

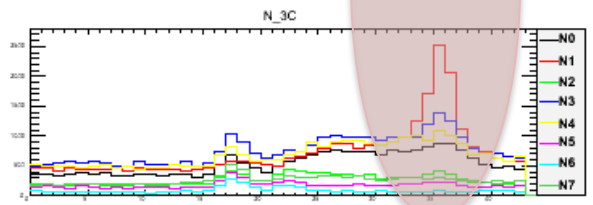










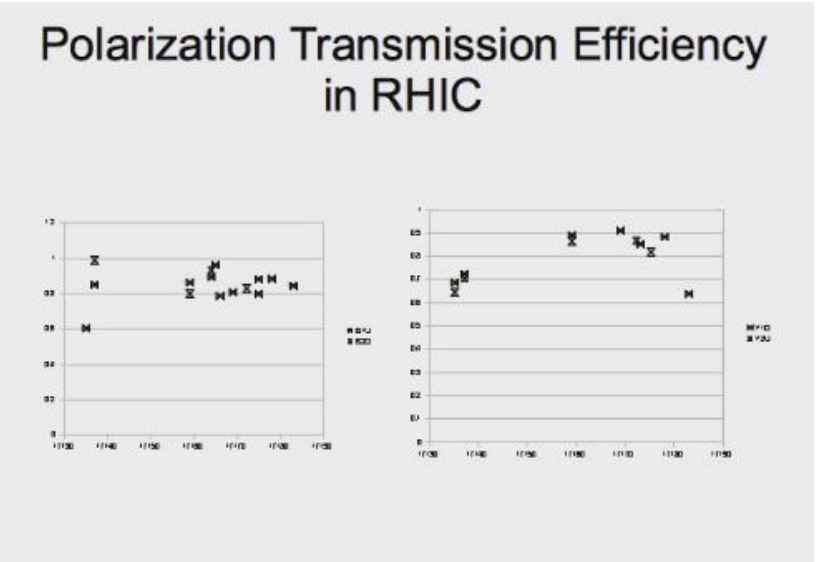


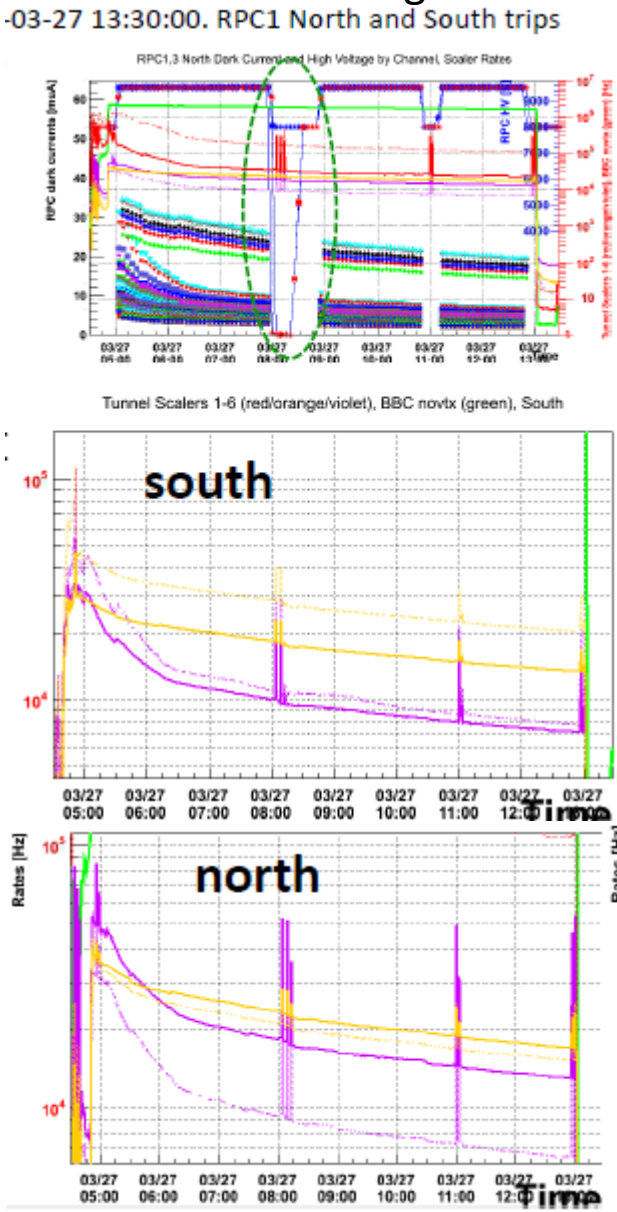
Polarization is Magic

and efficiency

Martin Leitgab

- Increase data taking efficiency over polarization measurements (ramp down as few detectors as possible, start a new run immediately??) – new shielding will help

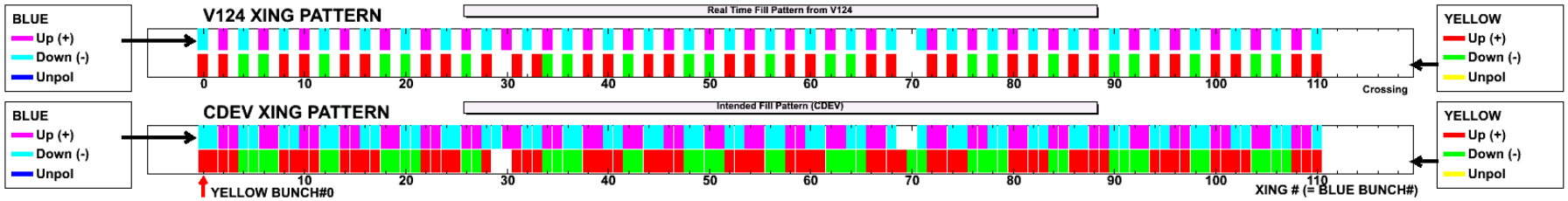




Spin monitor ok with new patterns

Mike Beaumier

Spin Monitor (run 386408, fill 17186) - for shift crew -

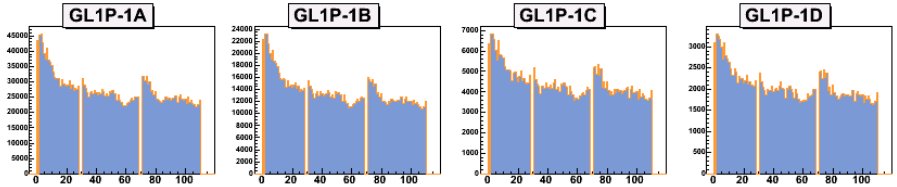


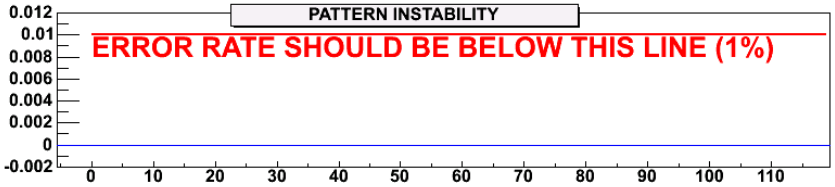
MONITOR START	2013/03/08 02:54:31	
MONITOR CURRENT	2013/03/08 03:53:24	
CNI POL	BLUE	nan ± nan (stat)
	YELLOW	nan ± nan (stat)
BLUE	START	1969/12/31 19:00:00
	STOP	1969/12/31 19:00:00
YELLOW	START	1969/12/31 19:00:00
	STOP	1969/12/31 19:00:00
# OF EVENTS MONITORED	DATAEVENT	2031188
	SCALEREVENT	49

Snake current : 94.8/ 322/ 322/ 94.8/ 322/ 94.5/ 94.9/ 323/

STAR rotator current : 282/ 225/ 282/ 224/ 279/ 251/ 280/ 251/

PHENIX rotator current : 268/ 255/ 268/ 255/ 273/ 274/ 273/ 274/





V124 SHIFTED TO RIGHT BY 0 bunches.(match method.)

PACKET LOSSES / PROBLEMS in DATAEVENTs

GL1	0 (0.00 %)
GL1P	0 (0.00 %)
GL1-GL1P xing mismatch	0 (0.00 %)

PACKET LOSSES / PROBLEMS in SCALEREVENTs

CDEV	0 (0.00 %)

DEFAULT XING SHIFT 5

PATTERN INSTABILITY (THE WORST BUNCH)

BLUE	0%
YELLOW	0%

# of UNFILLED BUNCHES

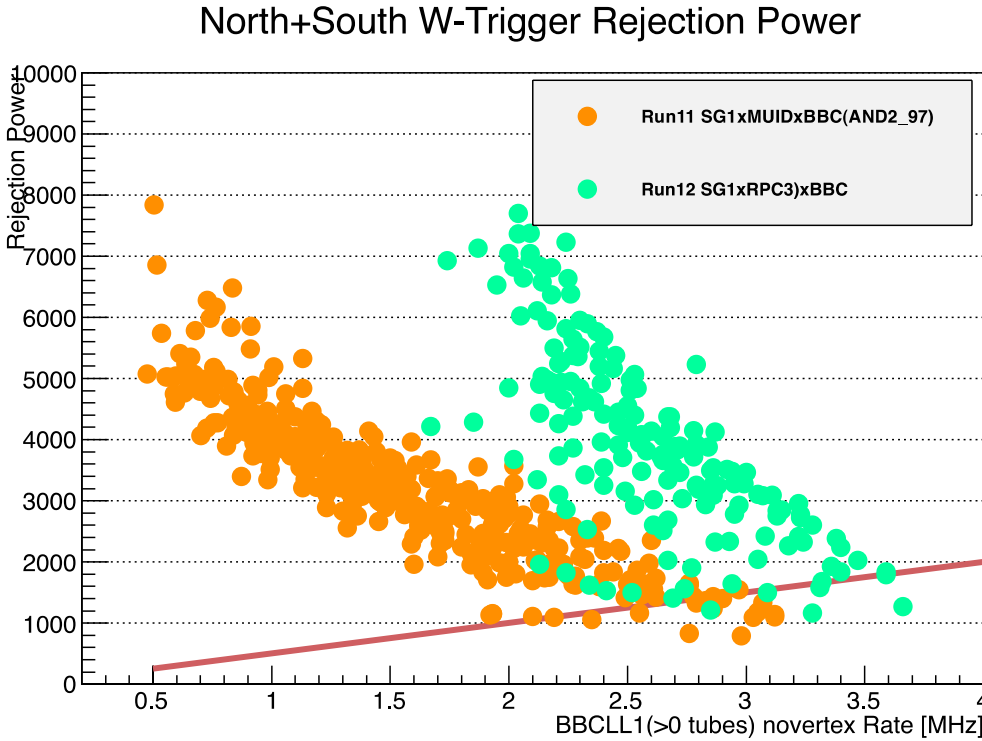
BLUE	53
YELLOW	54

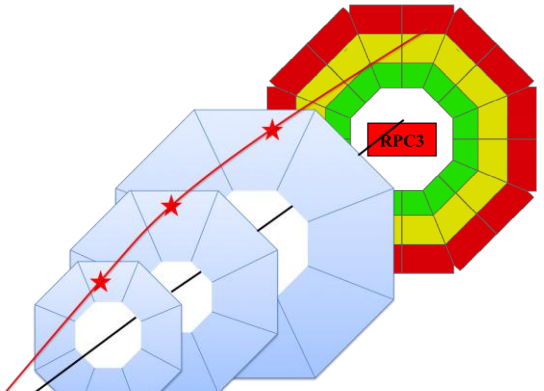
PHENIX ROTATOR	ON
PATTERN NAME	109x109_P2
POL DIRECTION	unknown

W Muon Trigger

Francesca Giordana, Sanghwa Park, Sarah Campbell, Itaru Nakagawa,
Daniel Jumper, Arbin Timilsina, Martin Leitgab, John Lajoie

- Main W trigger (SG1&RPC3) unchanged,
- New RPC1 inclusion (increase acceptance $1.2 < \eta < 1.4$) commissioned in Run12 and recent cosmics running
- Some initial (false) high rate sources identified and eliminated
- Trigger systems being timed in
- Some tweaking (thresholds) to increase rejections for highest collision rates

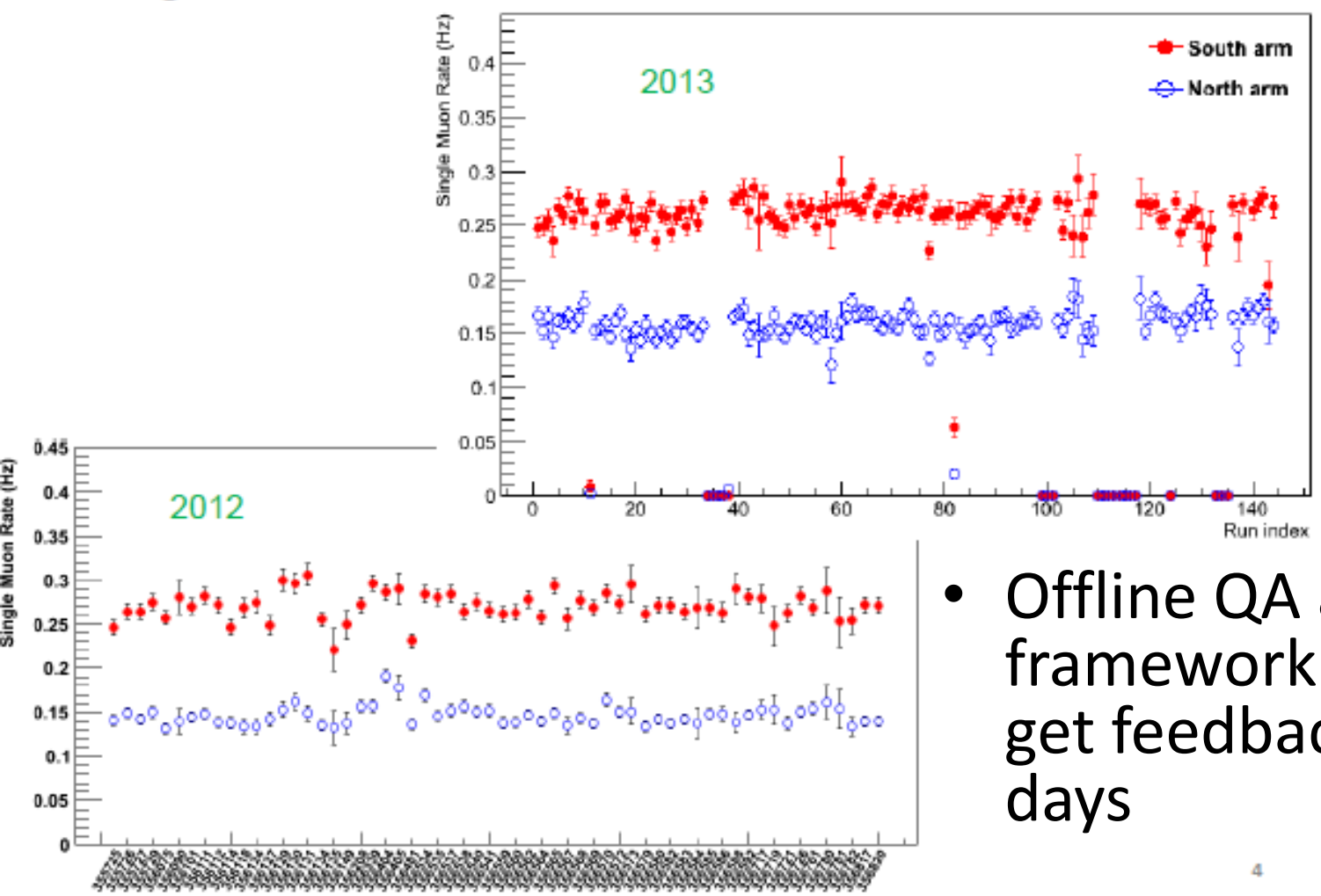




Cosmics datataking analysis

Murad Sarsour

Single Muon Rates for for 2012 & 2013



- Offline QA analysis framework setup to get feedback within days

Summary and status

- BBCs timed in Feb 27
- ZDCs/Local pol work finished,
  - Transverse run
  - Rotator commissioning @ MCR
  - Longitudinal run to cross check components
- Relative luminosity scalers prepared
- RPC shielding seems to help
- New spin patterns digested by subsystems
- Muon Trigger system ready

➔ Ready for PHYSICS data

Criteria for start-of-physics

- 109 bunches in the machine
- Longitudinal polarization established, <5% transverse component
- >=55% polarization at the start of the store
- Beta* = 0.65
- >$1*10^{11}$ protons/bunch

PHENIX