Jetcorr PWG Summary

A. Hamed for the Jetcorr PWG

University of Mississippi, Texas A&M University

Updates Given at Meeting

- Event Mixing for full jet reconstruction (Alex Schmah)
- Full Jet Reconstruction (Jan Rusnak)
- Paper update - p+p and d+Au correlations (Mriganka Mondal)
- Paper update -Near-side Jet-like Correlations (Li Yi)
- Data Structure development (Martin Codrington) – slides not yet made available

Updates Given at Meeting

- Higher Harmonics and Pomeron Models (Lanny Ray) – see L.R. plenary talk for details
- Identified 2-Particle Correlations (Prabhat Bhattarai)
- Correlations in d+Au (Fuqiang Wang)
- Strange-Particle-Triggered Correlations (Zillay Khan)
- Direct Photon v_2 and Gamma-Jet Correlations (Ahmed Hamed)

Possible QM 2014 Topics

Topics that will likely have results for QM:

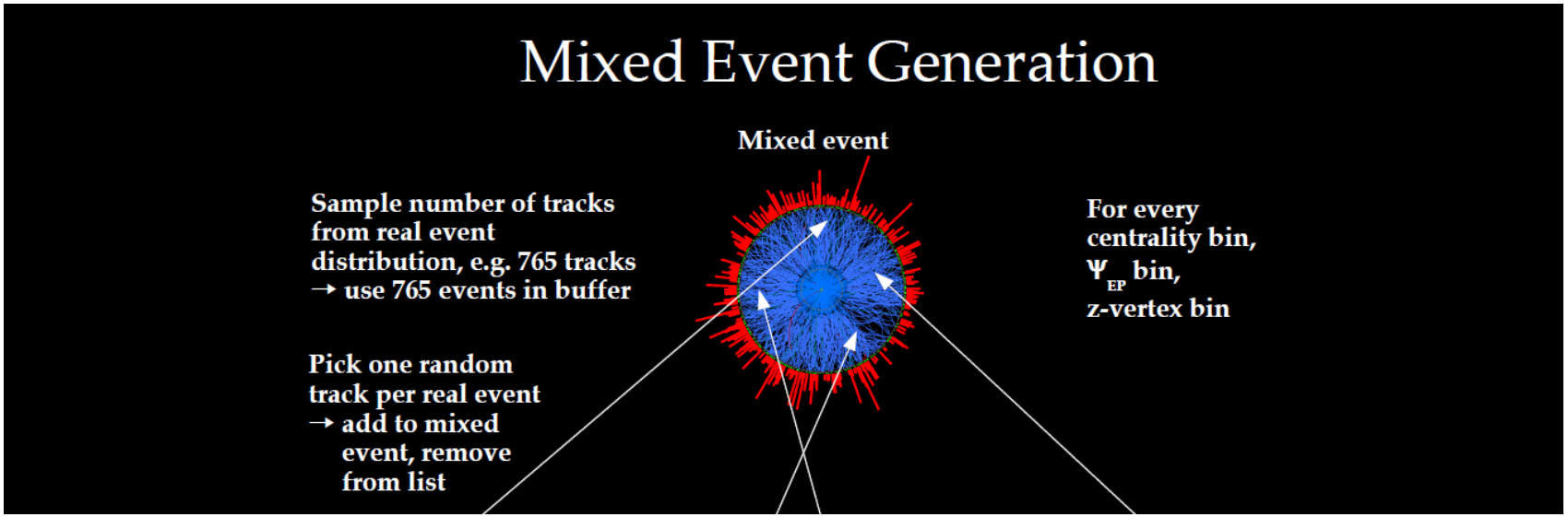
1. Full Jet Reconstruction
2. Direct Photon v_2 (and gamma-jet, if ready)
3. Investigating the existence of a d+Au Ridge

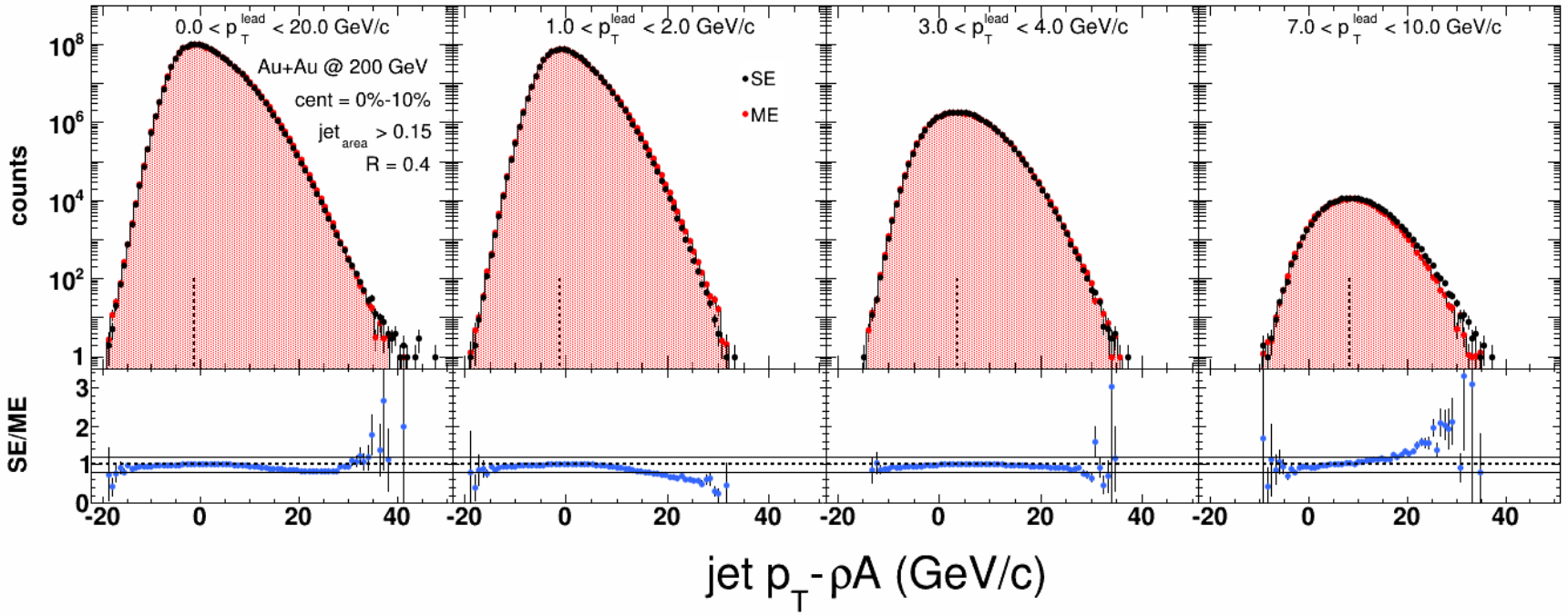
Other results may come up between now and February

Outline

- Summary of updates related to possible QM topics (3)
- Summary of updates related to papers in preparation (2)
- Summary of updates related to identified particle correlations (2 new analyses)

1. Full Jet Reconstruction (A. Schmah)





1. Full Jet Reconstruction (J. Rusnak)

Status:

- Run-11 data – full jet reconstruction with charged tracks only (for now)
- Unfolding procedure correcting for background fluctuations is under control (within ~10-20%)

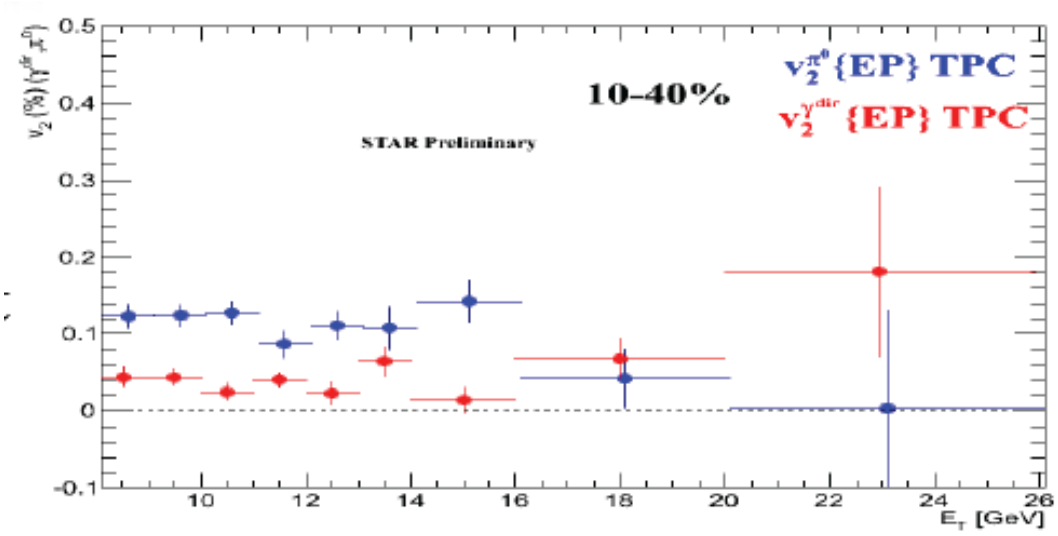
  - Alex's event mixing will provide alternative way to remove/reduce background

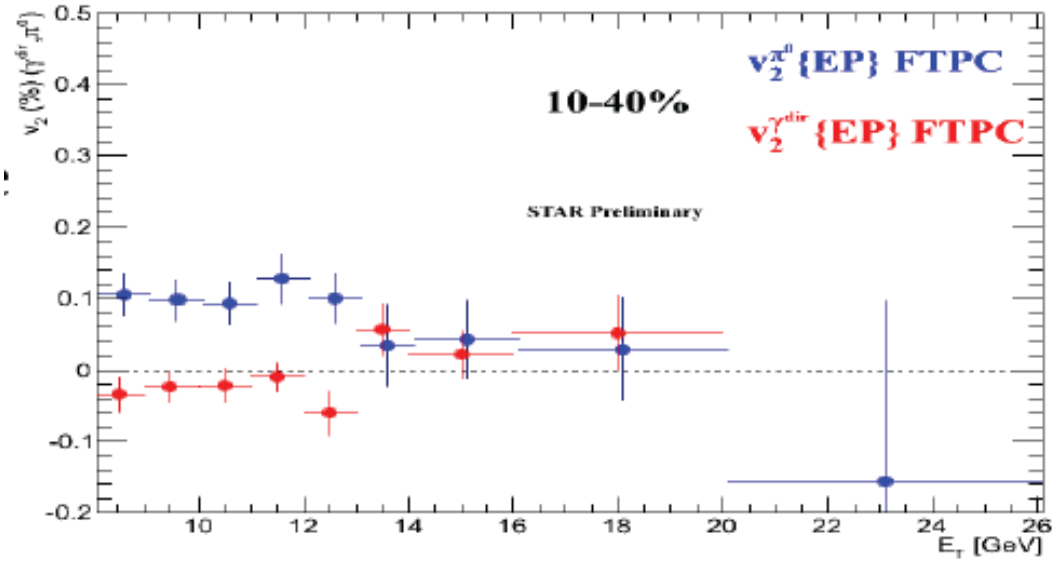
New:

- Instrumental corrections underway
- For I_{AA} measurement - p+p reference produced from STAR data+PYTHIA (to provide reference of jets with charged tracks only) (Matt Lamont)

2. Direct Photon v_2 (A. Hamed)

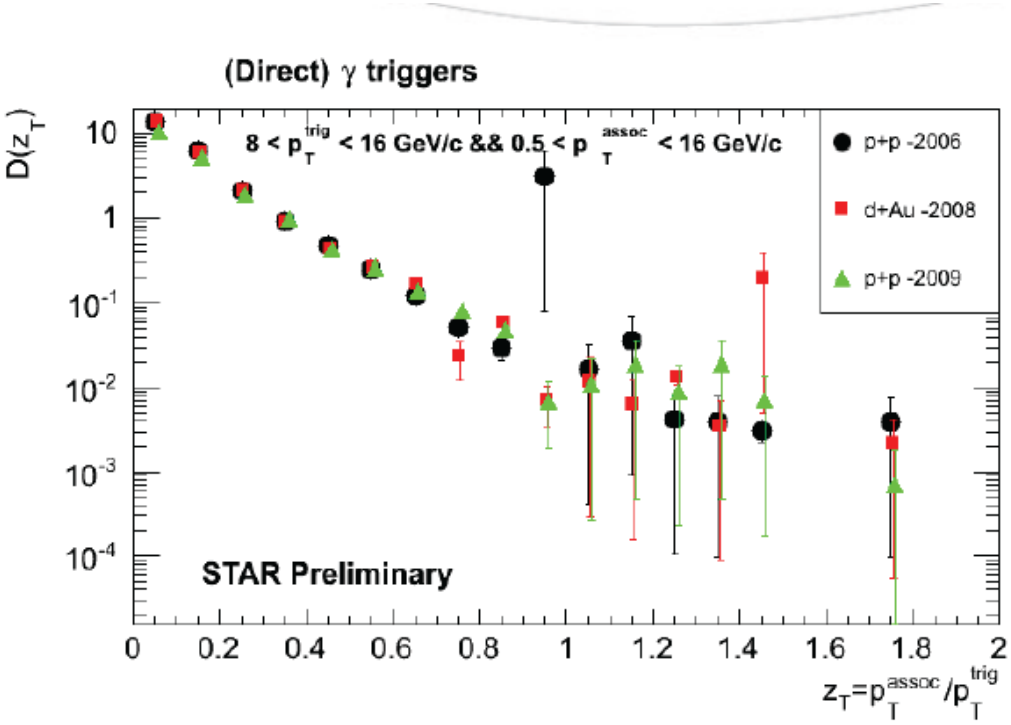
- v_2 (TPC) of direct photons is not zero (3-5%)
- v_2 (FTPC) of direct photons is zero
- v_2 of π^0 using the FTPC is apparently due to the L dependence of ΔE.





2. Gamma-Jet (A. Hamed)

New: Analysis of Run-9 p+p data set



Next step:
Increase p_T^{trig} cut> 15 GeV/c for a comparison with Au+Au data (I_{AA}) at low z_T

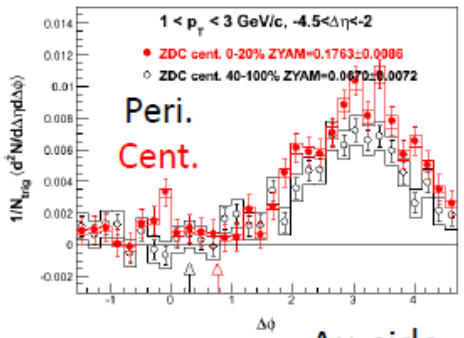
$$Y^{\gamma_{dir}+h} = \frac{\left(Y^{\gamma_{rich}+h} - \mathcal{R}Y^{\pi^0+h}\right)}{1-\mathcal{R}}$$

- The AS conditional yields per direct γ from different data sets (pp2006, dAu2008, and pp2009) agree

3. Ridge in d+Au? (F. Wang)

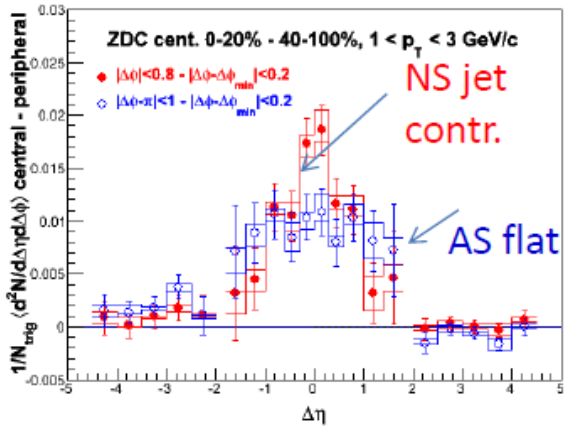
ZDC-east centrality

$1 < p_T^{trig}, p_T^{assoc} < 3$ GeV/c

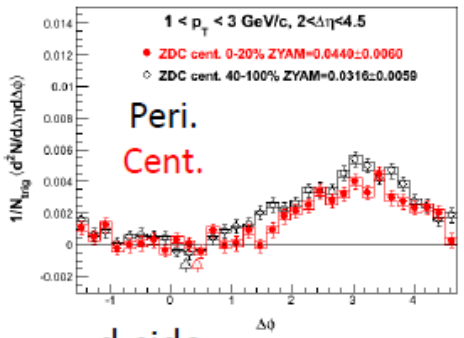


Au-side

Au-side away-side correl: central > peripheral

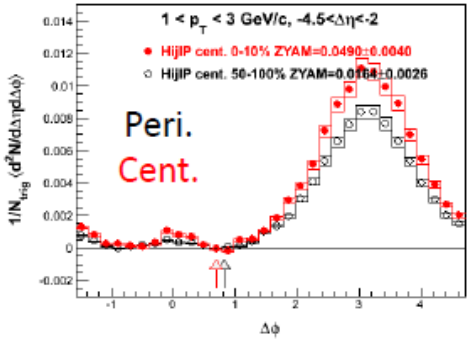


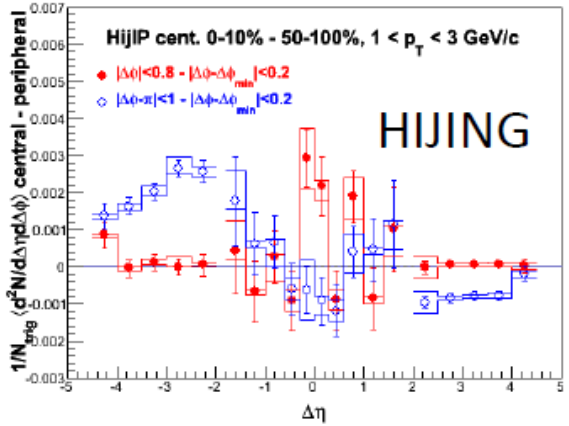
ZDC centrality

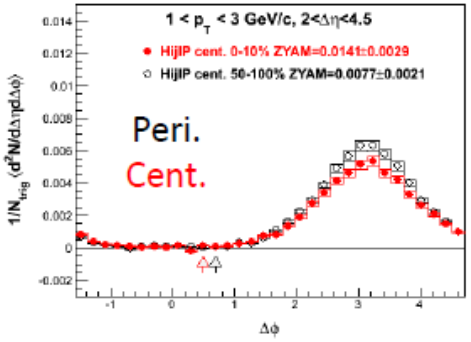


d-side

d-side away-side correl: central < peripheral







Impact parameter centrality

3. Ridge in d+Au? (F. Wang)

Status Summary:

- d+Au is more complex than thought.
- Central-peripheral has jet contributions (caused by centrality bias).
- Very forward/backward correlations are suppressed/enhanced on the away side.
- Premature to draw physics conclusions from central-peripheral.
- p+Au (neutron tag) similar to d+Au. **(NEW)**

Updates from Papers in GPC

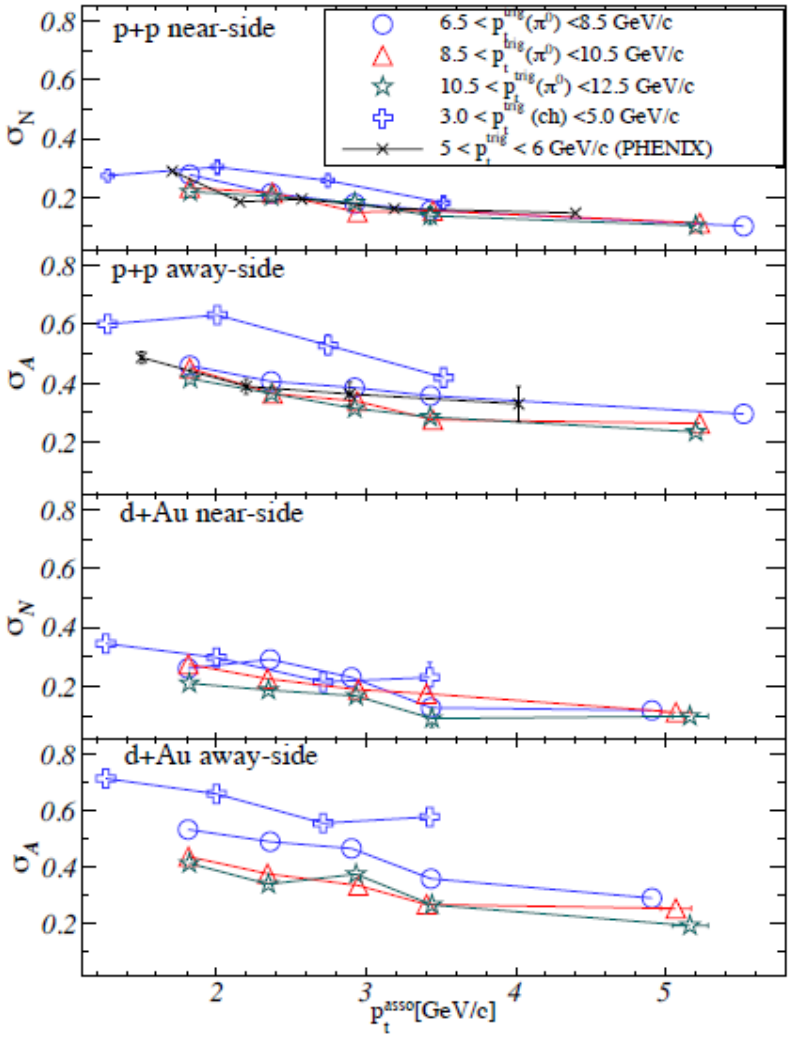
Paper on Correlations in p+p and d+Au (M. Mondal)

Changes made in GPC:

- η-dependent gain corrections
- Acceptance corrections in Δη
- Generalized Gaussian fittings
- Modified plots

Paper has been in GPC for a long time because significant changes in analysis were required to compare results of ch-ch and π^0-ch correlations directly;
But paper is steadily progressing

NEW

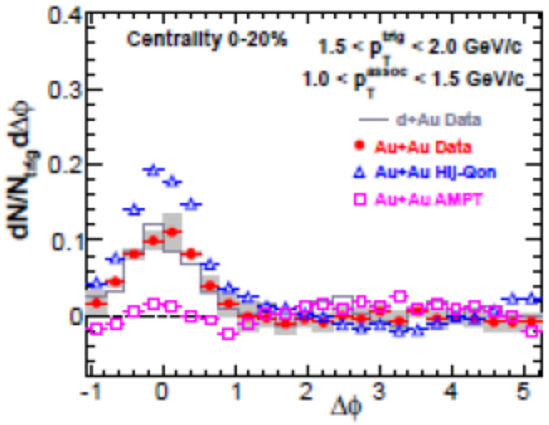


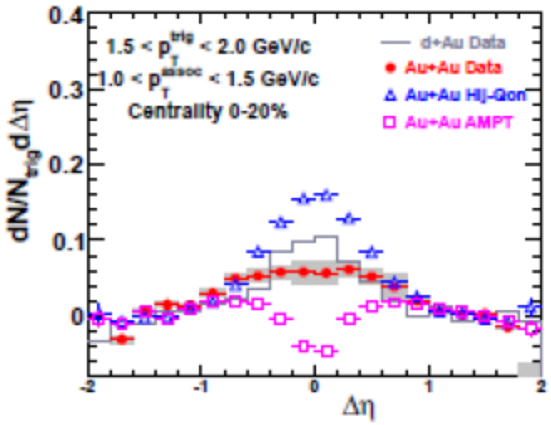
ch-ch points need to be checked

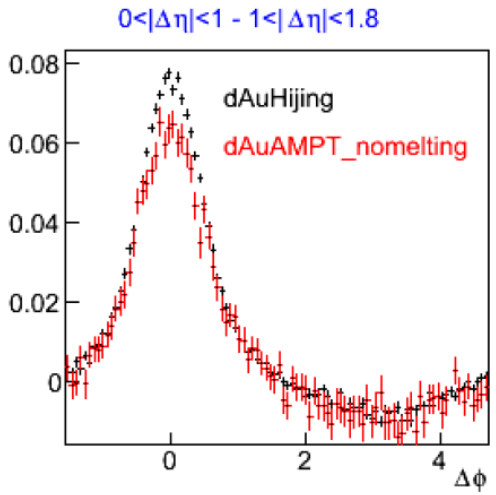
Updates from Papers in GPC

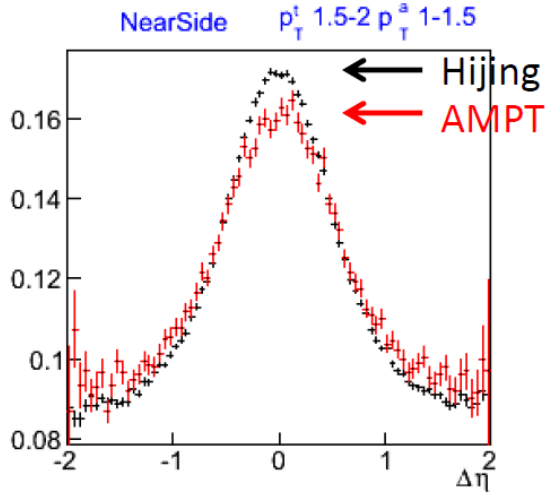
Comparison of Near-Side Jet-like Correlations in Au +Au and d+Au (L. Yi)

$'|\Delta\eta| < 1' - '1 < |\Delta\eta| < 1.8' / 0.8 \quad |\Delta\phi| < 1$









- Results show lack of significant difference in Near-side Correlation in d +Au and Au+Au collsions
- Paper in GPC (Josh Konzer's PhD analysis)
- Missing- more complete model Comparisons
- New – more complete and systematic study of models (HIJING + AMPT, d +Au, Au+Au) from Li Yi

Lower panels – yields have been divided by factor 2 ($\Delta\phi/\Delta\eta$ range)

Identified Particle Correlations

2-Particle Correlations of PID'd particles (P. Bhattarai)

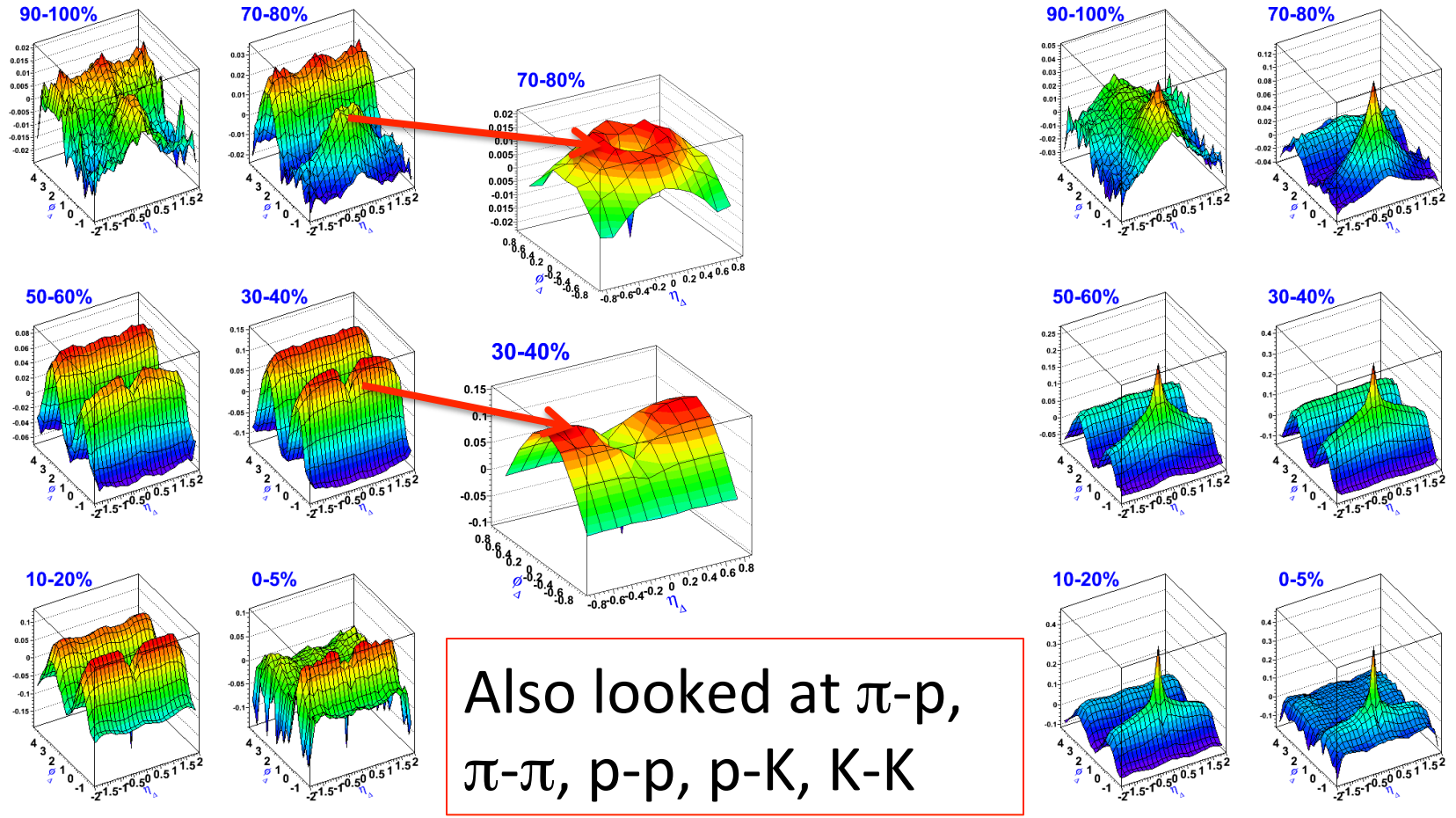
– new analysis with Run10/11 data sets

(All PID'd particles with p_T>0.15 GeV/c)

Like-Sign

π-K Correlations

Unlike-Sign



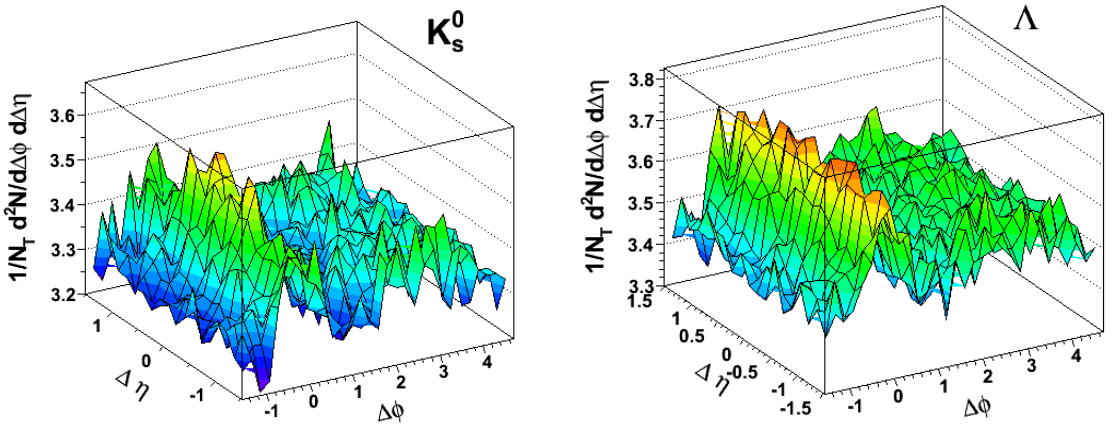
Also looked at π-p, π-π, p-p, p-K, K-K

Identified Particle Correlations

Jet-Like Correlations with Neutral Strange Hadrons

(Z. Khan) – new analysis with Run-11 data set

K^0_s Vs. Λ Triggers



- Need corrections at small angles
- Larger ridge for Λ

Summary/Outlook

- At least 3 topics are on track to having results for QM (Full jet reconstruction, Direct photon v_2/Correlations, Correlations in d+Au)
- Other topics possible (several ongoing analyses of di-hadron correlations)