Do Heavy Flavor Particles Flow with the QGP?

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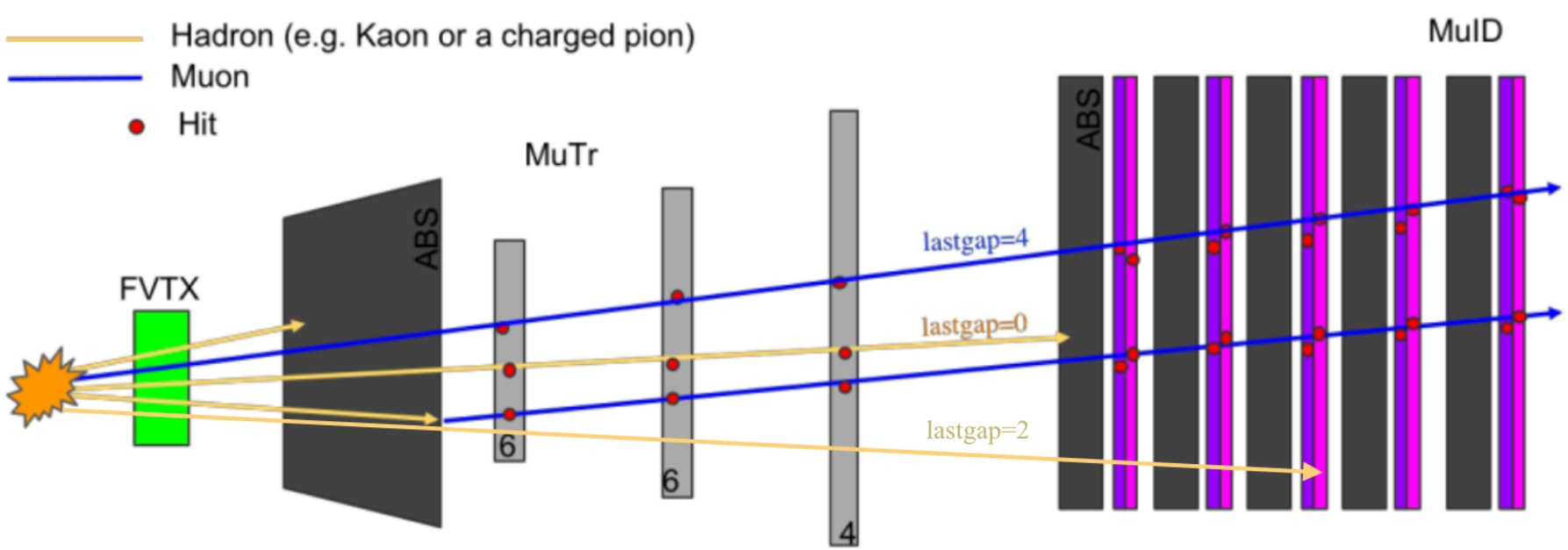
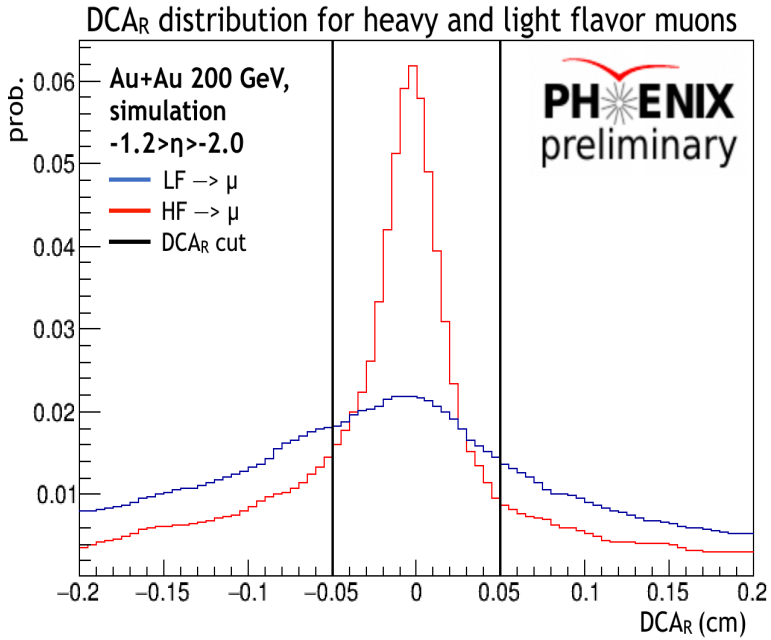
- Heavy flavor is a unique probe of QGP: large mass —> early production, less thermalization
- Forward rapidity —> different initial state/system dynamics (e.g. pressure gradients)

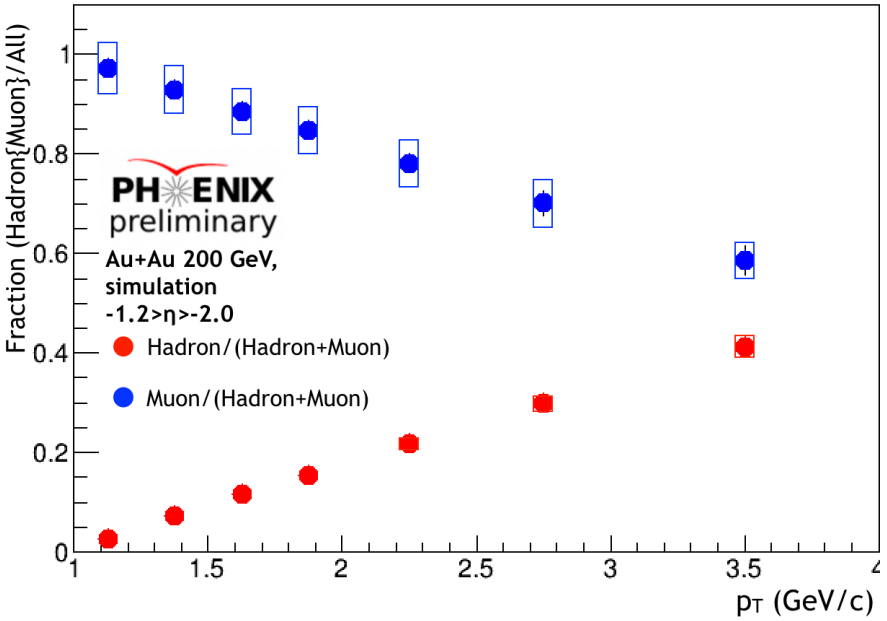




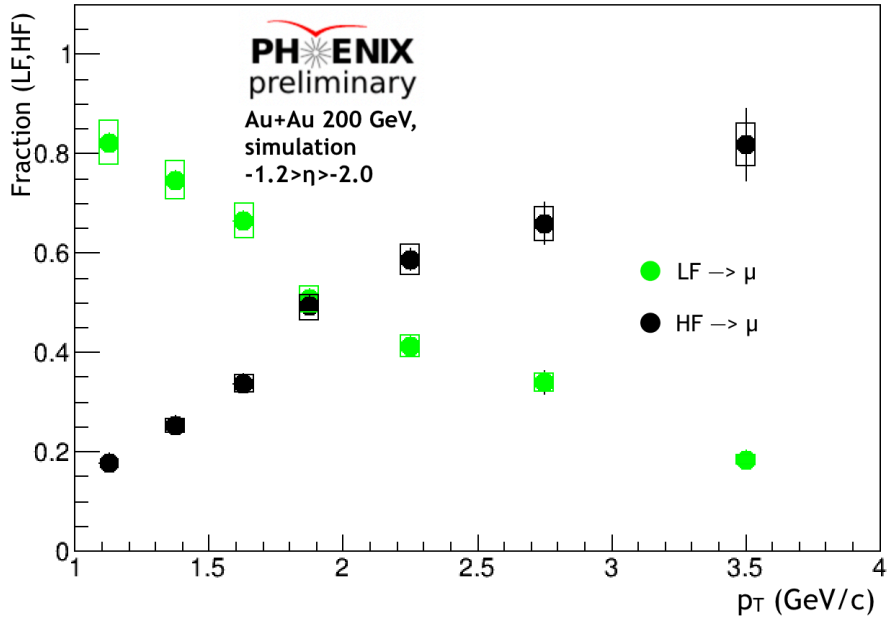
- PHENIX has unique capabilities for forward heavy flavor measurements at RHIC
  - Separation of hadrons and muons (MuID)
  - Secondary vertex determination (FVTX)

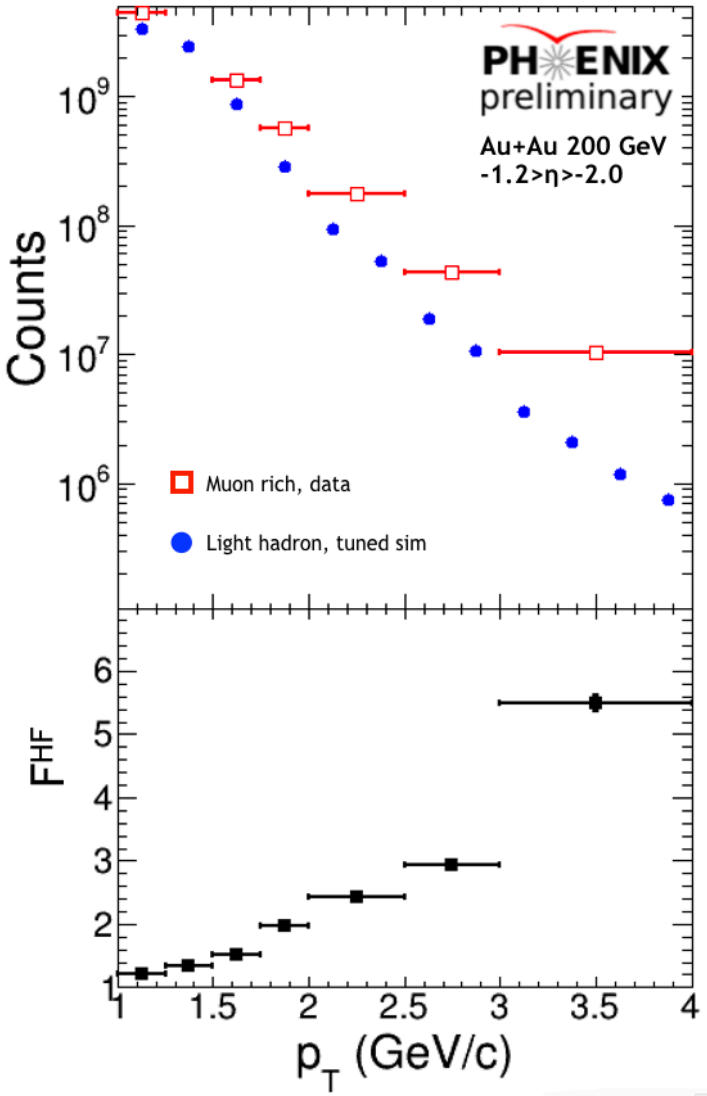
Extracting Heavy Flavor

Hadron and muon ratios, muon rich



Light and heavy flavor decay muons

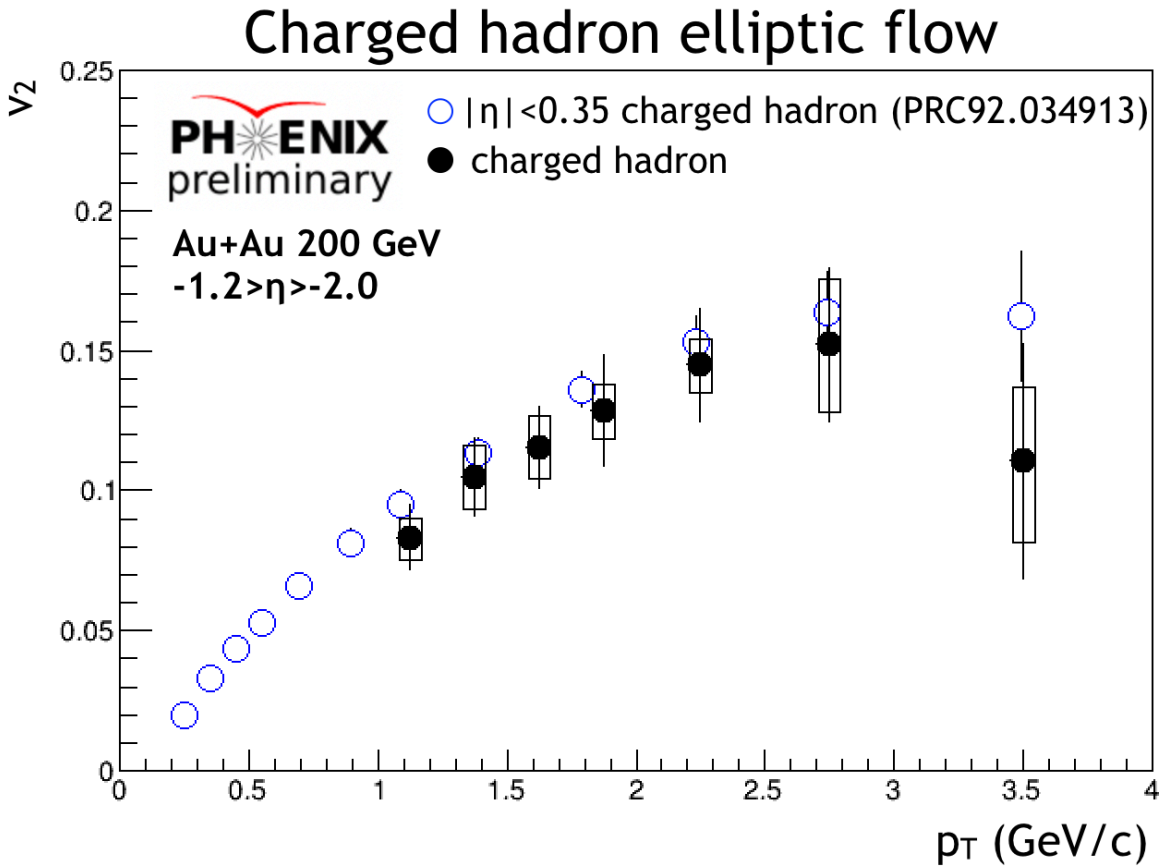


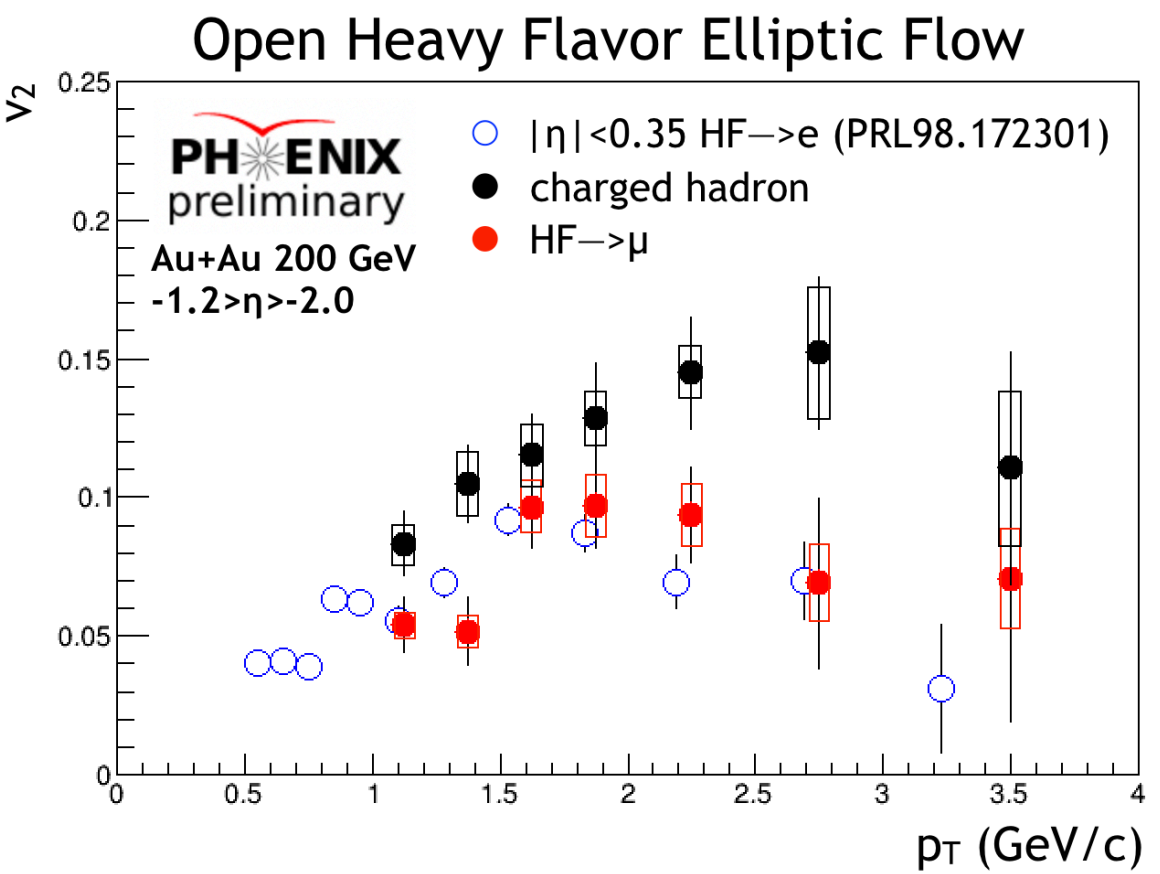


- Tuned PYTHIA+GEANT4 embedded in Au+Au to get hadron and muon fractions
- Extract the contribution of open heavy flavor muons (F^{HF})
- Determine heavy flavor muon v_2 in the inclusive muon sample:

$$v_2^{HF} = \frac{1}{F^{HF}}\left(v_2^{\mu} - (1 - F^{HF})v_2^{LF}\right)$$

Flow of charged hadrons and heavy flavor muons at forward rapidity





- Hint of rapidity-dependence of charged hadron v_2, while open heavy flavor v_2 results are consistent with previous PHENIX results at mid-rapidity

- **YES, heavy flavor particles flow with the QGP, but less than charged hadrons**