Hadron Spectra from PHOBOS

Gábor I. Veres / MIT
for the
PHOBOS Collaboration

Quark Matter 2004
Oakland – January 11-17

PHOBOS Collaboration



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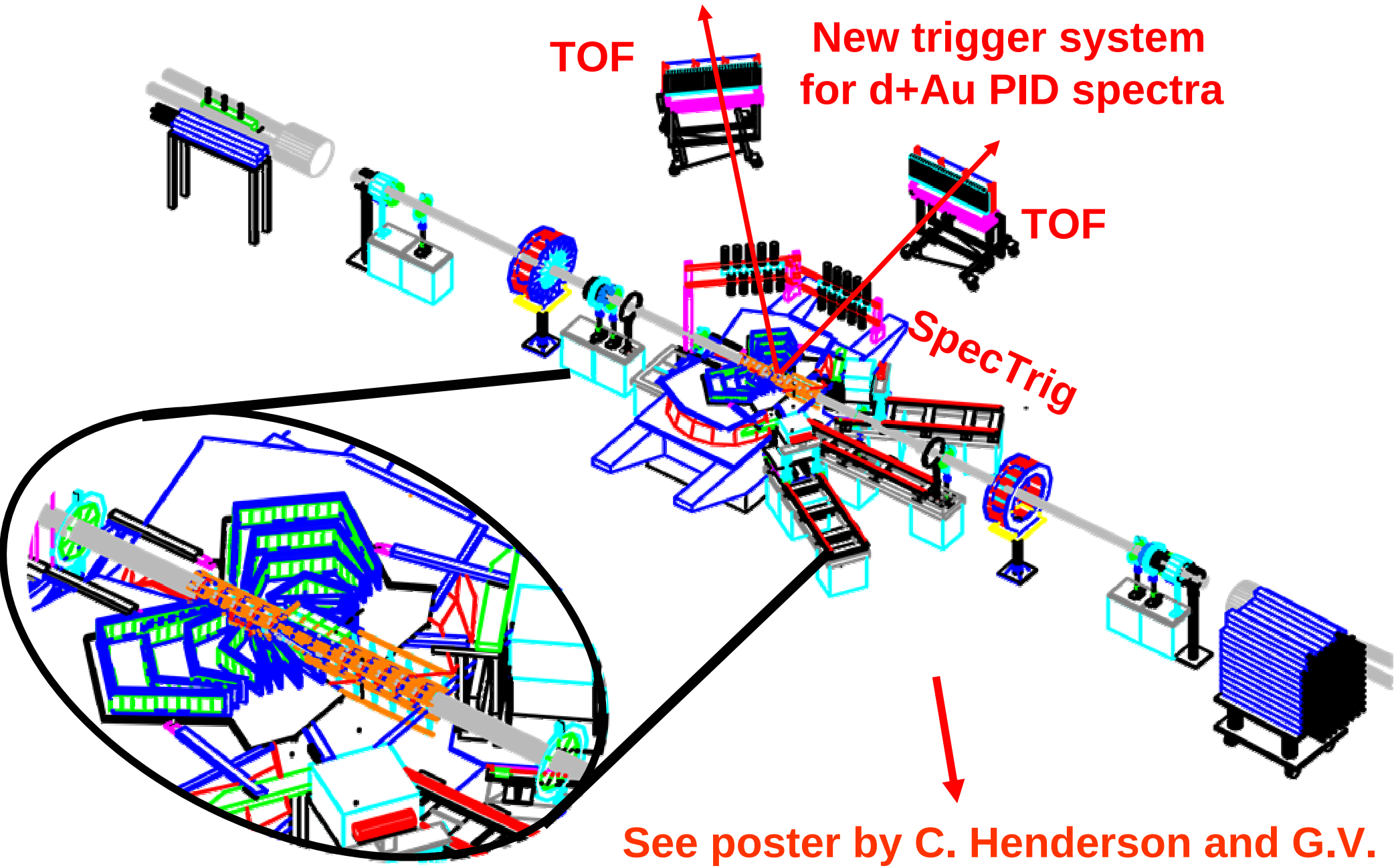
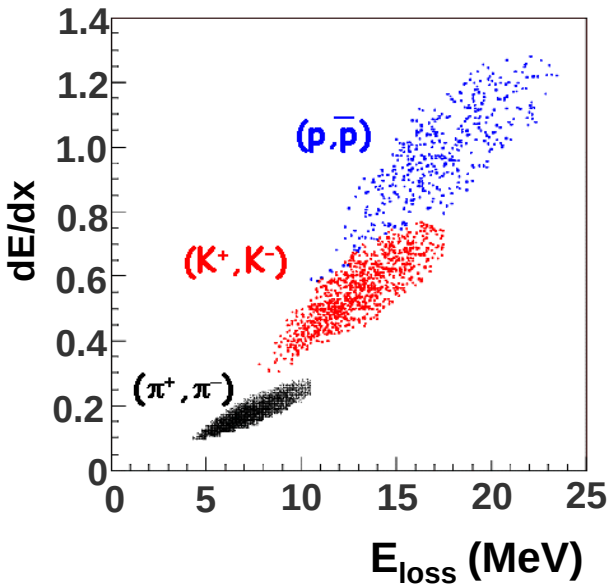
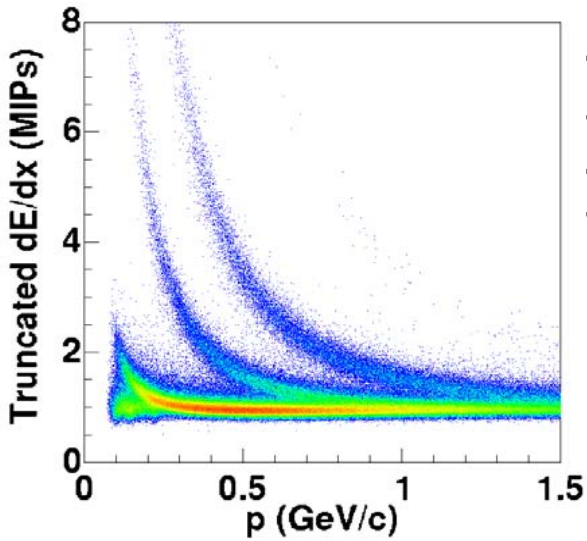
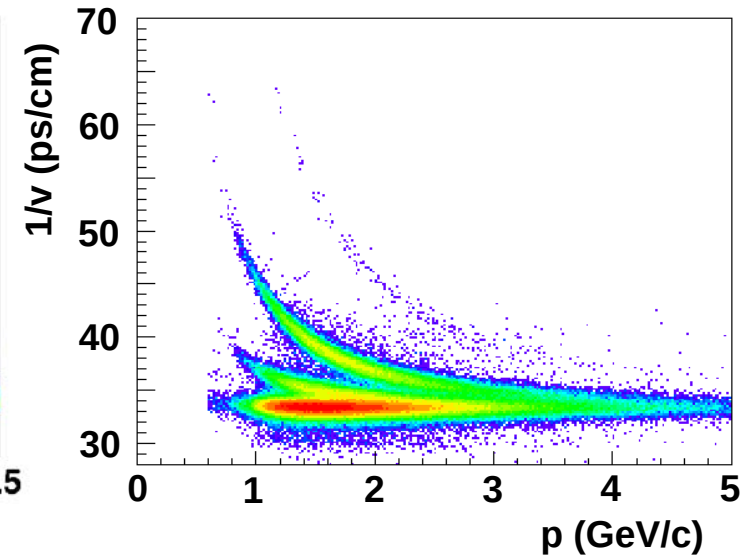
PHOBOS Detector System

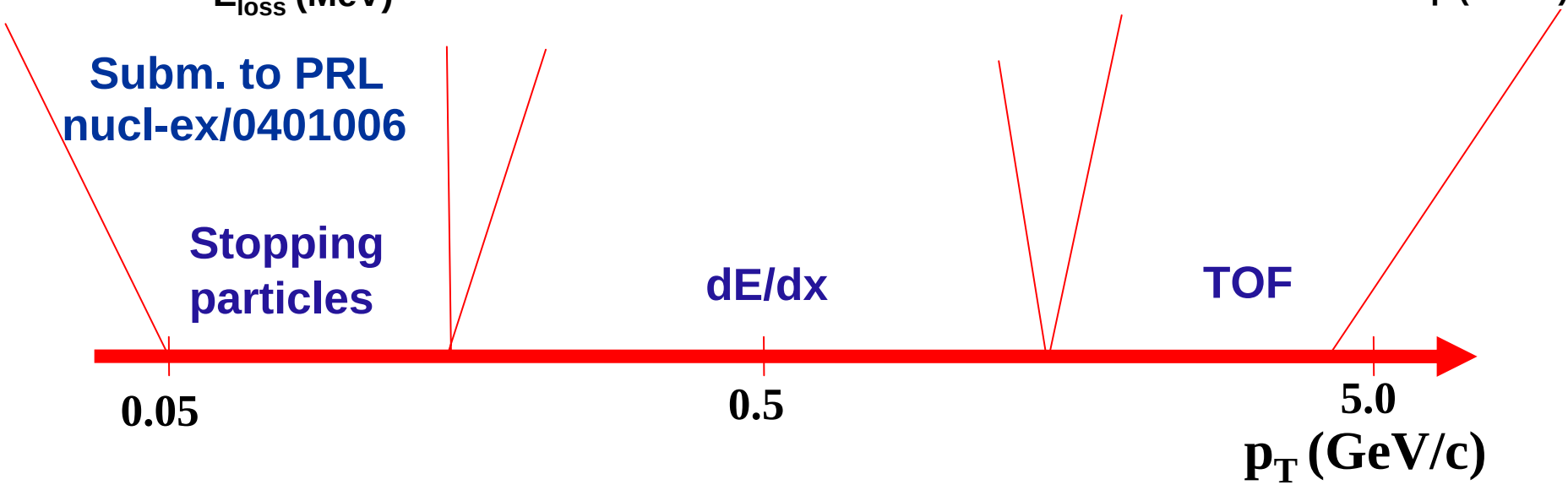


PHOBOS PID Capabilities



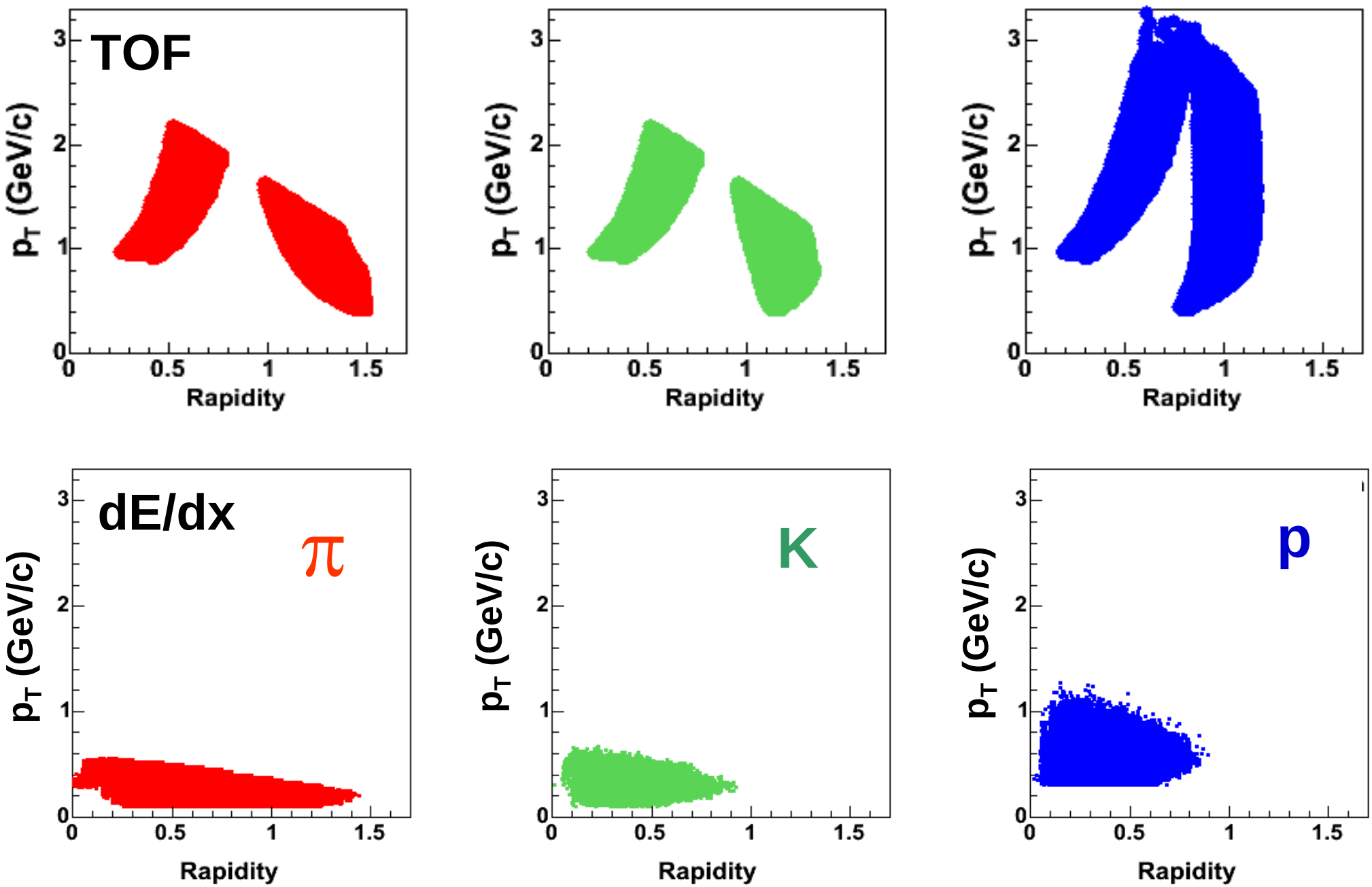




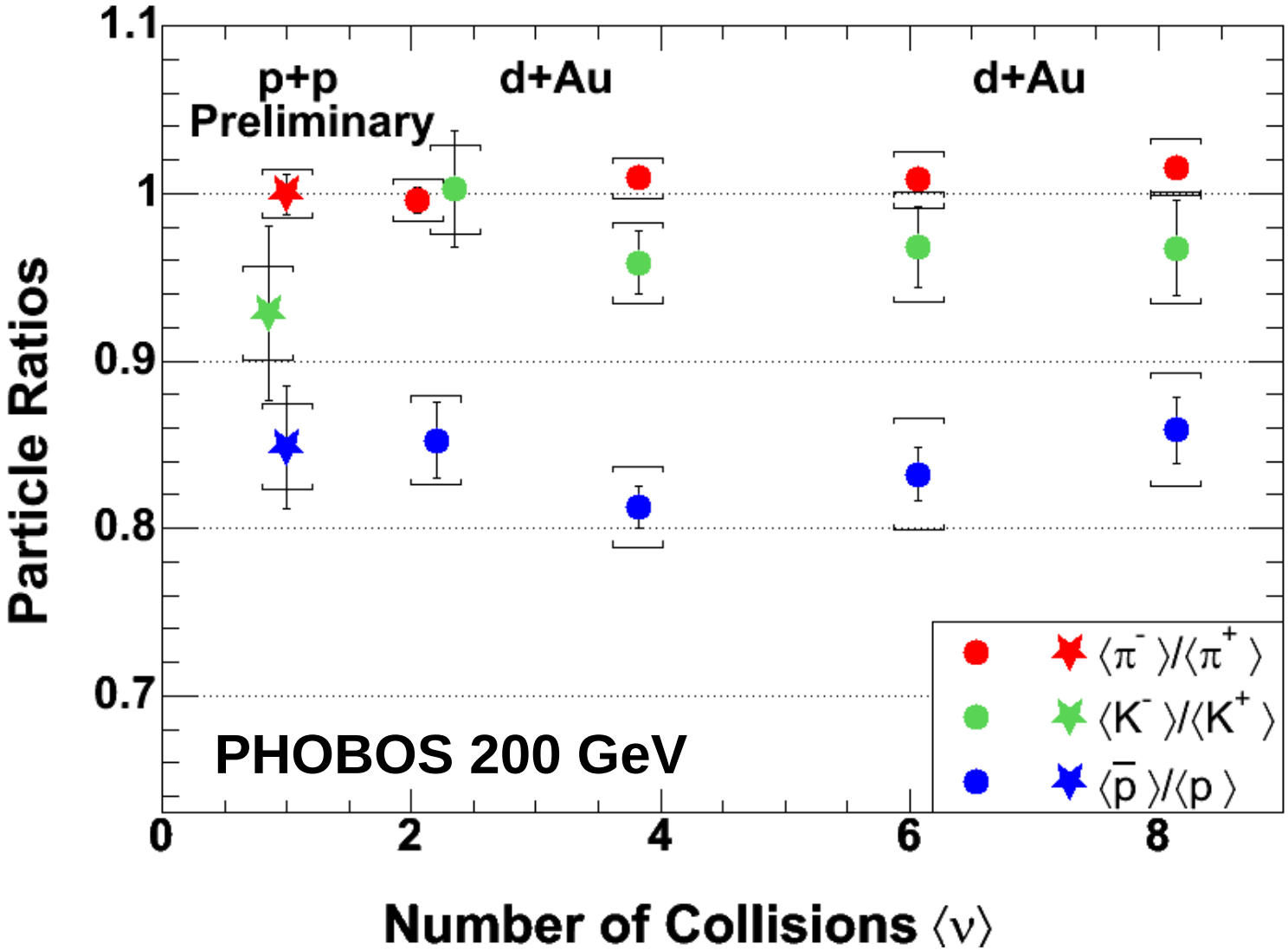


Particle ID from low to high p_T

Acceptance for PID Analyses



Particle Ratios Using dE/dx PID

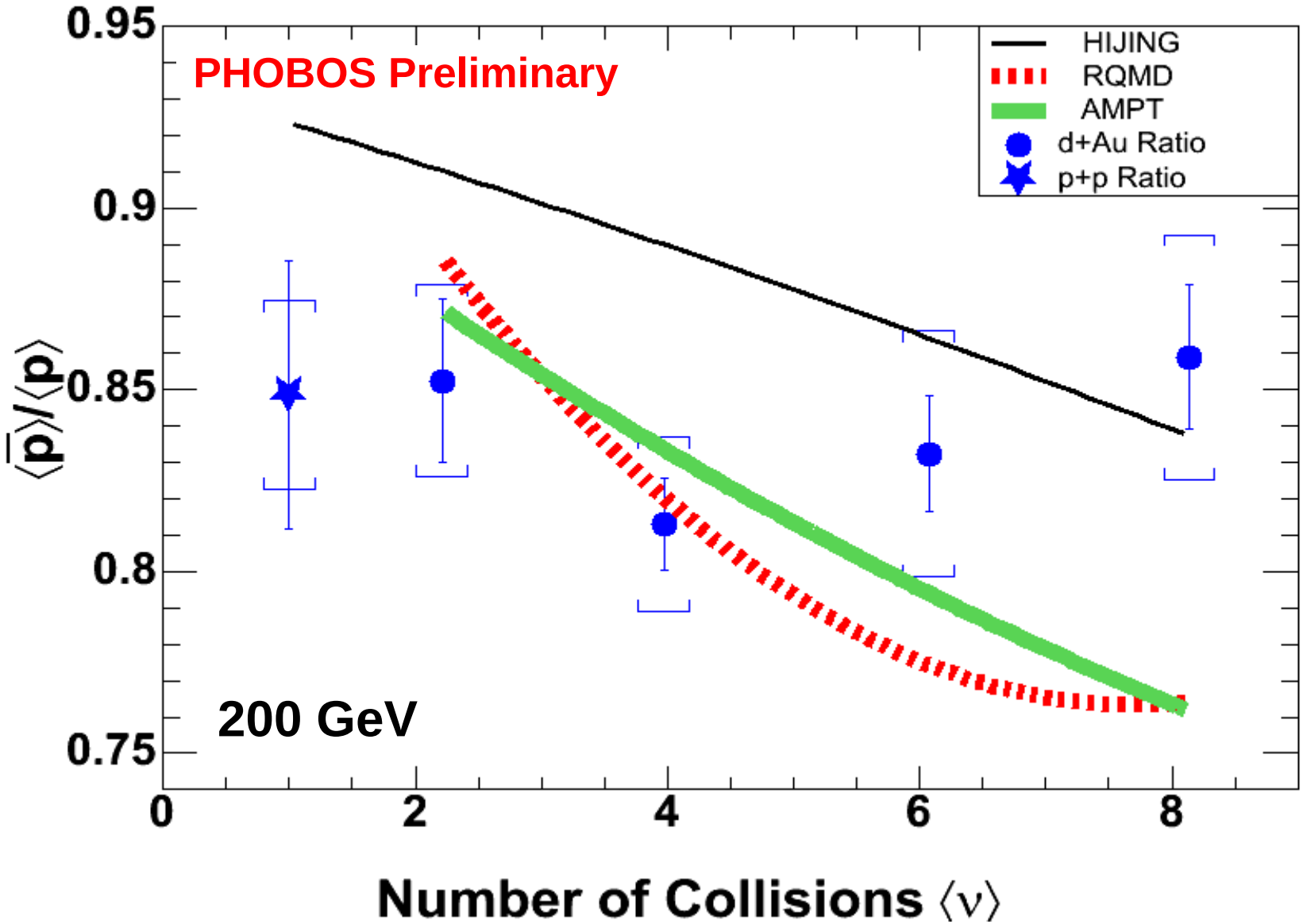


d+Au: $\nu = N_{coll}/N^{d}_{part}$

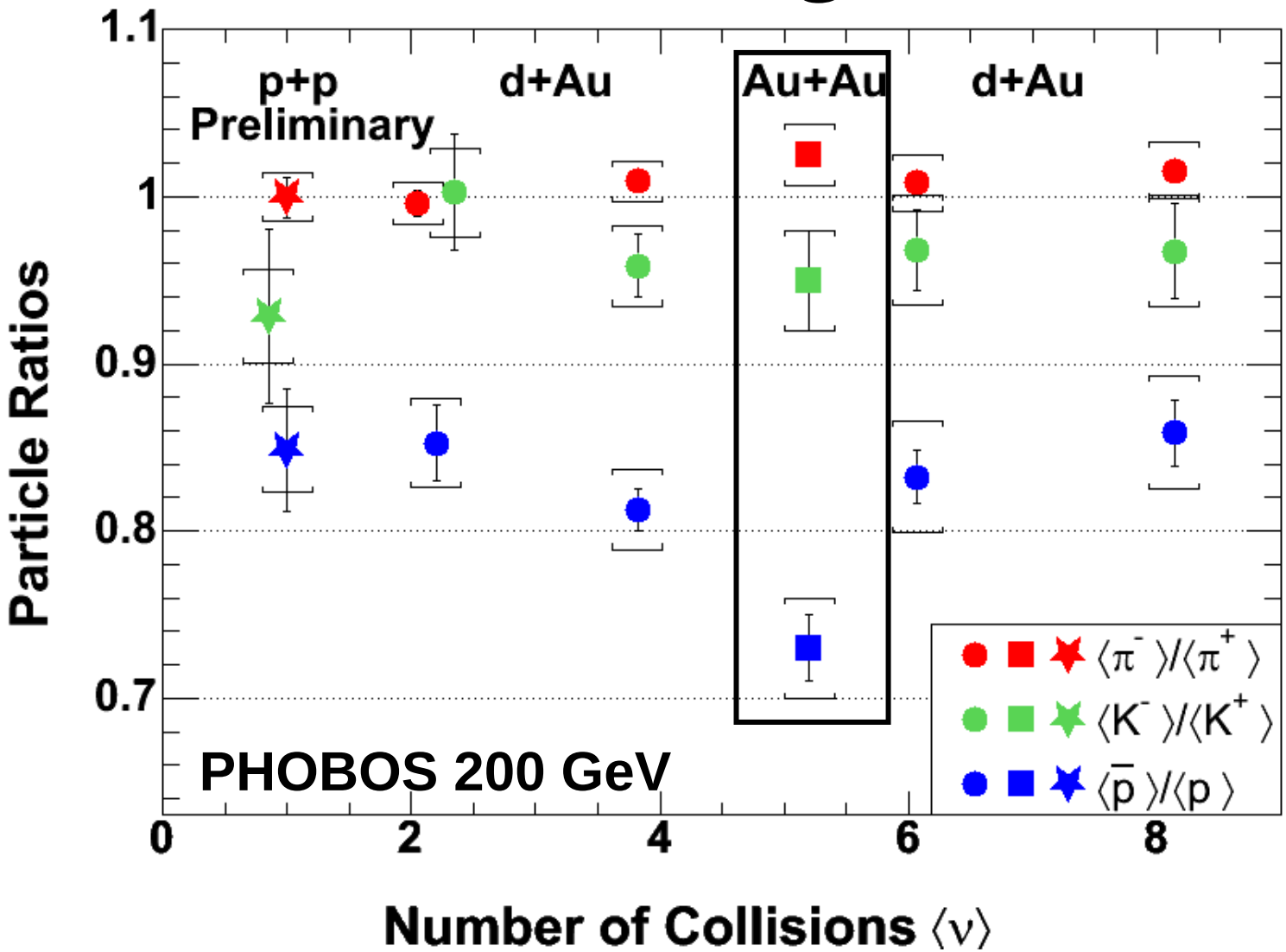
Subm. to PRC nucl-ex/030913

→ See poster by A.A. Bickley

...p̄/p Compared to Models



Particle Ratios Using dE/dx PID



d+Au: $\nu = N_{coll}/N^{d}_{part}$

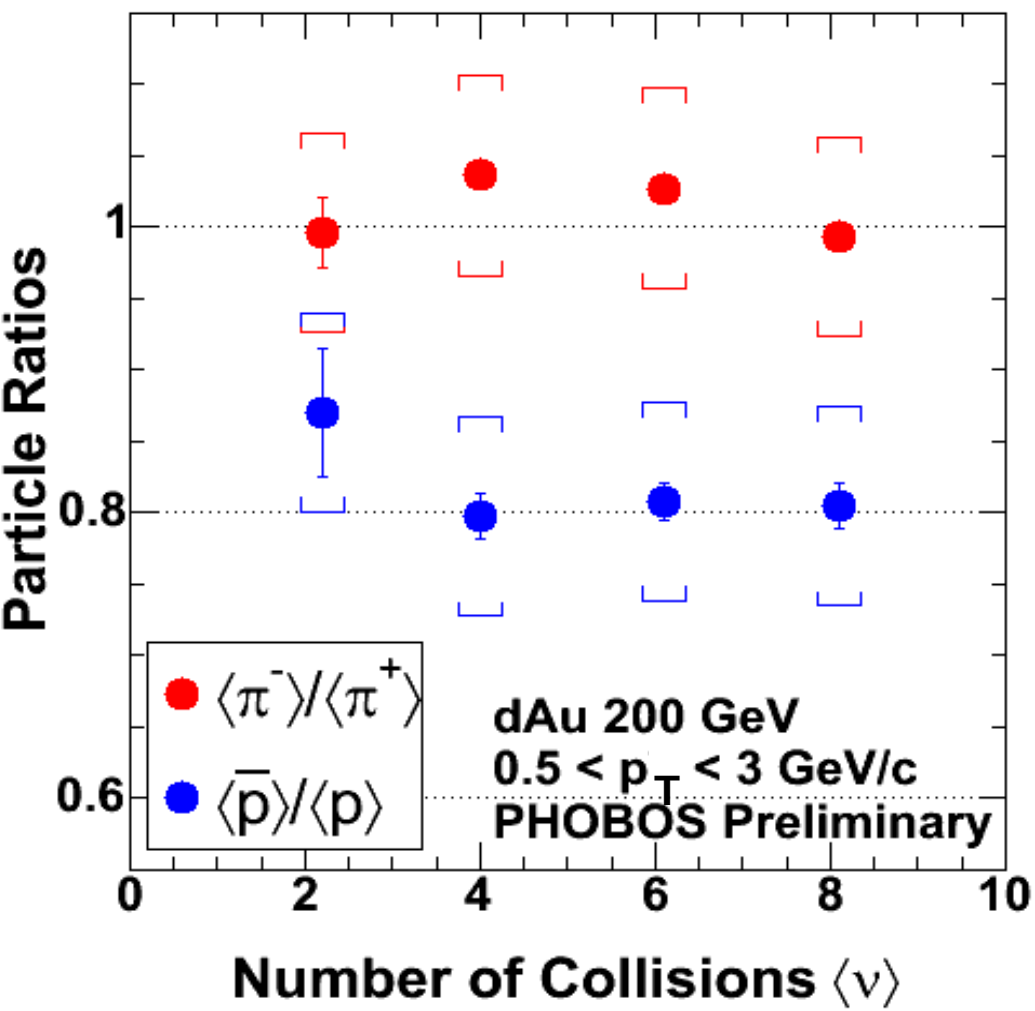
Au+Au: $\nu = N_{coll}/(N_{part}/2)$

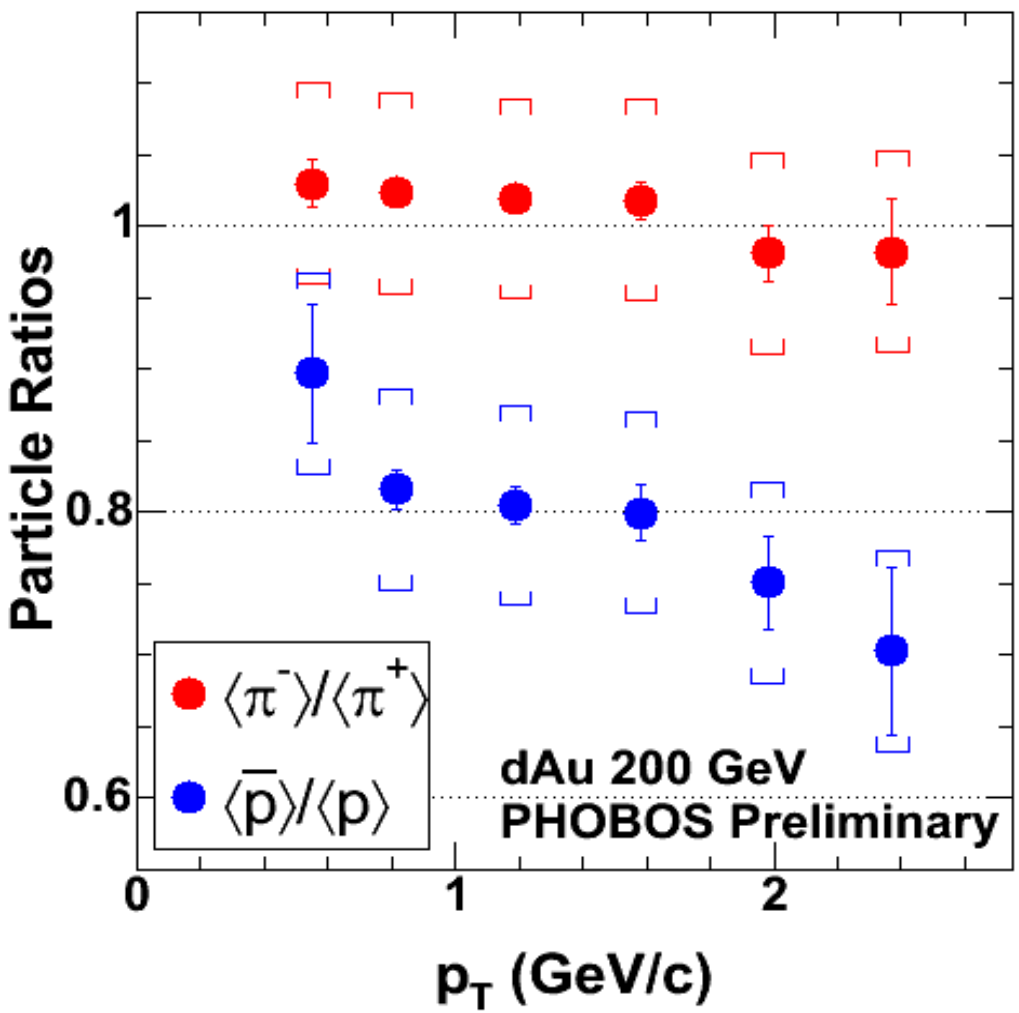
Subm. to PRC nucl-ex/030913

→ See poster by A.A. Bickley

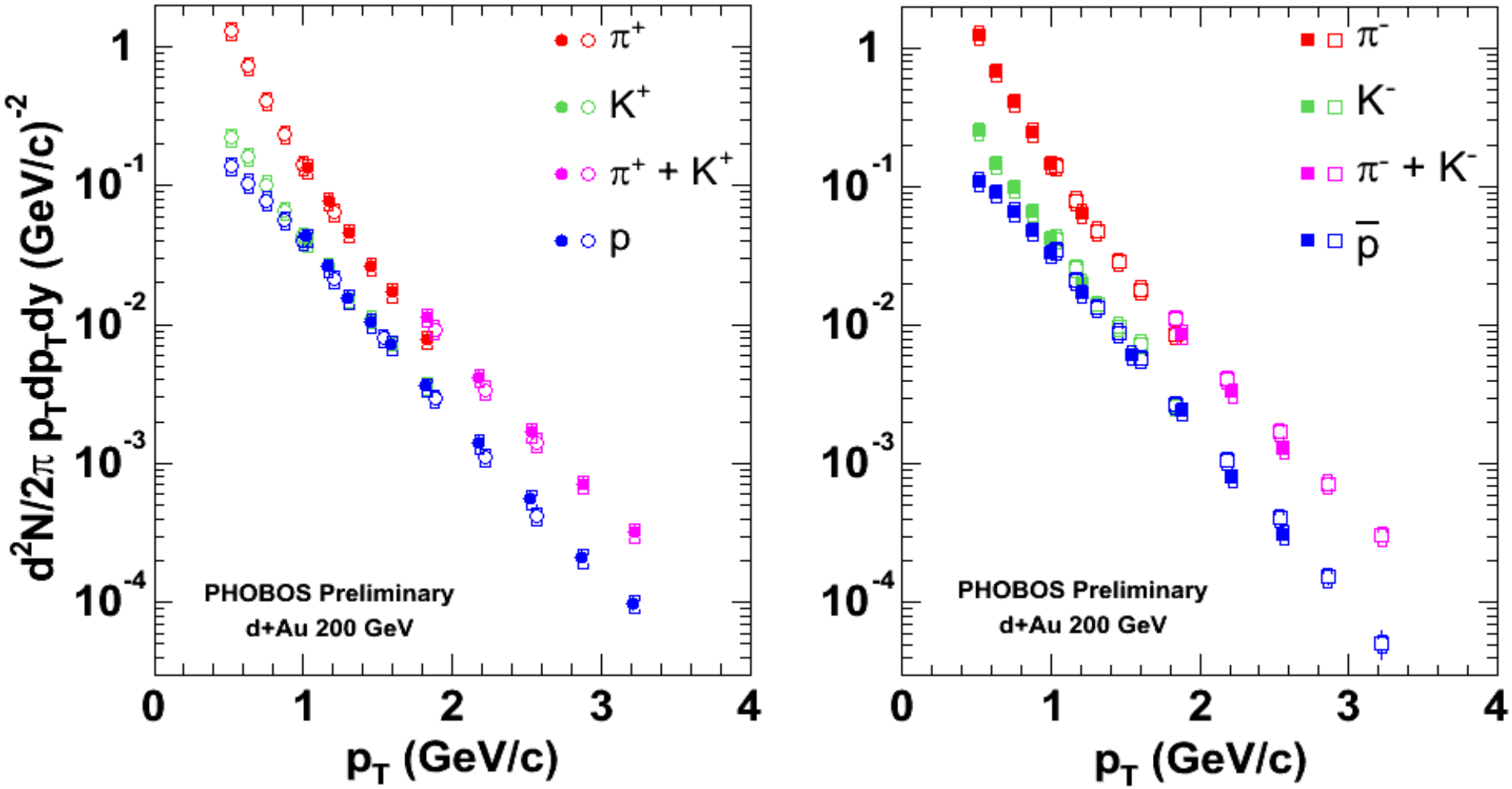
Particle/Antiparticle Ratios using the TOF

d+Au





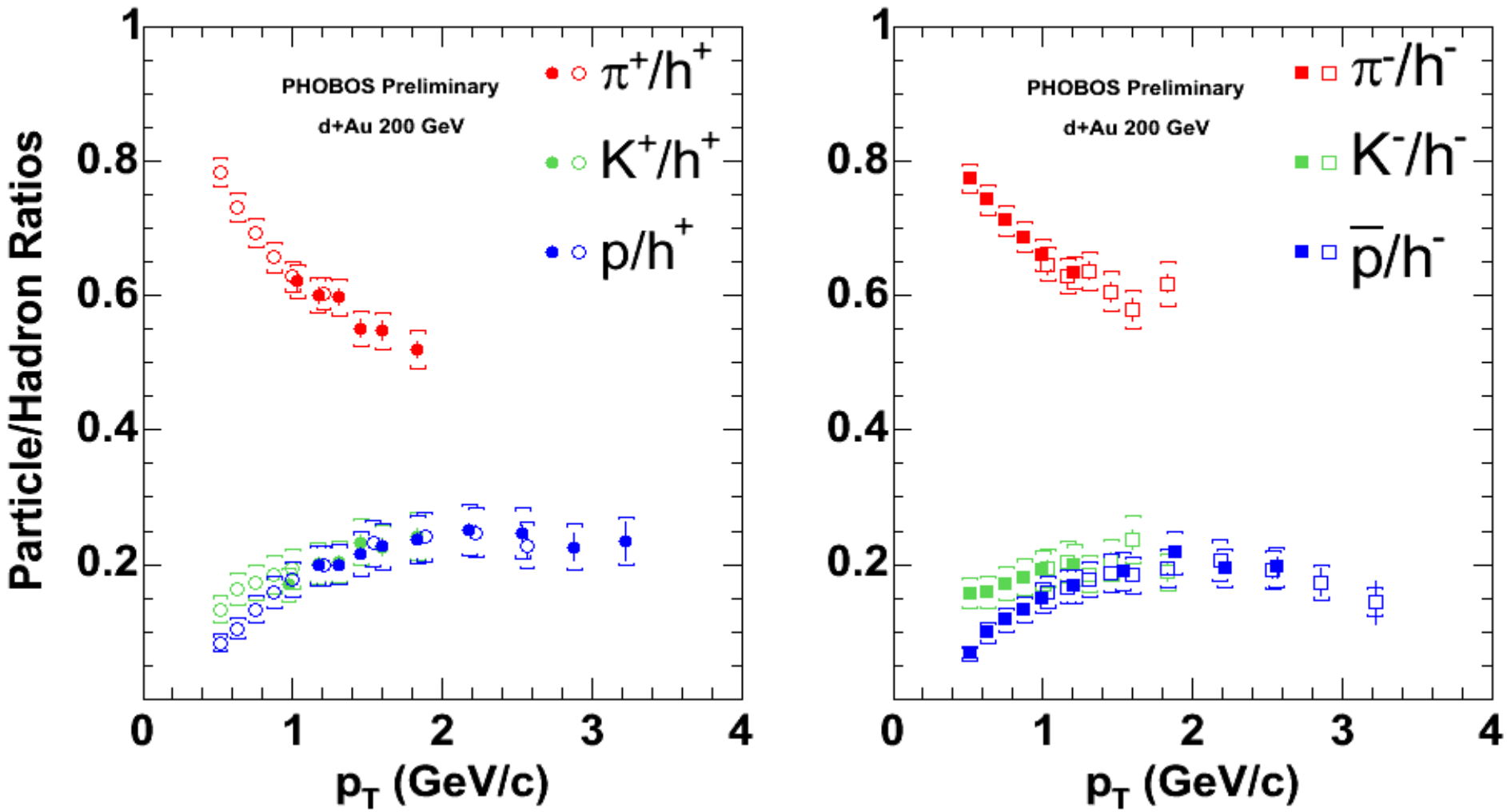
Identified p_T -spectra in d+Au



Scale uncertainty: 15%

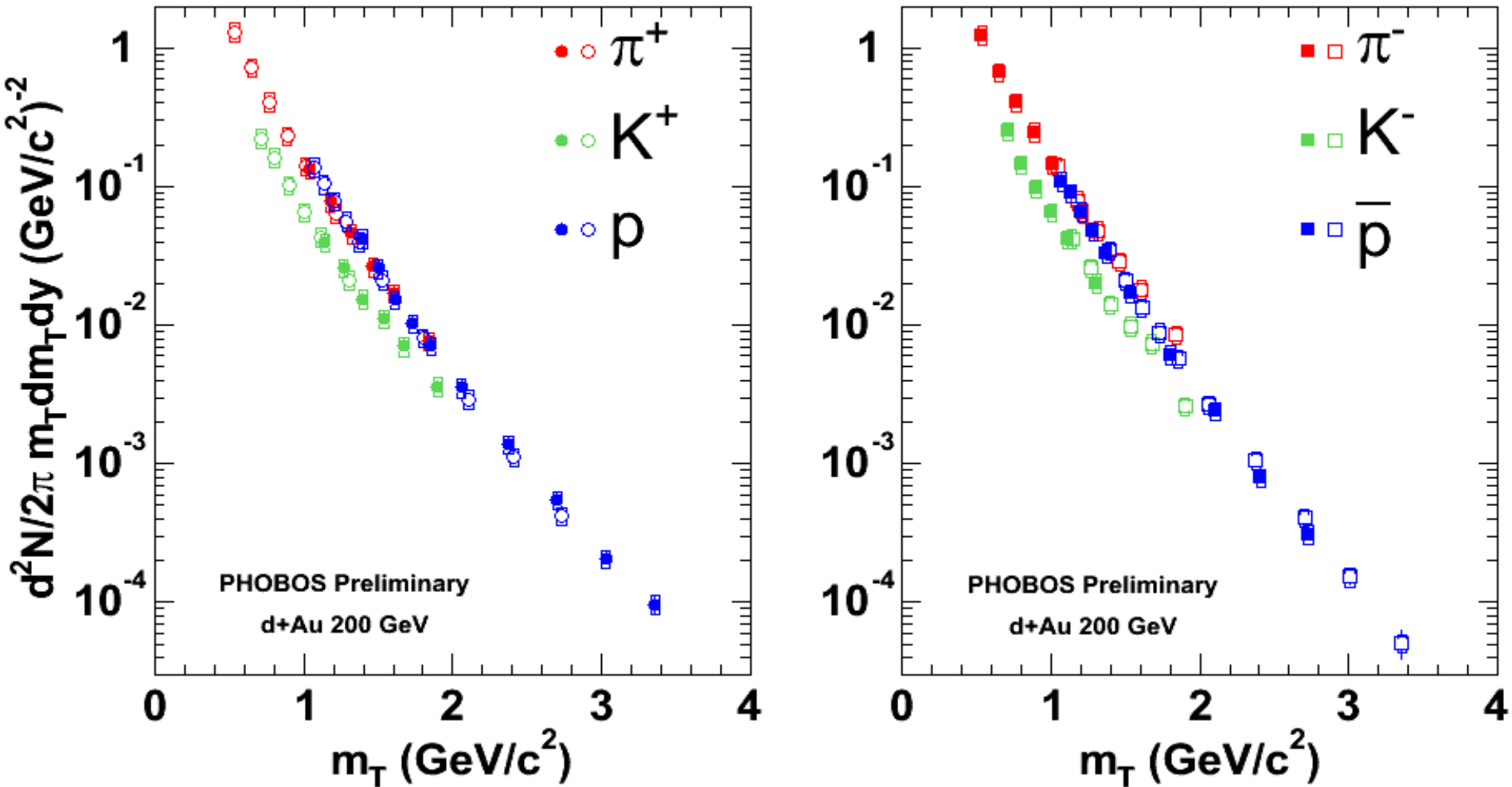
Not feed-down corrected

Particle Composition in d+Au



Not feed-down corrected

Identified m_T-spectra in d+Au

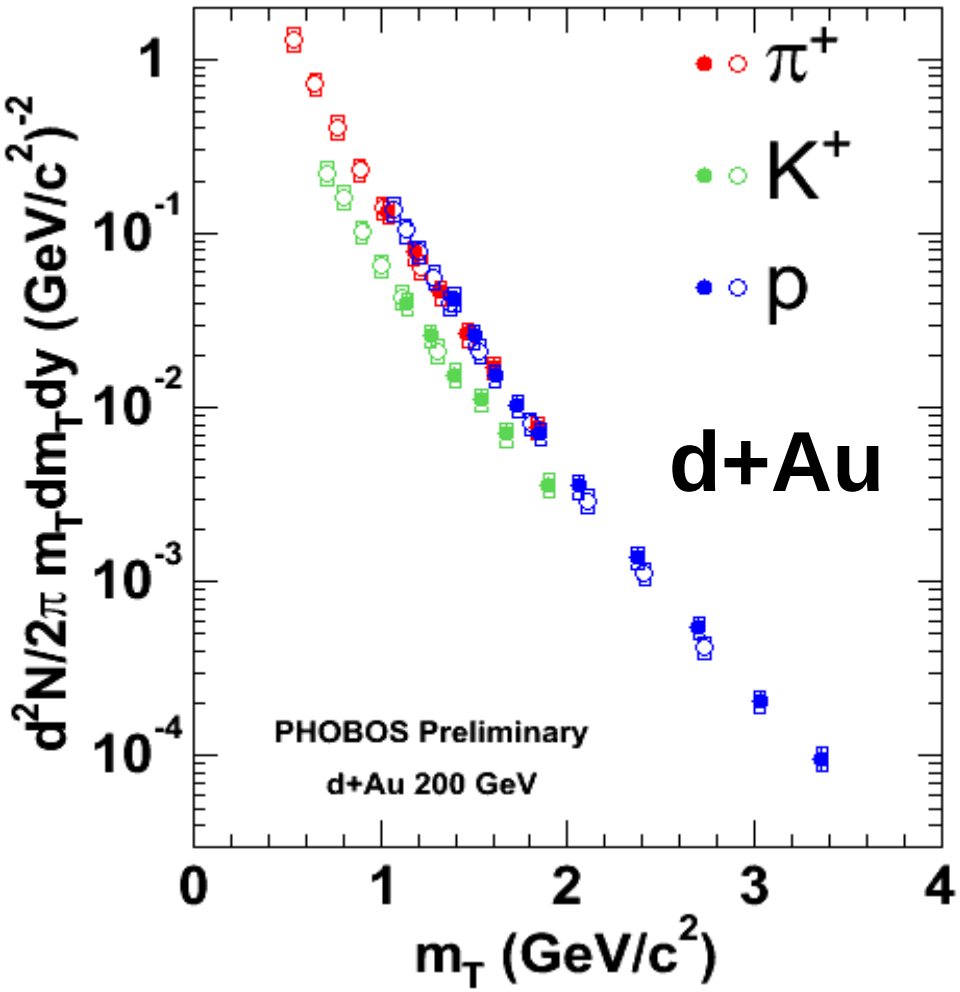


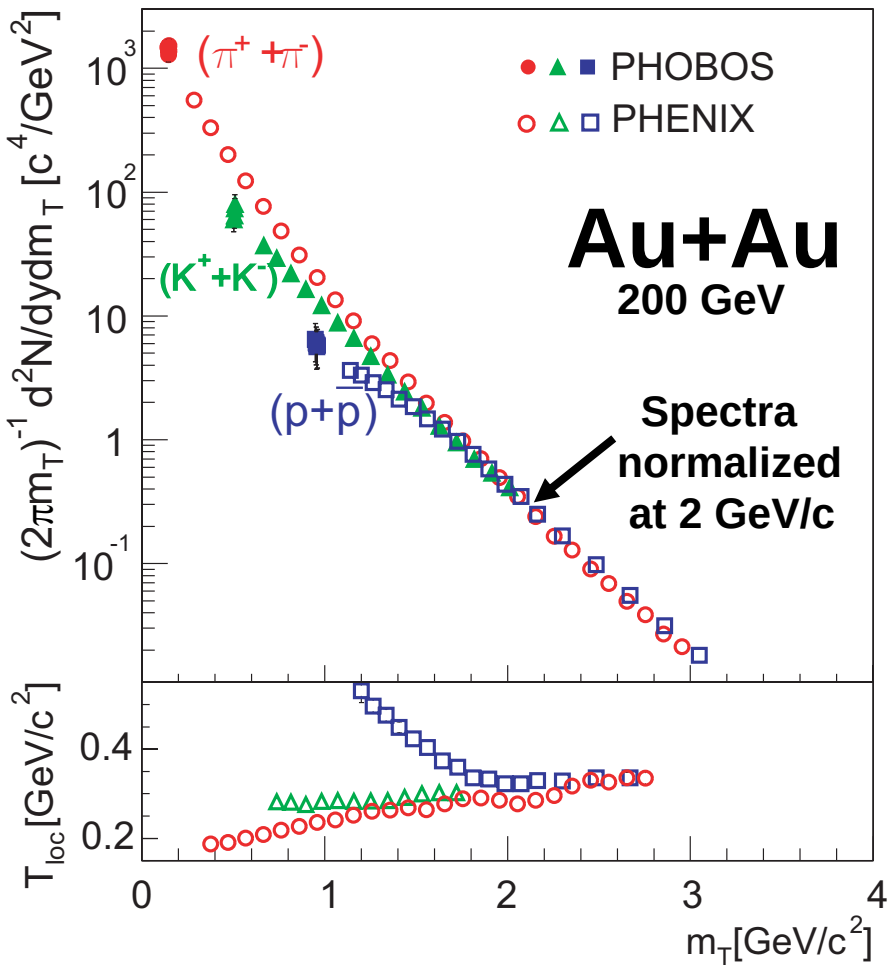
$$m_T^2 = m^2 + p_T^2$$

Scale uncertainty: 15%

Not feed-down corrected

Identified m_T-spectra at 200 GeV



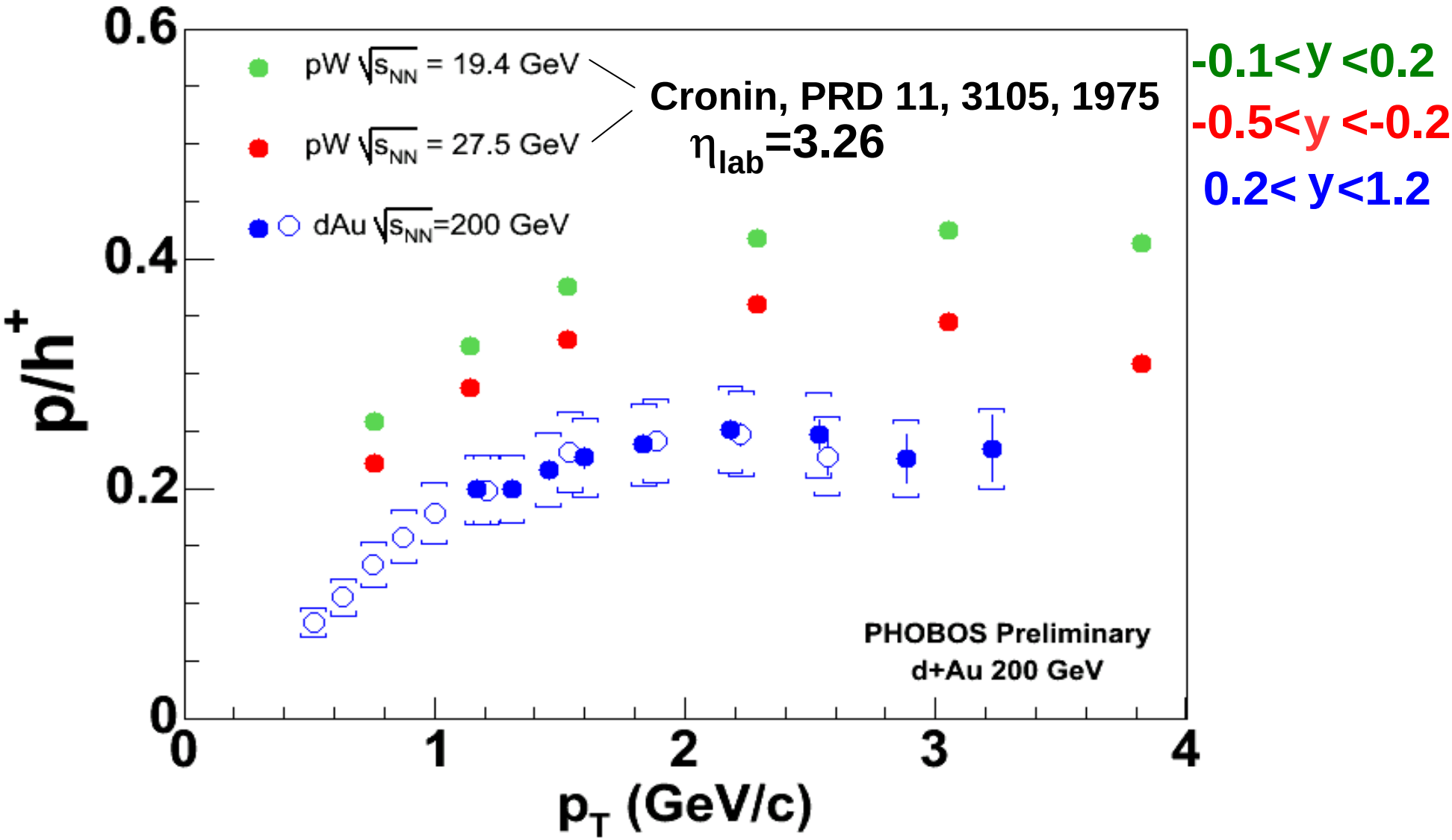


Scale uncertainty: 15%

Not feed-down corrected

Subm. to PRL
nucl-ex/0401006

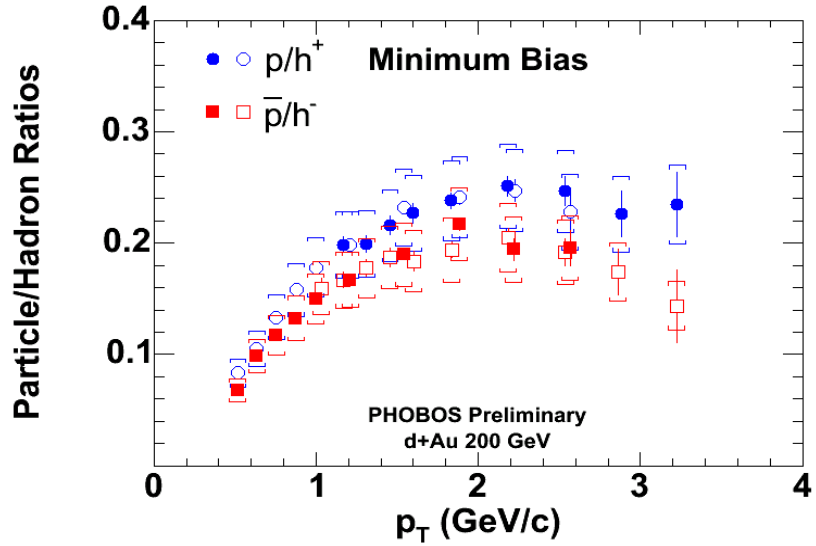
Comparison: Low Energy d+Au



Not feed-down corrected

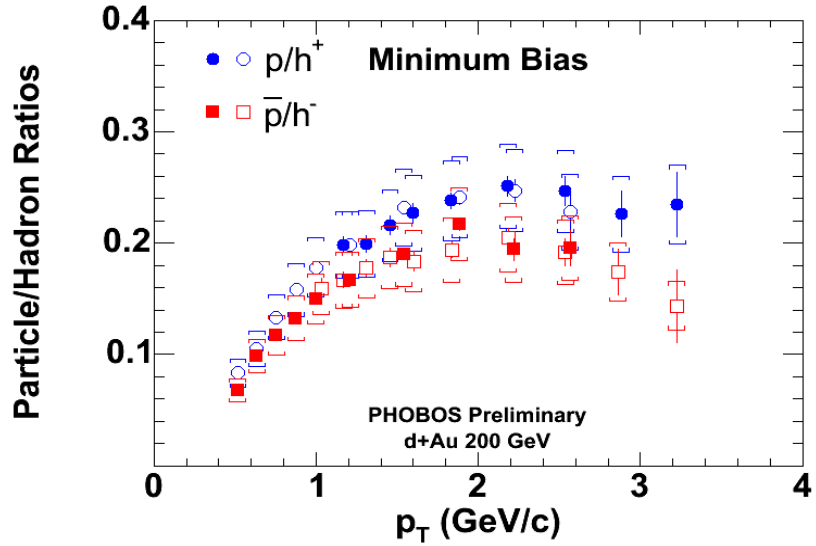
Centrality Dependence of p/h^+, $\bar{p}/h^-$

d+Au
200 GeV



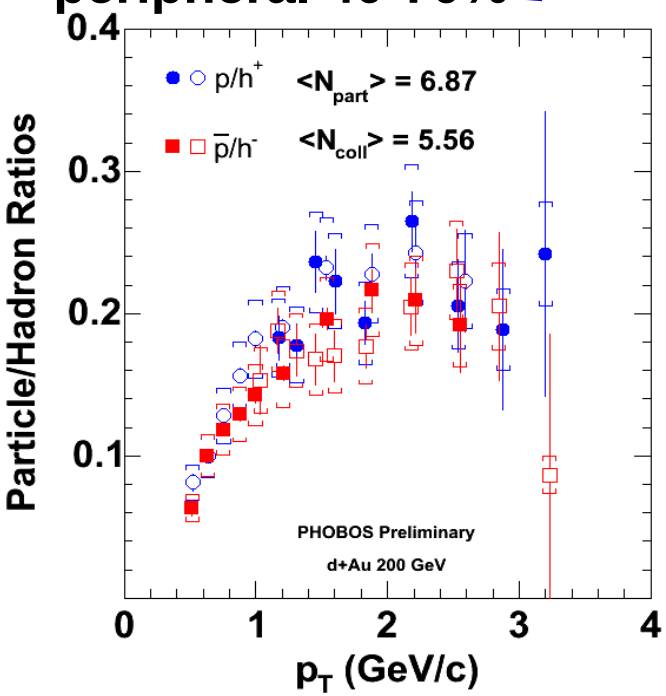
Centrality Dependence of p/h^+, $\bar{p}/h^-$

d+Au
200 GeV

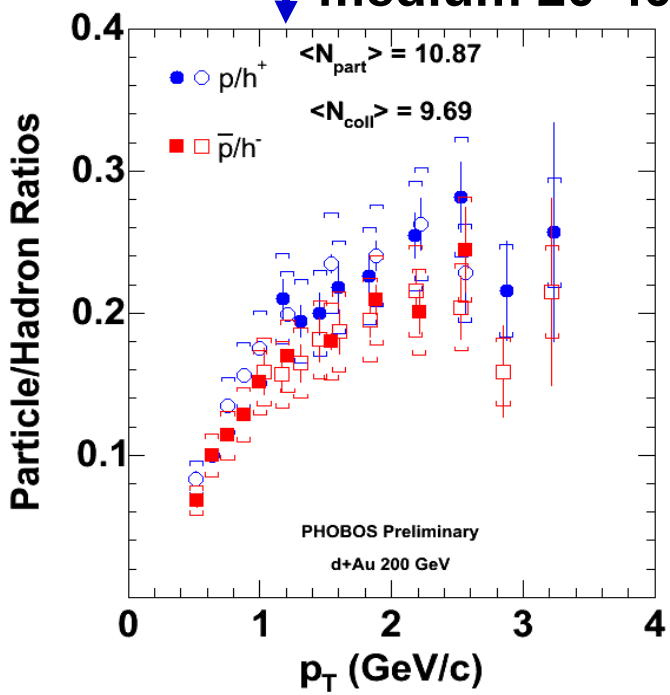


Centrality dependence

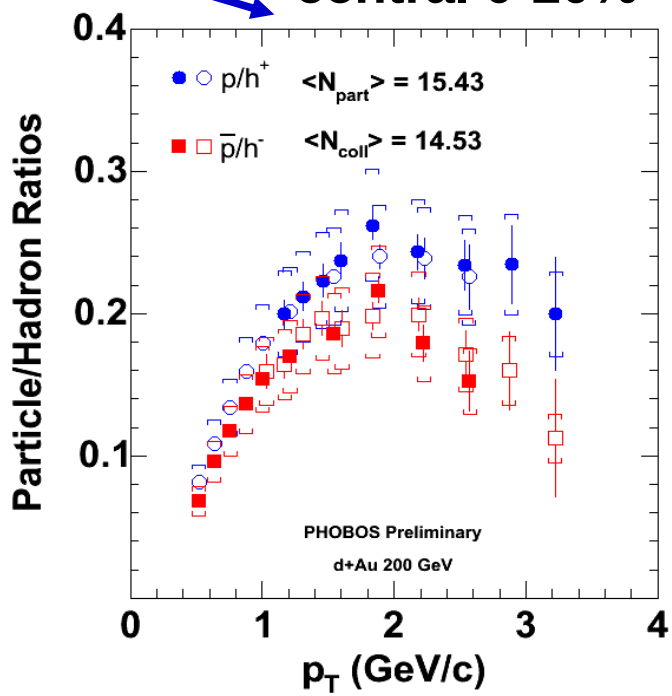
peripheral 40-70%



medium 20-40%

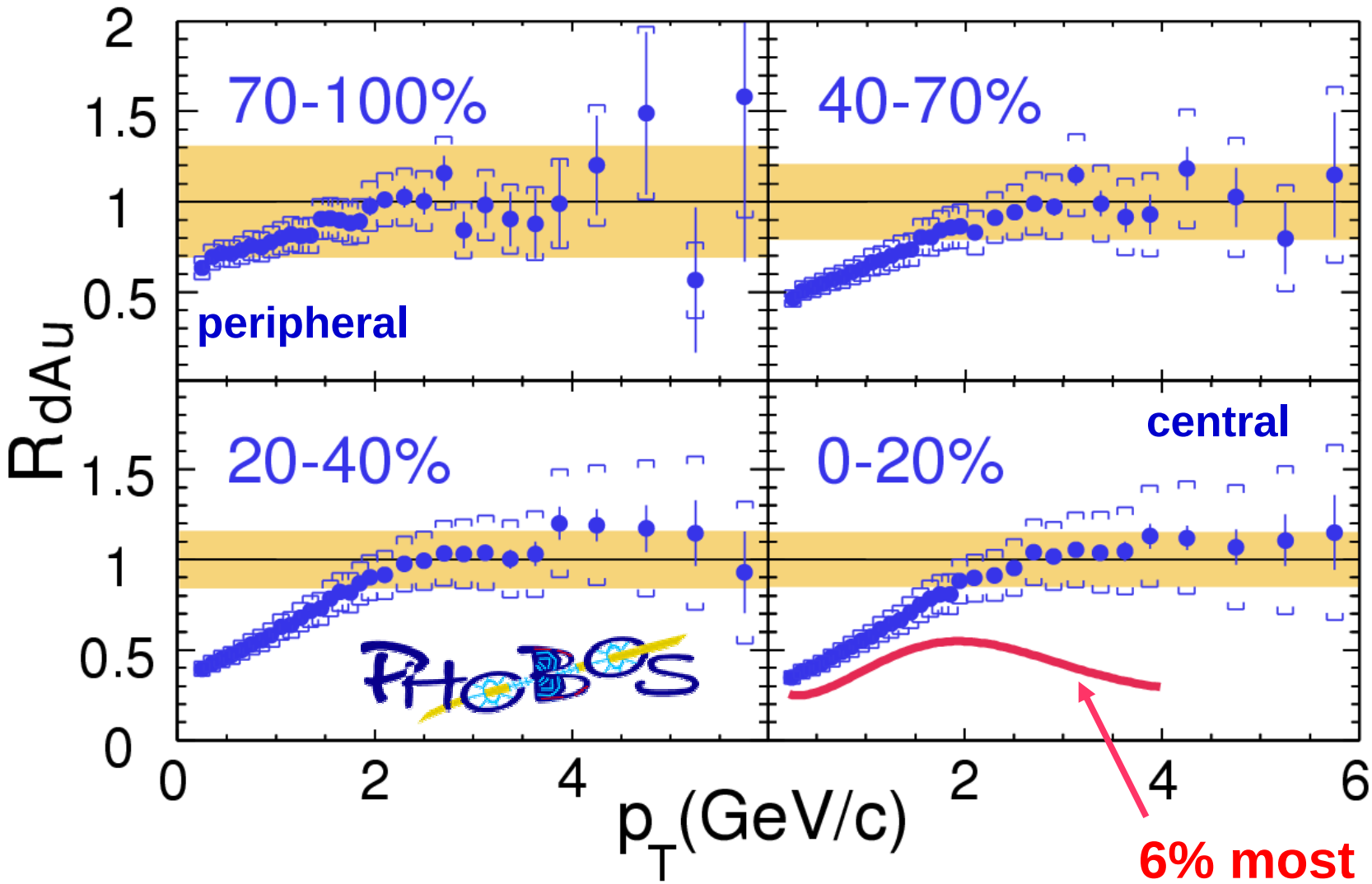


central 0-20%



Cronin Effect in d+Au vs. Centrality

$$R_{dAu} = \frac{\sigma_{p\bar{p}}^{inel}}{\langle N_{coll} \rangle} \frac{d^2 N_{dAu}/dp_T d\eta}{d^2\sigma(\mathrm{UA1})_{p\bar{p}}/dp_T d\eta}$$



6% most central Au+Au

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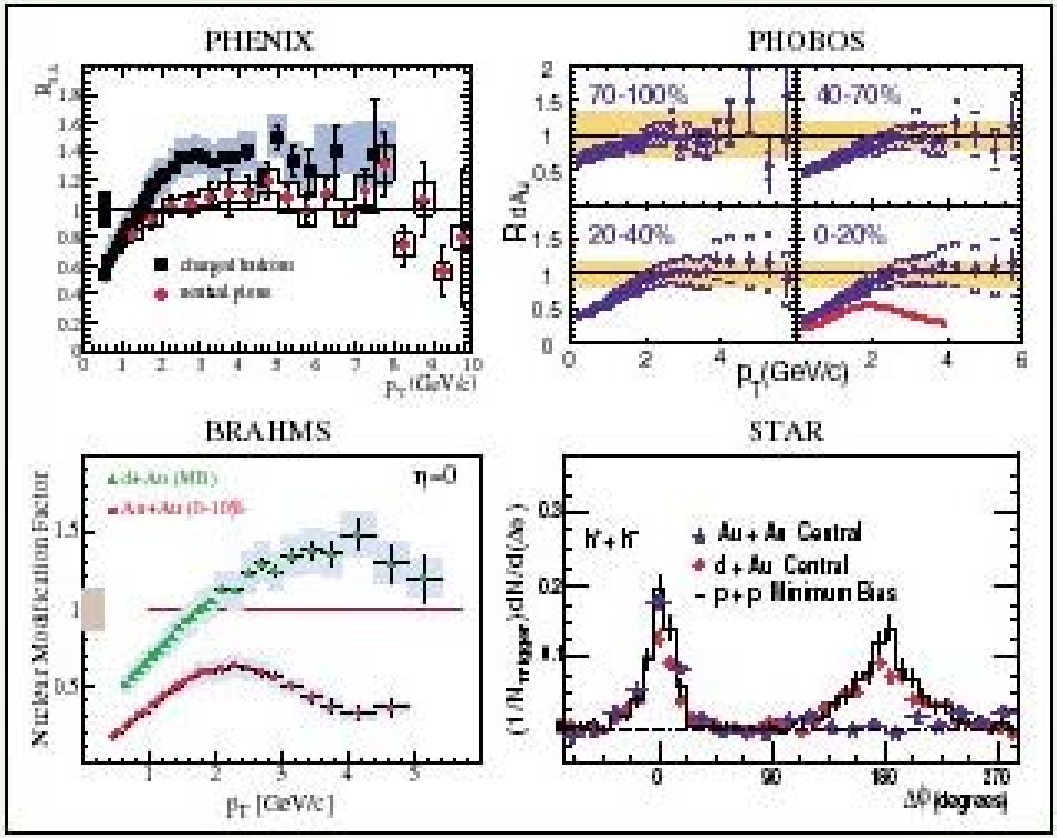
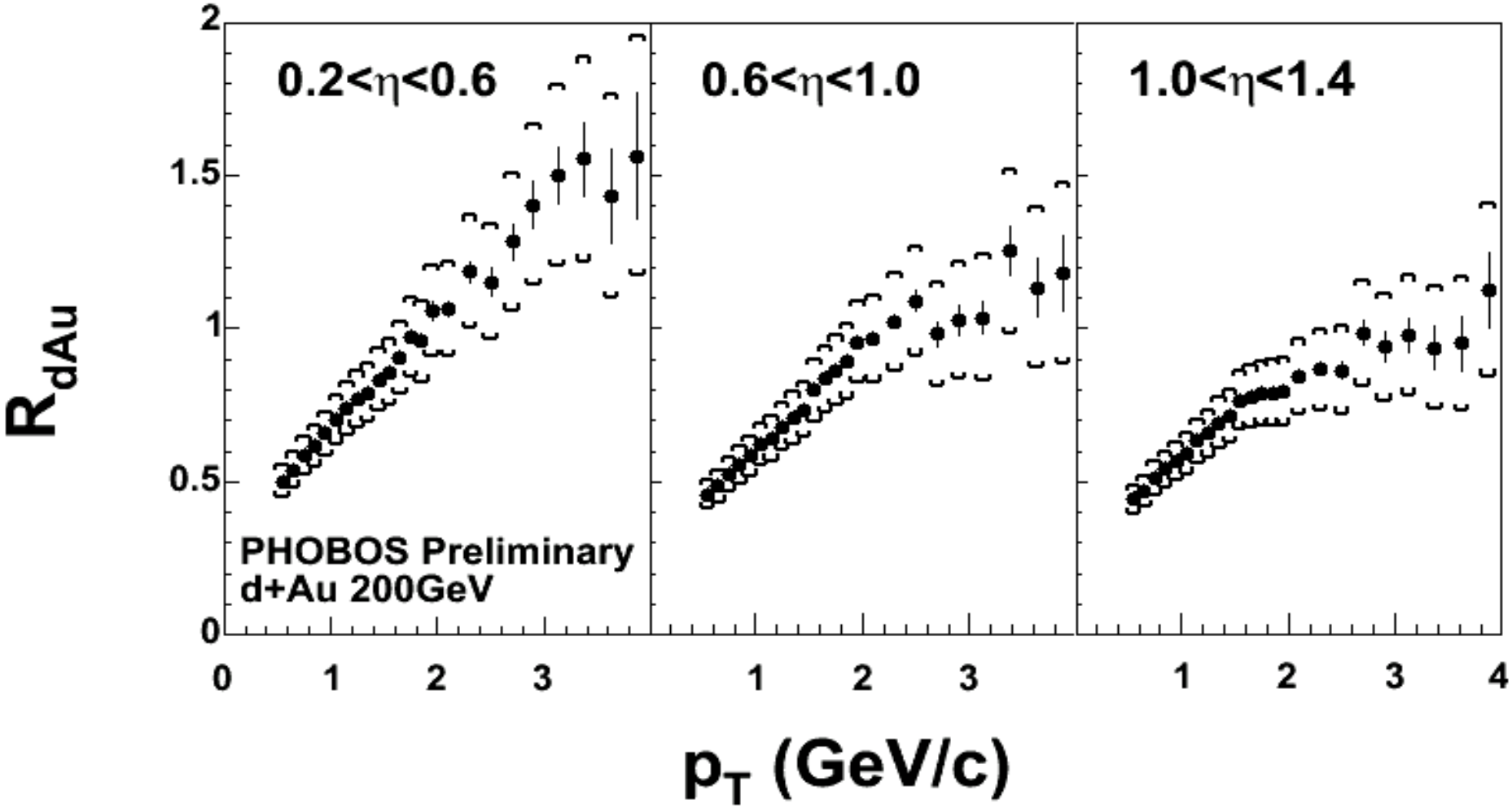
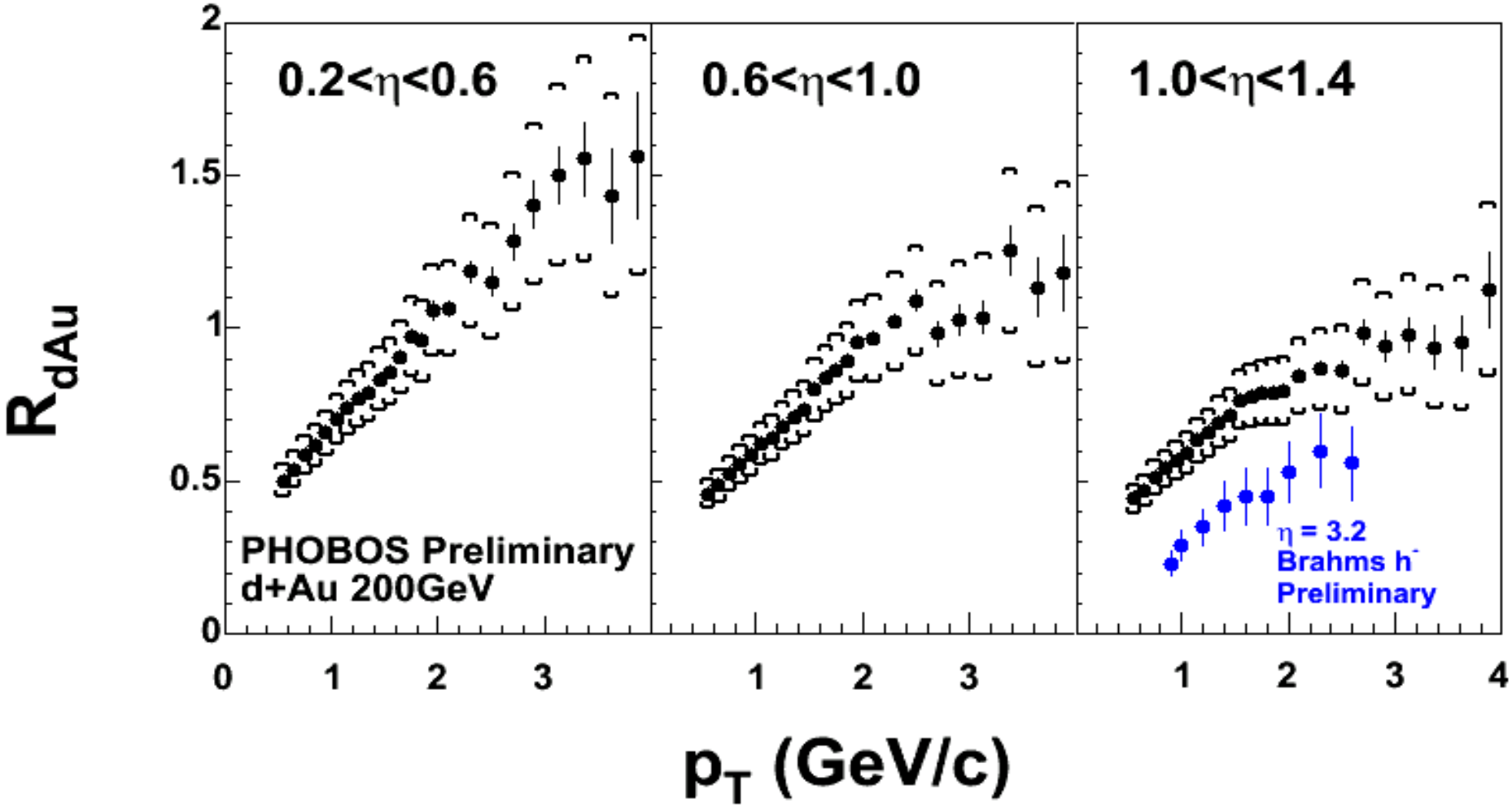


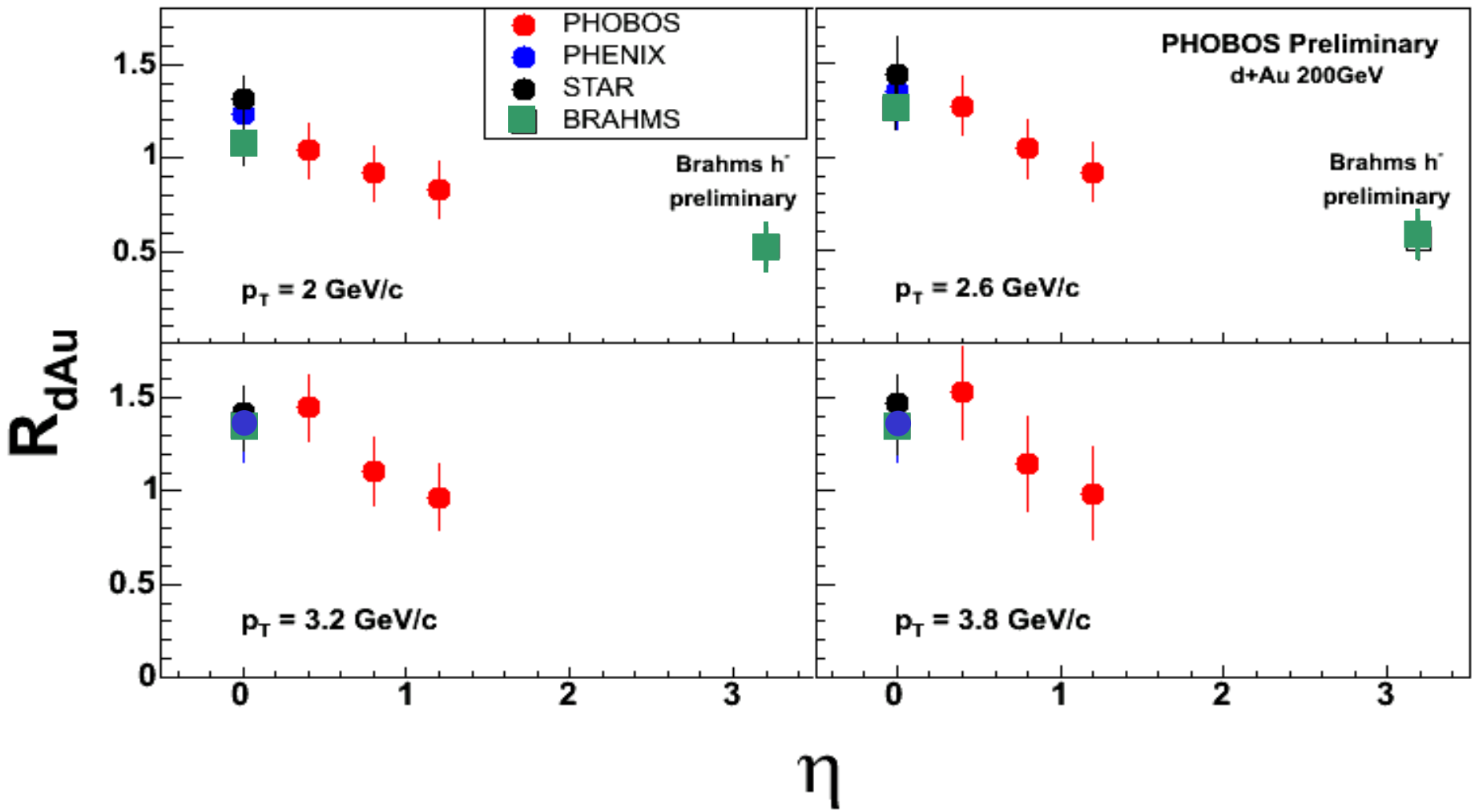
Cronin Effect as a Function of η (d+Au)



Cronin Effect as a Function of η (d+Au)



Evolution of R_{dAu} with η



→ See poster by J.L. Kane

Summary

- **Phobos has PID coverage from 0.05 to 3.5 GeV/c in p_T**
  - → First PID ratios and spectra from PHOBOS TOF
  - → Surprisingly small centrality dependence of $\bar{p}/p$ ratios
  - → Approximate m_T scaling in d+Au as opposed to Au+Au
  - → Particle composition in d+Au: similar p_T-dependence to lower energy data (but different overall proton fraction)
- **Study of η-dependence**
  - → Exciting new η-dependent R_{dAu} values measured
  - → R_{dAu} continuously decreases with η

→ **More coming soon...**