

Goals of Workshop

- Update each other on technical status/issues/tasks
 - simulations
 - pixel layer
 - barrel strips
 - endcap mini-strips
 - mechanical, daq, trigger, HBD/TPC/VTX studies
- Decide on R&D plan for JY03 / US FY04
- Agree to schedule for proposal to DOE
 - responsibilities and deadlines
 - » LOI to collaboration (March 03)
 - » CDR to DOE Fall/Winter 03

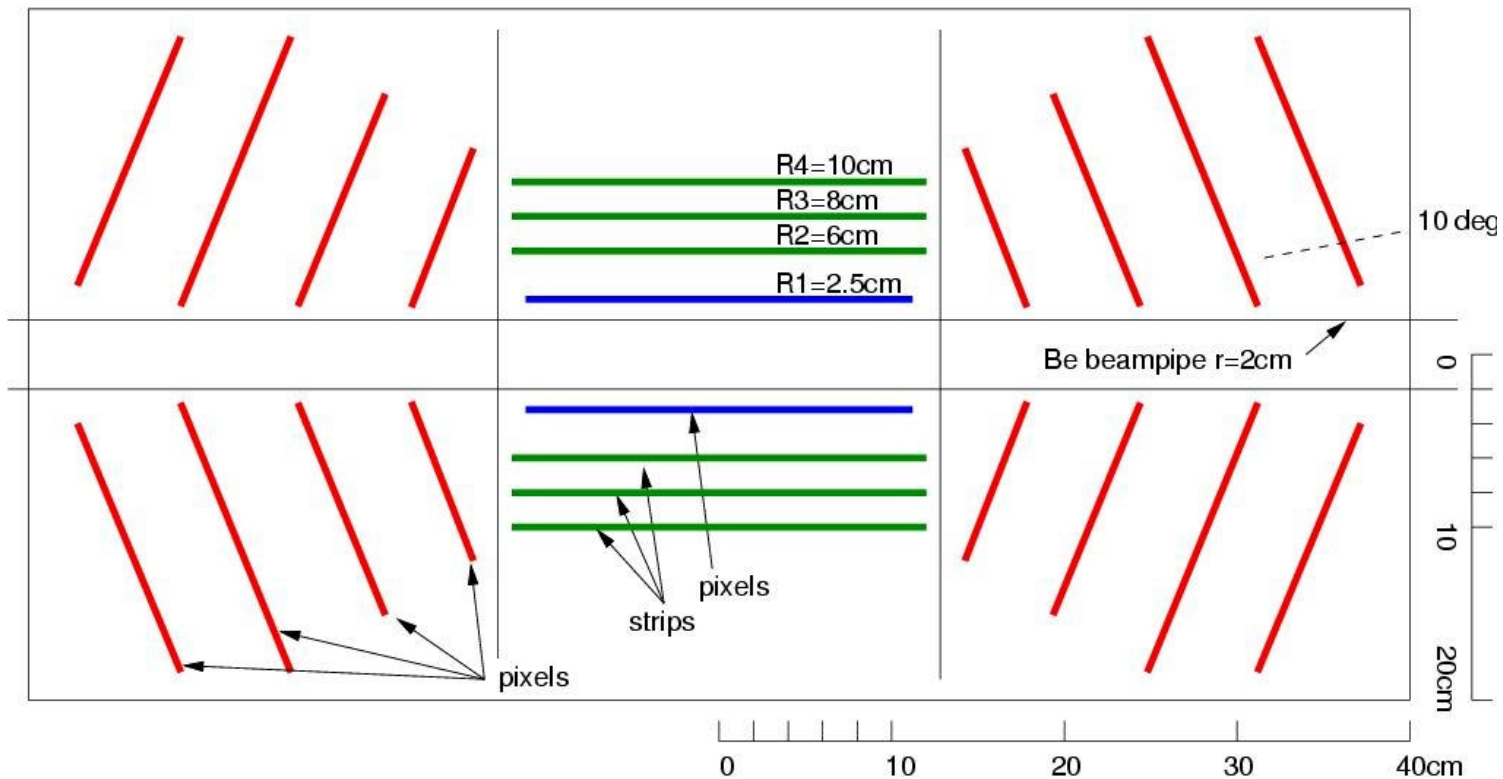


Intro To Physics

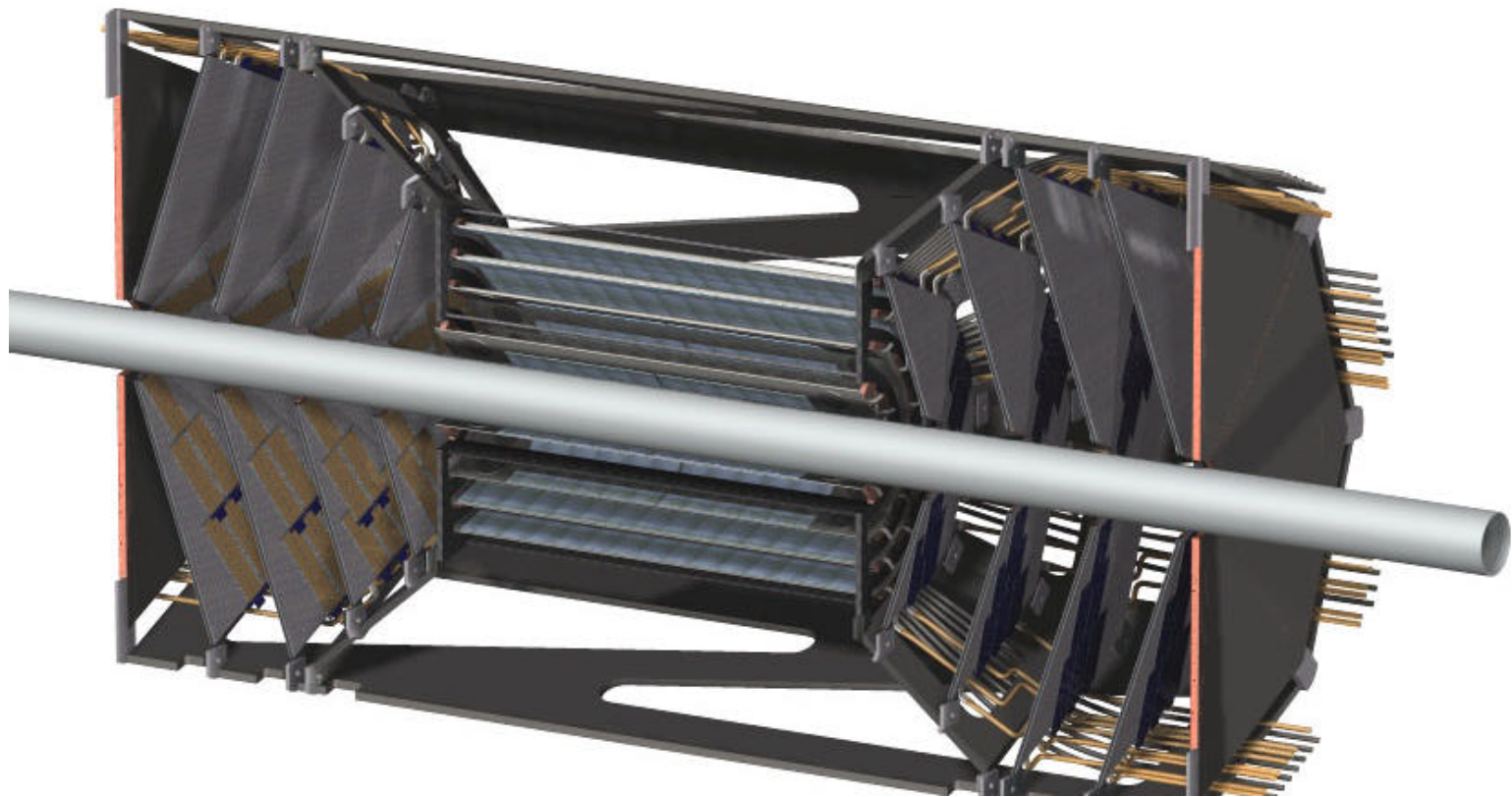
- Physics priorities
 - spin carried by gluons: ΔG vs x
 - modification of gluon structure function in nuclei
 - properties of earliest, densest stage of Au+Au
- Charm
 - low-pt, $D \Rightarrow e+X, \mu +X$, displaced electrons, muons
 - high-pt, $D \Rightarrow K\pi$
- Beauty
 - $B \Rightarrow J/\psi \Rightarrow \mu^+\mu^-$ or e^+e^- , displaced J/ψ
 - high-pt $B \Rightarrow e+X$, displaced electrons



Strawman Design



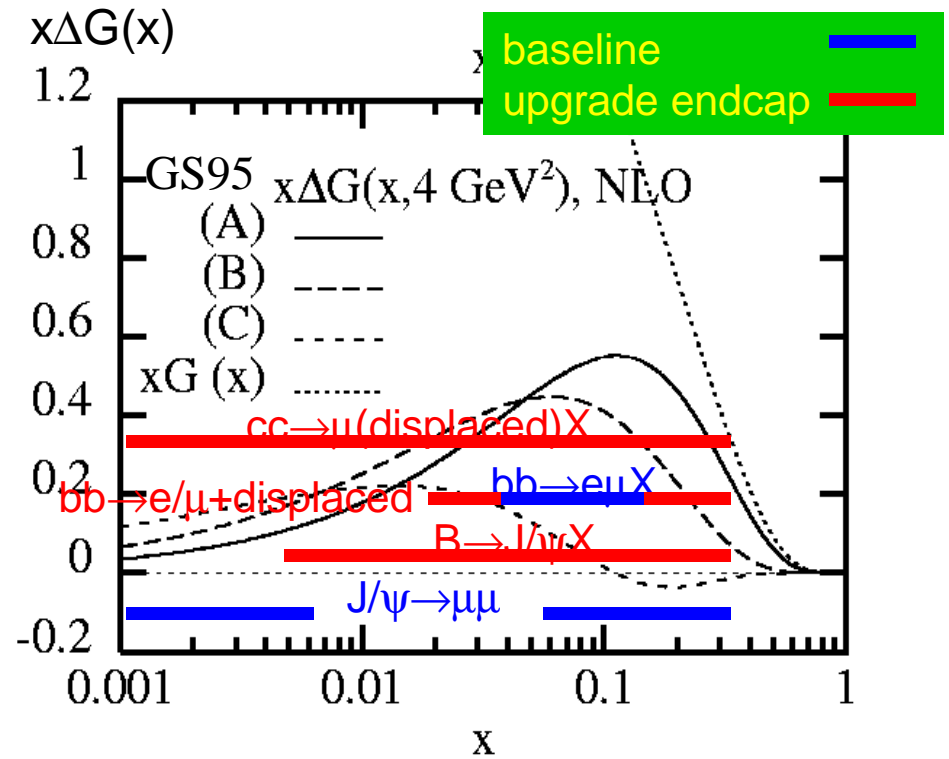
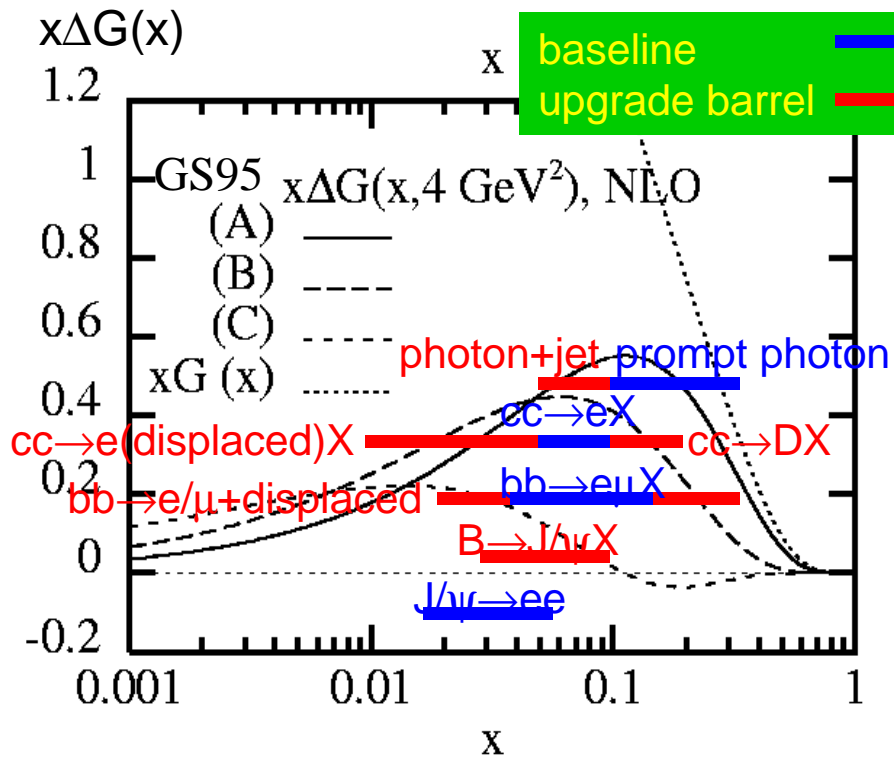
- 1.5% X/X_0 per layer
- 1st layer as close to beam-pipe as possible
- rely on PHENIX central + muon arms for PID, momentum
- 4 layers => accurate, redundant DCA



preliminary design by Hytec

ΔG Before vs After Si Vertex

(Mar 03, PLM checking/revising x-ranges)

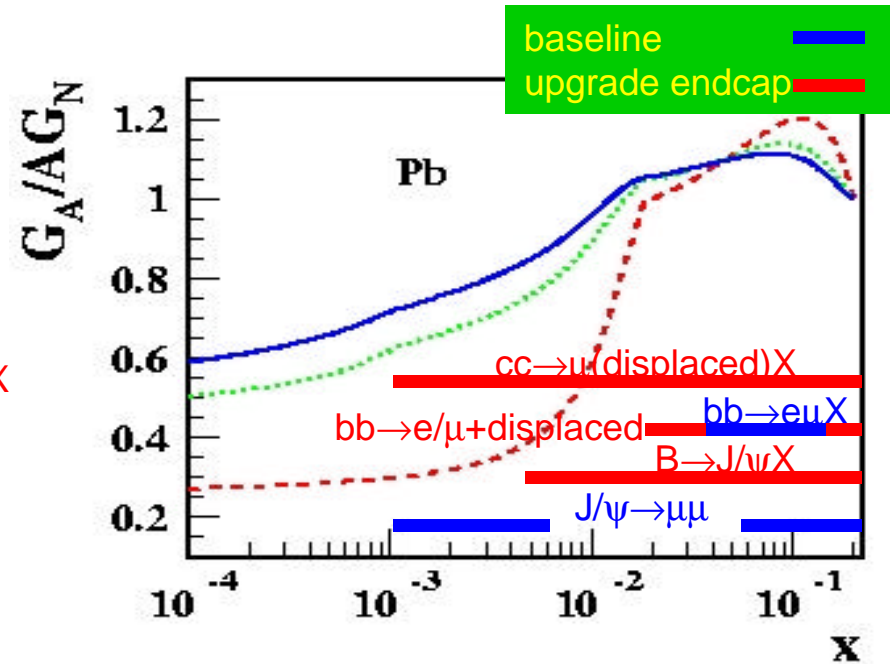
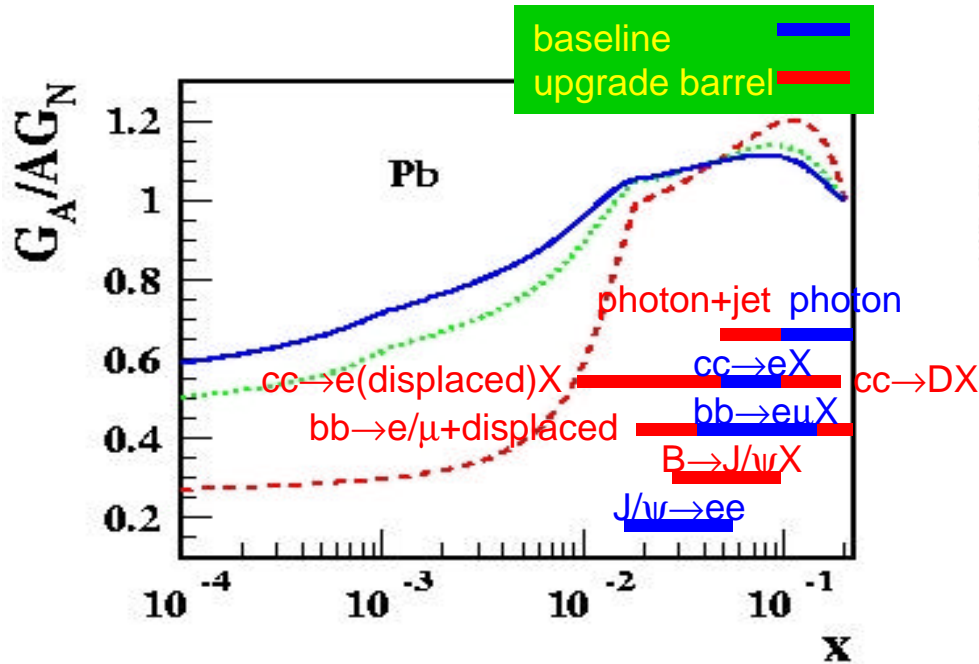


pA Charm, Beauty Production

- Extracting gluon structure function nuclei, shadowing
 - vertex detector provides broader range in x
 - » into predicted shadowing region

L. Frankfurt, M. Strikman
 Eur. Phys. J A5, 293 (99)

- - - $Q = 2 \text{ GeV}$
⋯ $Q = 5 \text{ GeV}$
— $Q = 10 \text{ GeV}$



AA Charm, Beauty Production

- High-pt heavy-quarks may lose less energy in the plasma
 - Kharzeev et al. predict reduced gluon Bremsstrahlung
- Does charm flow?
 - requires going to high-pt to distinguish hydro/pythia
- Charm is critical baseline for J/ψ suppression
- Charm provides key info. for di-lepton continuum
- Possible charm enhancement in earliest stage of reaction

- Goals require broad-range in pt and y coverage
 - spectra and yields of open charm, beauty
 - » pp, pA and AA
- Strategy
 - different decay channels → complementary pt, y ranges

