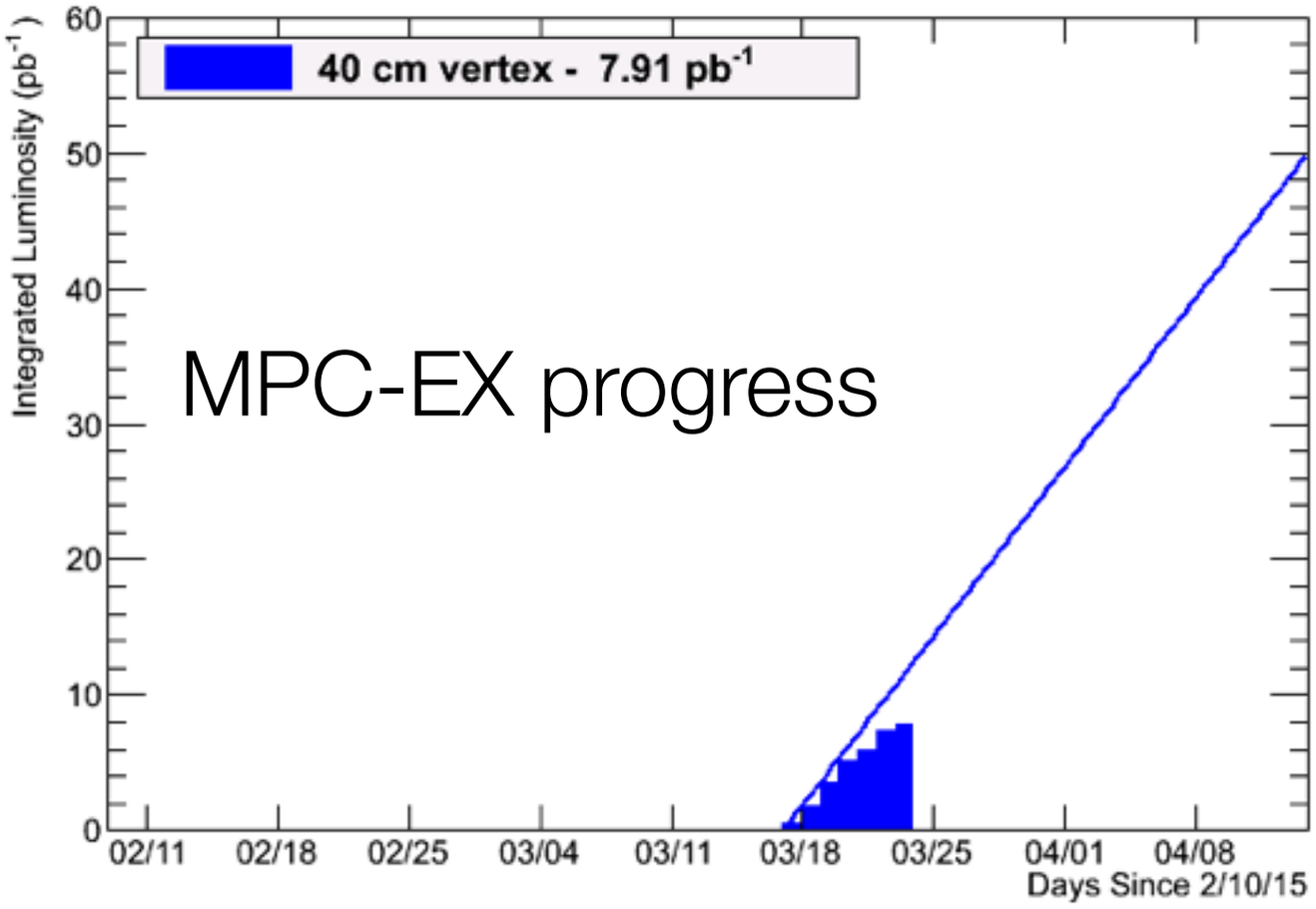
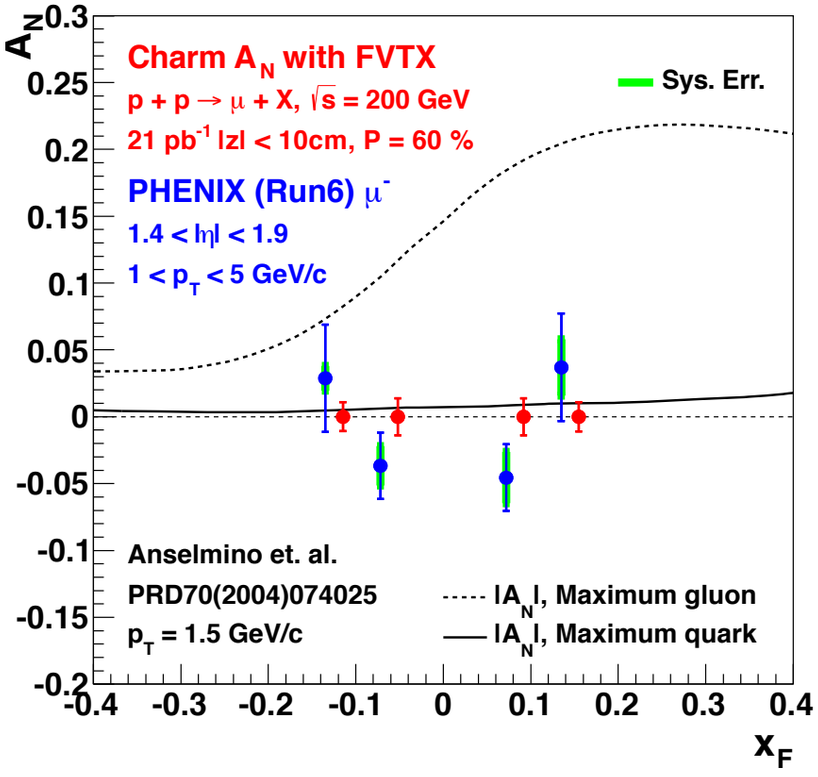
Progressing toward PHENIX physics goals



MPC-EX progress

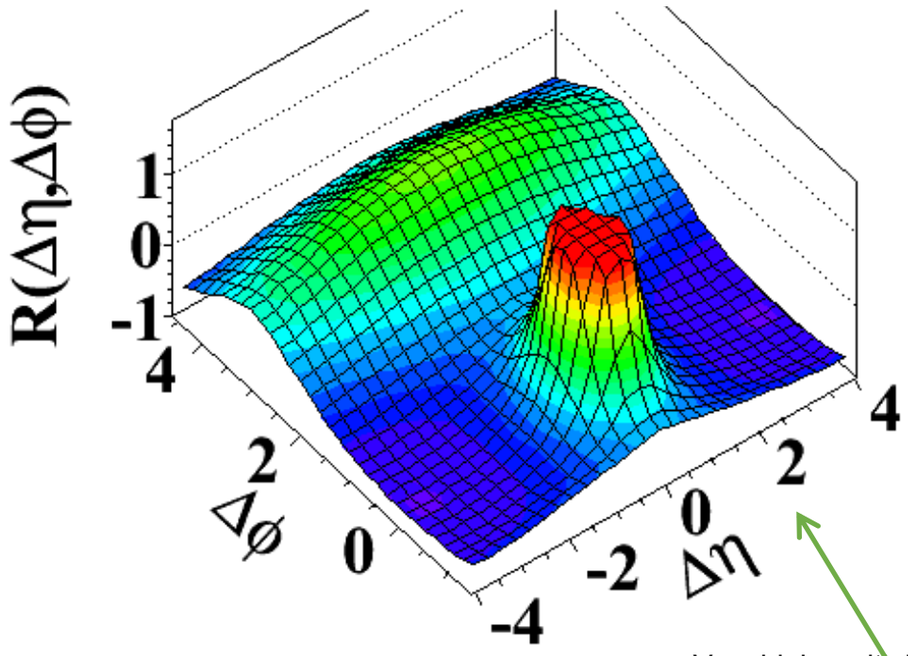
From BUP



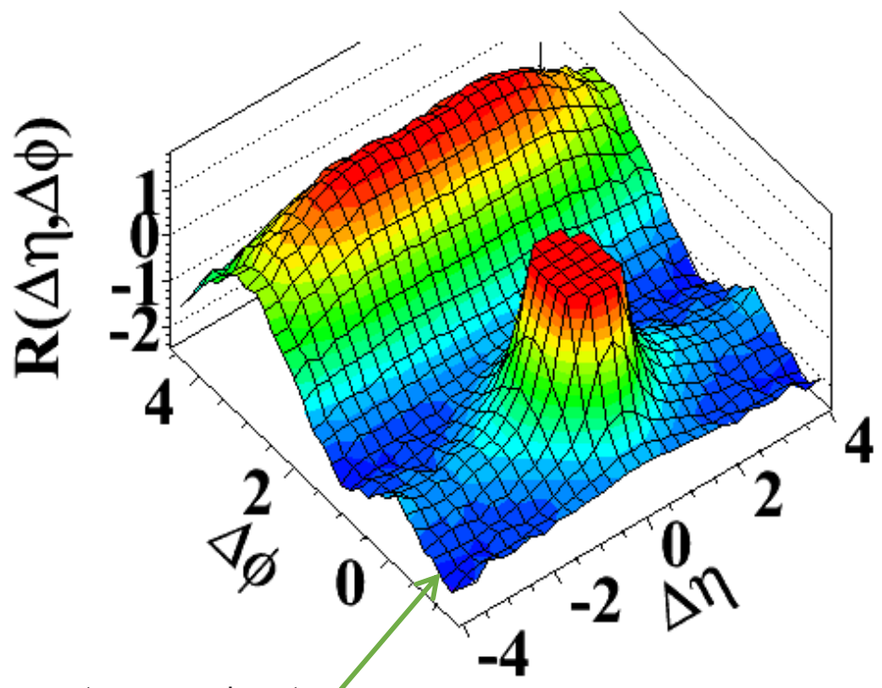
Progressing well toward all physics goals in *p+p* – project that we would achieve most of MPC-EX goal with nominal schedule – nonetheless, we don't oppose a modest extension of the *p+p* run.

Two-particle Δη-Δϕ correlation

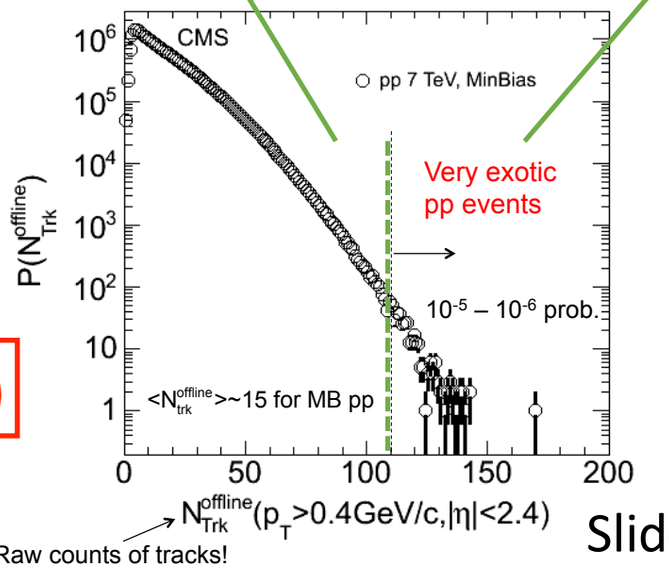
pp <N>~15, $1<p_T<3$ GeV/c



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



Very high-multiplicity pp events are rare in nature



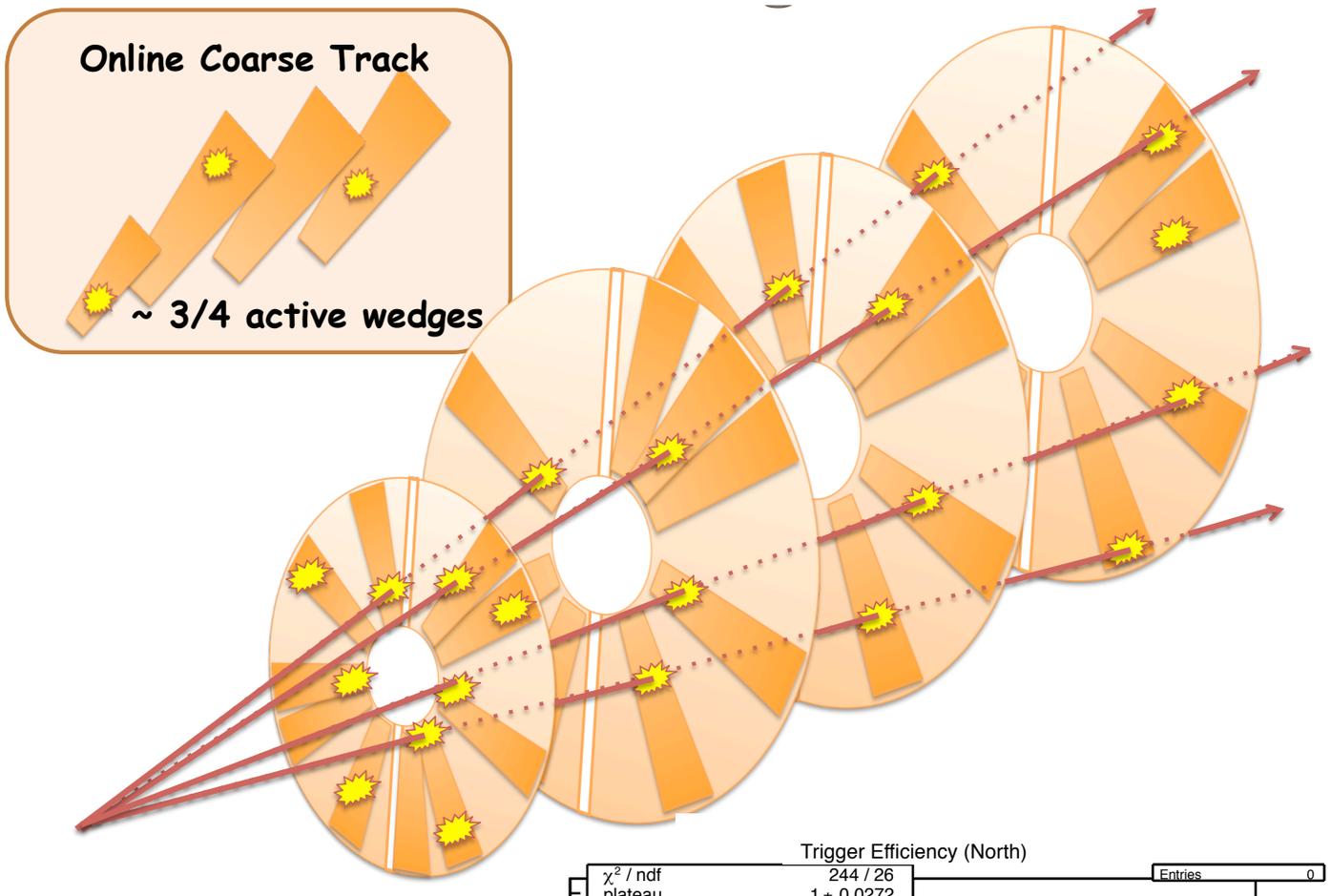
$N_{trk}^{offline}$ (p_T>0.4 GeV/c, |η| < 2.4)

Slide from Wei Lei, Rice University

Triggering on high multiplicity p+p at RHIC

PHENIX forward silicon vertex (FVTX)

N_{trk}^{FVTX} $(1.2 < |\eta| < 2.2) \geq 12$

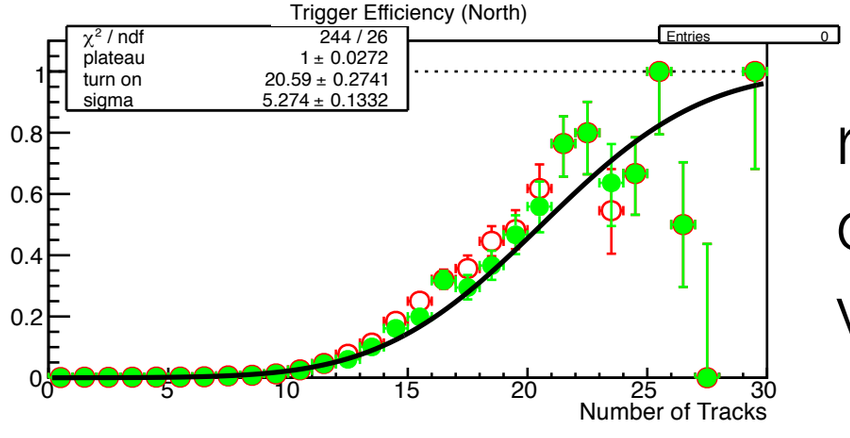


Run15 pp

100 Hz bandwidth for FVTX HighMulti Trigger

9 weeks of pp running assuming 30% uptime

300 Mevents to be accumulated
(~ x4 of Run8 dAu central)



rejection power of ~1500 in combination with a ±10 cm primary vertex trigger (based on BBC)

From PHENIX beam use proposal

Run-15 Proposal (22 cryo-weeks)

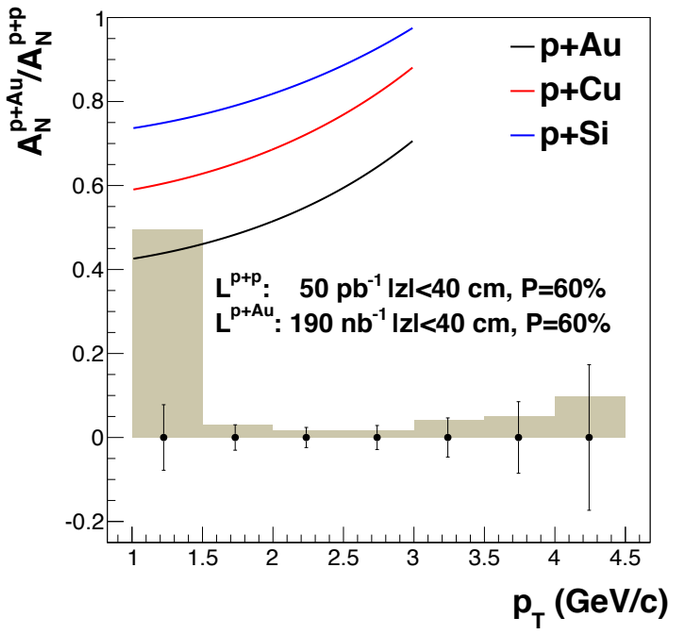
- p+p @ 200 GeV with transverse polarization for 9 weeks [Physics driven goal is 50 pb^{-1} recorded within $|z| < 40$ cm and $\langle \mathcal{P} \rangle = 60\%$]

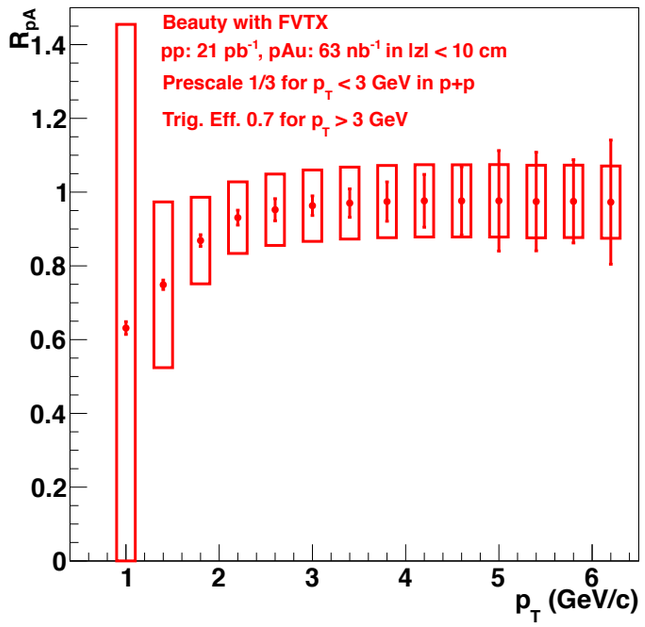
- p+Au @ 200 GeV with transverse polarization of the proton for 5 weeks [Physics driven goal is 190 nb^{-1} sampled within $|z| < 40$ cm and $\langle \mathcal{P} \rangle = 60\%$. We note that the request is with half the data switching the beams to Au+p.]

- p+Si @ 200 GeV with transverse polarization of the proton for 2 weeks [Physics driven goal is 450 nb^{-1} sampled within $|z| < 40$ cm and $\langle \mathcal{P} \rangle = 60\%$]

p+Au and p+Al

saturation physics; HF modification

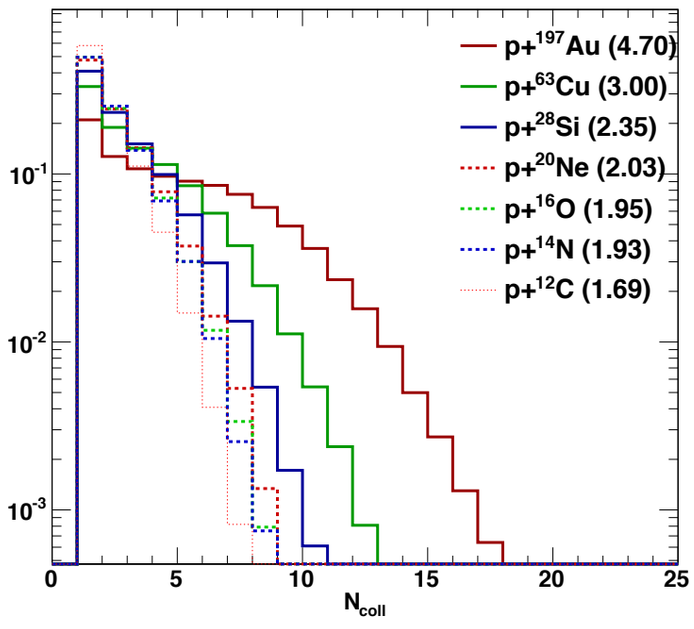


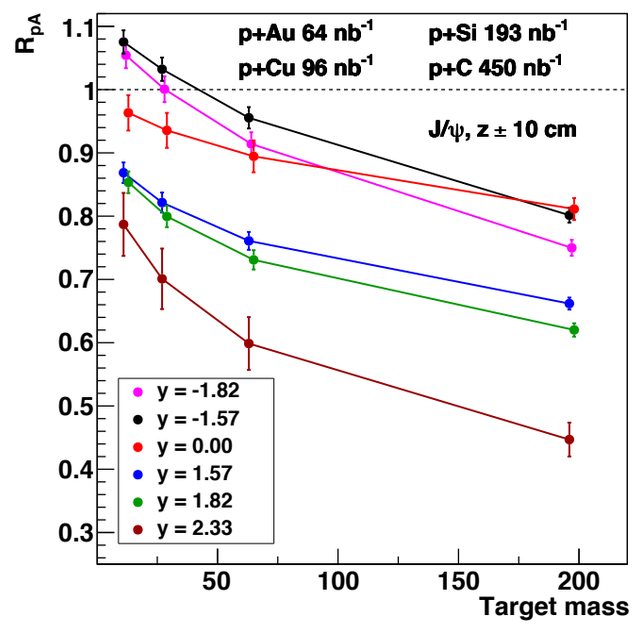


p+Au

175/nb * 0.3 * 0.7 * 0.95 * 5 ~ 70/nb

min bias geometry check; J/psi R_{pA}





1.3/pb * 0.3 * 0.7 * 0.95 * 2 ~ 500/nb

p+A concerns

- Run-15 is still only opportunity for p+A running
    - if we don't run p+Al now, it's a missed opportunity. Also demonstrates RHIC capability, versatility and relevance at a key time.
- p+Al already at increased risk because scheduled at end of Run-15 – two weeks meets our physics goals (and robust against problems like the power dip)
- scheduling details matter (from Phil's email).
  15 May (Fri), Begin 5 week $\sqrt{s}$=200 GeV/n pAu physics run
  19 June (Fri), End 5 week $\sqrt{s}$=200 GeV/n pAu physics run
    - 10 Feb to 4 May is 11 weeks, 5 days
    - starting p+Au on a Friday (15 May) is not optimal
- extend p+p run, but not to May 4, allows starting p+Au early in work week to have smooth running before weekend (possibilities to start p+Au could include May 7, 11)
- with continued excellent RHIC performance, aim for quick switchover from p+p to p+Au, keep p+Al in schedule