

Question from S&T committee

- Are there any simulations/estimates from STAR concerning the ability to use prior HFT-collected data to do subtraction of open-heavy flavor decays for intermediate dileptons?

A: YES, we are actively working on analyses and assessment;
Not really the simulation, but using dielectron yields between
with and without HFT rejection of decays

- What was the cost/benefit analysis used to decide that there would be no new runs with the HFT in place?

A: Repurpose HFT components/additional material/structure
incompatibility/Slow readout

Thermal Dilepton at Low and Intermediate Mass

Mid-rapidity e^+e^- measurement at $\mu_B \sim 0$:

- Connection to chiral symmetry restoration
- Thermal radiation from QGP

iTPC upgrade essential

Low-mass di-lepton emission:

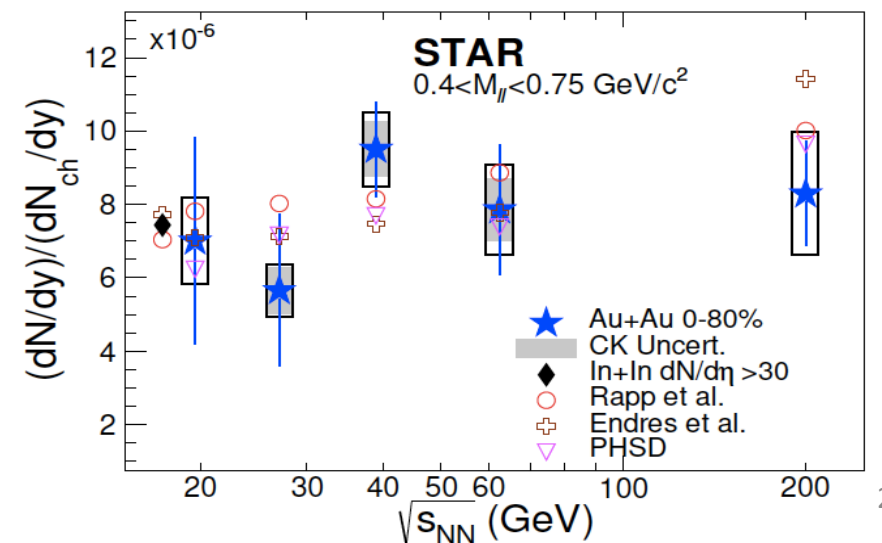
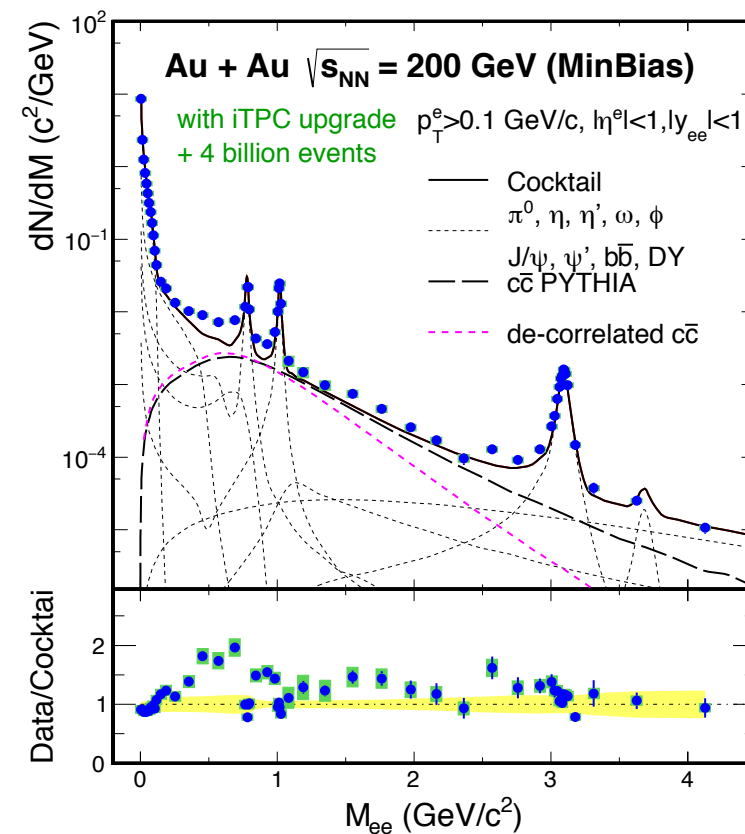
T , total baryon density, and life time; more importantly dynamics of approaching Chiral Symmetry

The slope T in IMR:
the true average temperature T of the medium.
(no blue shift by flow)

Improvement:

Factor 2 smaller systematic uncertainties

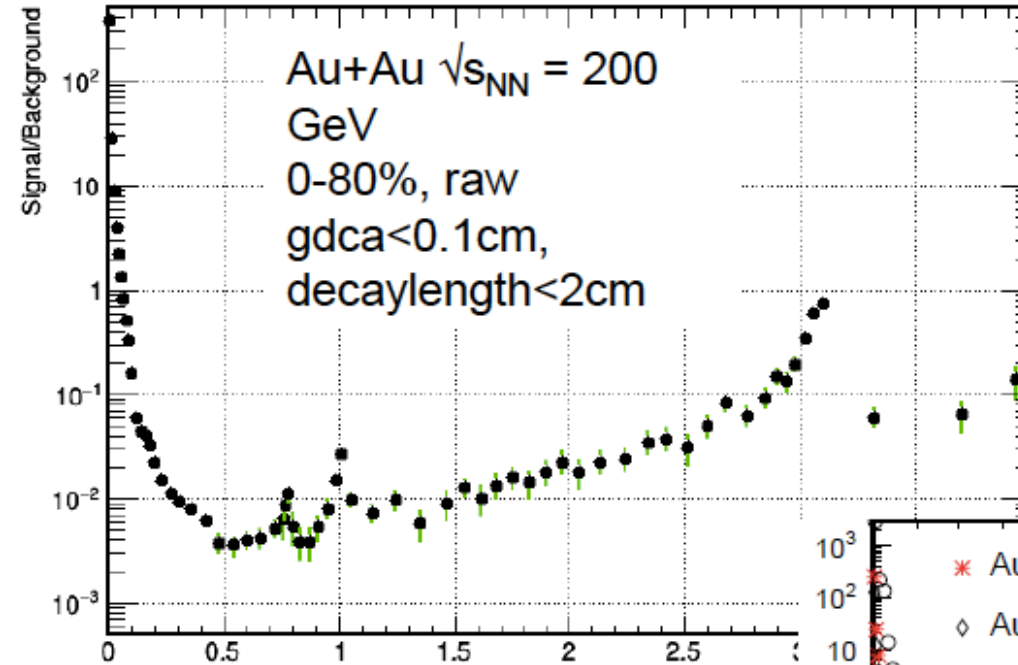
Factor 5.5 more statistics



Dielectron analyses from existing HFT data

Raw spectra run14 0-80%

Additional ONE run
with HFT will increase the
statistics by 50%

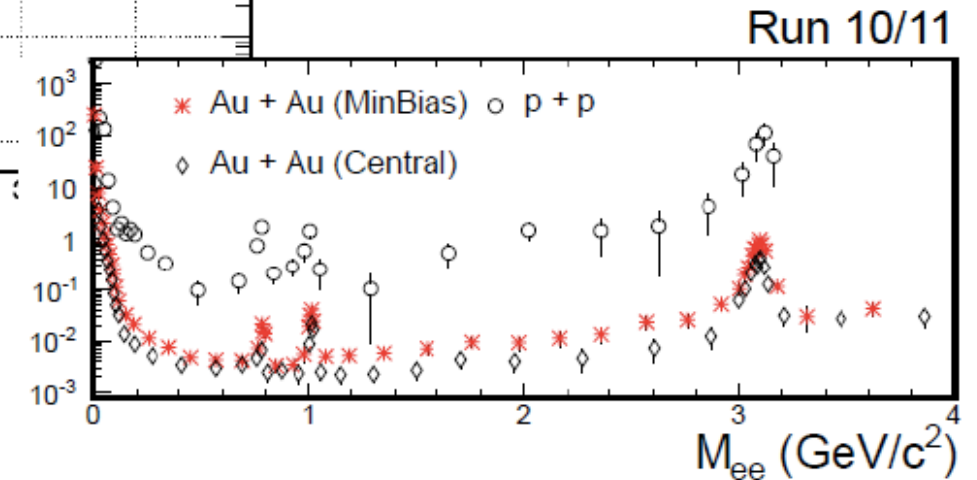


● S/B ratio

similar S/B ratio with the HFT
as in run10/11 without it

Possible study in the future on
Thermal dielectron + charm-bkg with tighter cuts:

With HFT: reduces fraction of charm-bkg pairs
W/o HFT: inclusive



Significant ghost hits in low and high pt

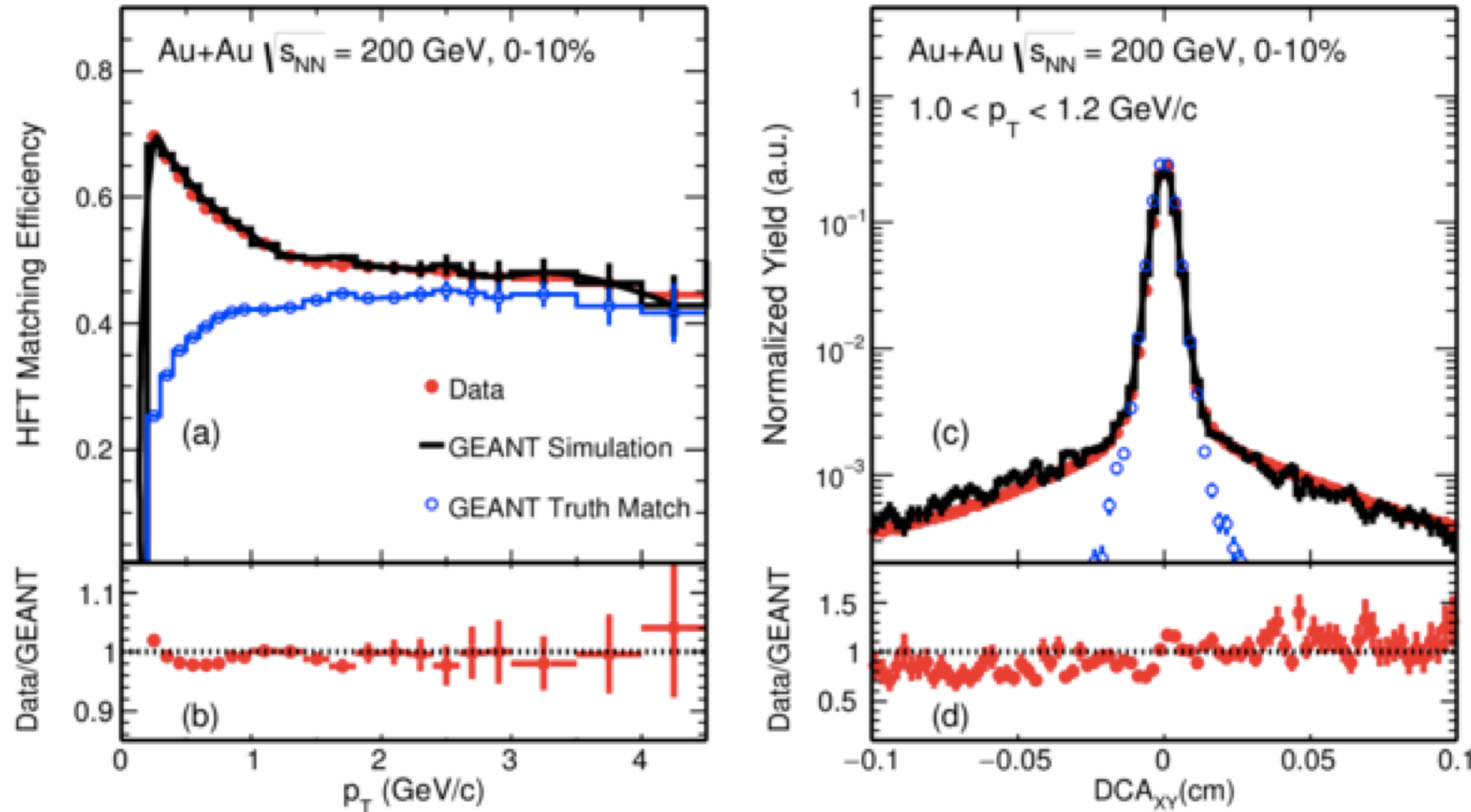


FIG. 10. HFT matching efficiency ϵ match HFT (a) and DCAXY (c) distributions of inclusive charged pions from real data and MC simulation in 0–10% Au+Au collisions. The ratios between real data and GEANT simulation are shown in the bottom panels. The blue histogram depicts the true matches for which the reconstructed tracks pick up the correct MC hits in the HFT detector induced by the associated MC tracks in the GEANT simulation.

Issues with re-installation of HFT in future runs

- HFT support structure not compatible with the current Forward upgrade
- Need to change the support cone
- External cables removed for eTOF (space)
- PXL cooling unit has been reused for TPC cooling
- Need to setup clean room for test before installation
- DAQ rate is x2 slower than current TPC
- IST cables/electronics/cooling reused for forward silicon tracking
- Should use a faster version of the PXL sensors
- Add quite some material: create background e^+e^- and Bremsstrahlung radiation

STAR Collaboration 693 members

Difficult to define **URM**
in other categories in
an international collaboration
with 15 different countries

