Global Spin Alignment Update

Gavin Wilks

08/11/2022

Centrality dependence study

Efficiency Inputs:

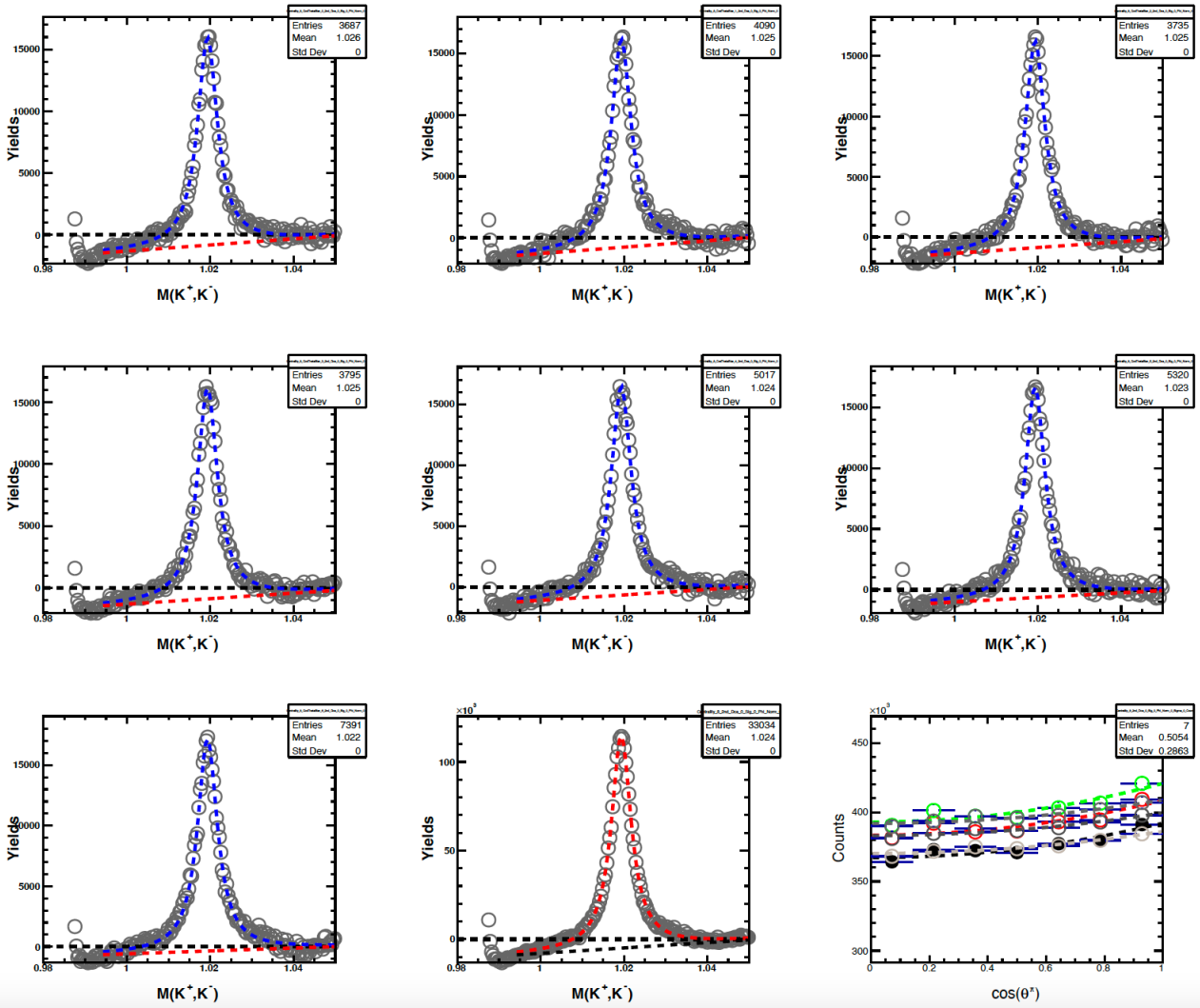
- Single K+/- efficiencies in each centrality bin.
- ToF Matching efficiency from 20-60% centrality bin → planning to update.

Acceptance inputs (simulated phi-meson decay):

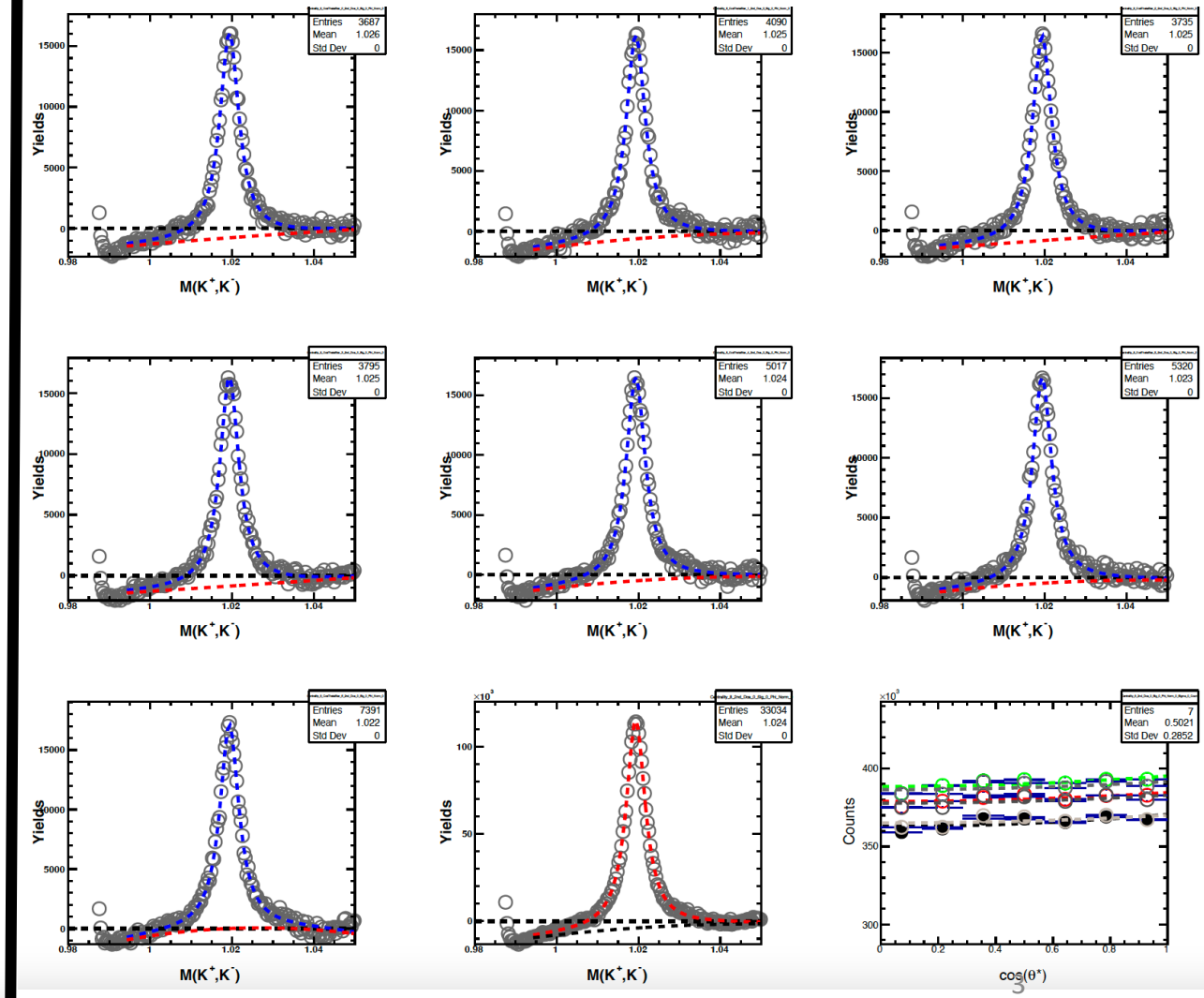
- y = [-1.0,1.0]
- pT = [1.0,5.0] GeV/c from pT spectra (*Phys. Rev. C93, 021903)*
  - Cent bins (0-10%,10-20%,20-30%,40-60%,60-80%)
- phi from phi-psi2 distribution (v2 input) (*Phys.Rev. C93, 014907)*
  - Cent bins (0-10%,10-40%,40-80%)
- Assume rho00=1/3 input and fit (after cut)/(before cut) cos(theta*) yield distribution to retrieve F. 1+F[cos(theta*)]^2
- Apply pT and eta cuts to K+/- daughters.

Poly background comparison (0-5% cent)

Poly1 background



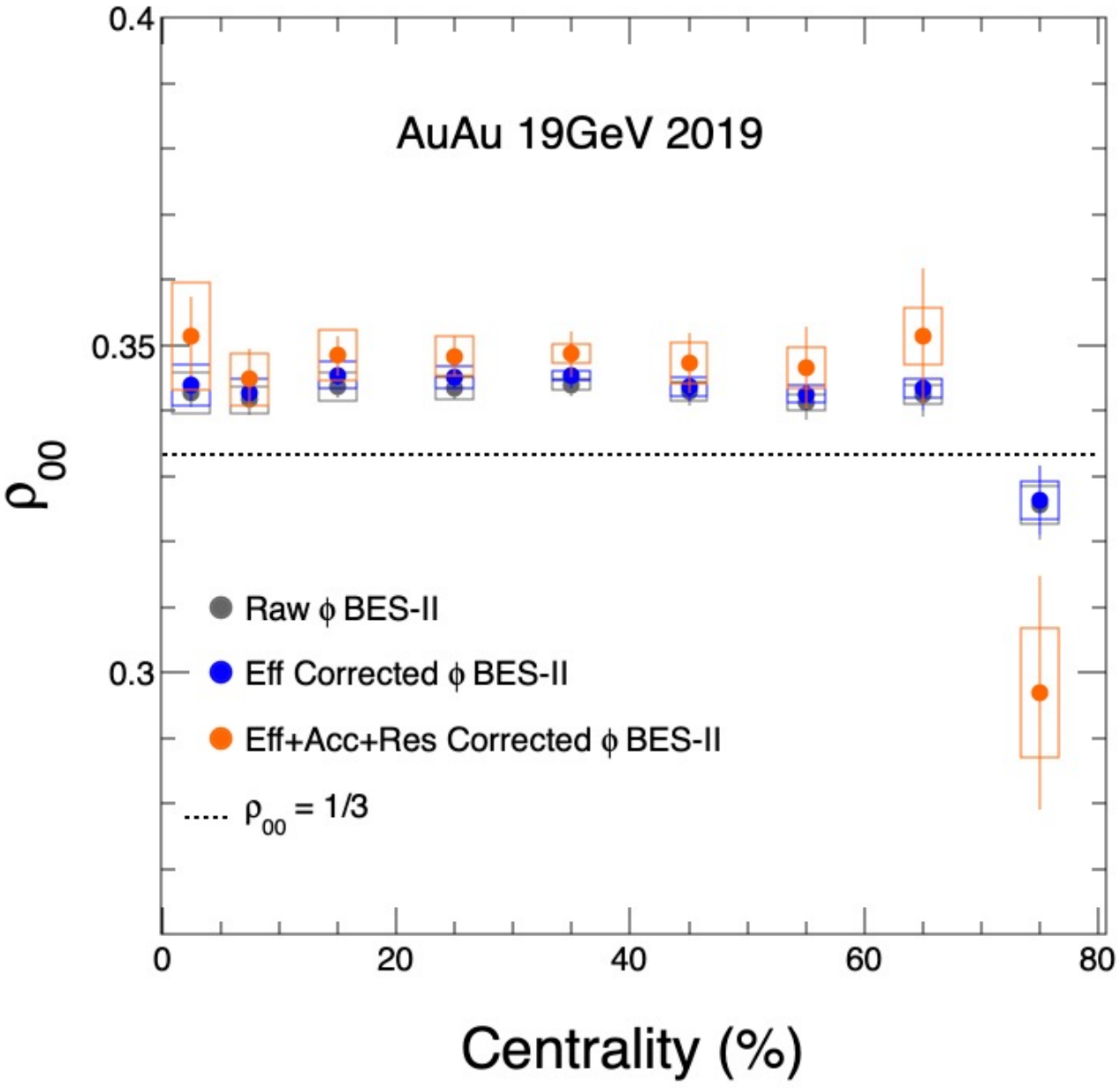
Poly2 background



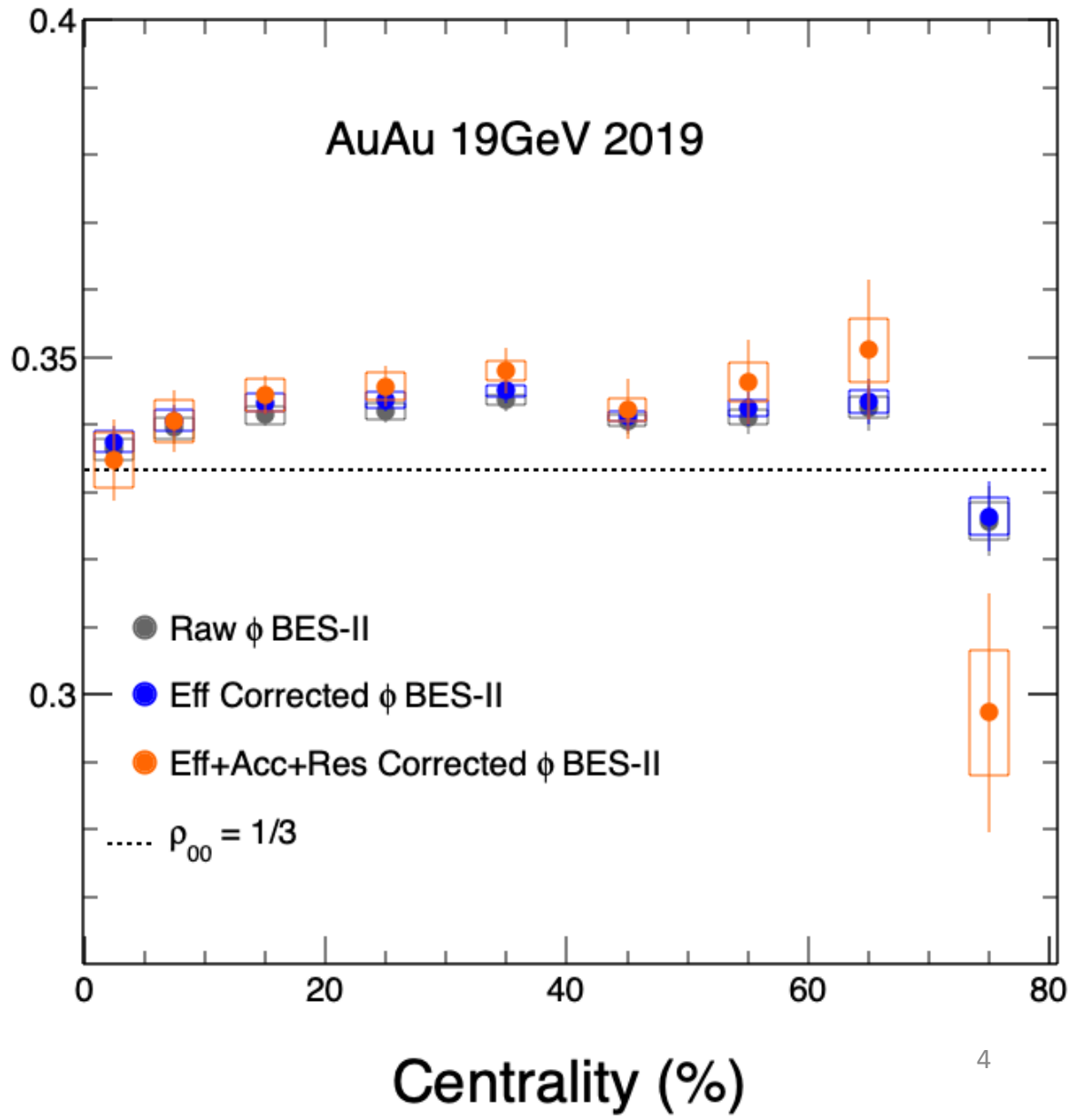
1 < pT < 5 GeV/c

|y| < 1.0

Poly1 Background



Poly2 Background



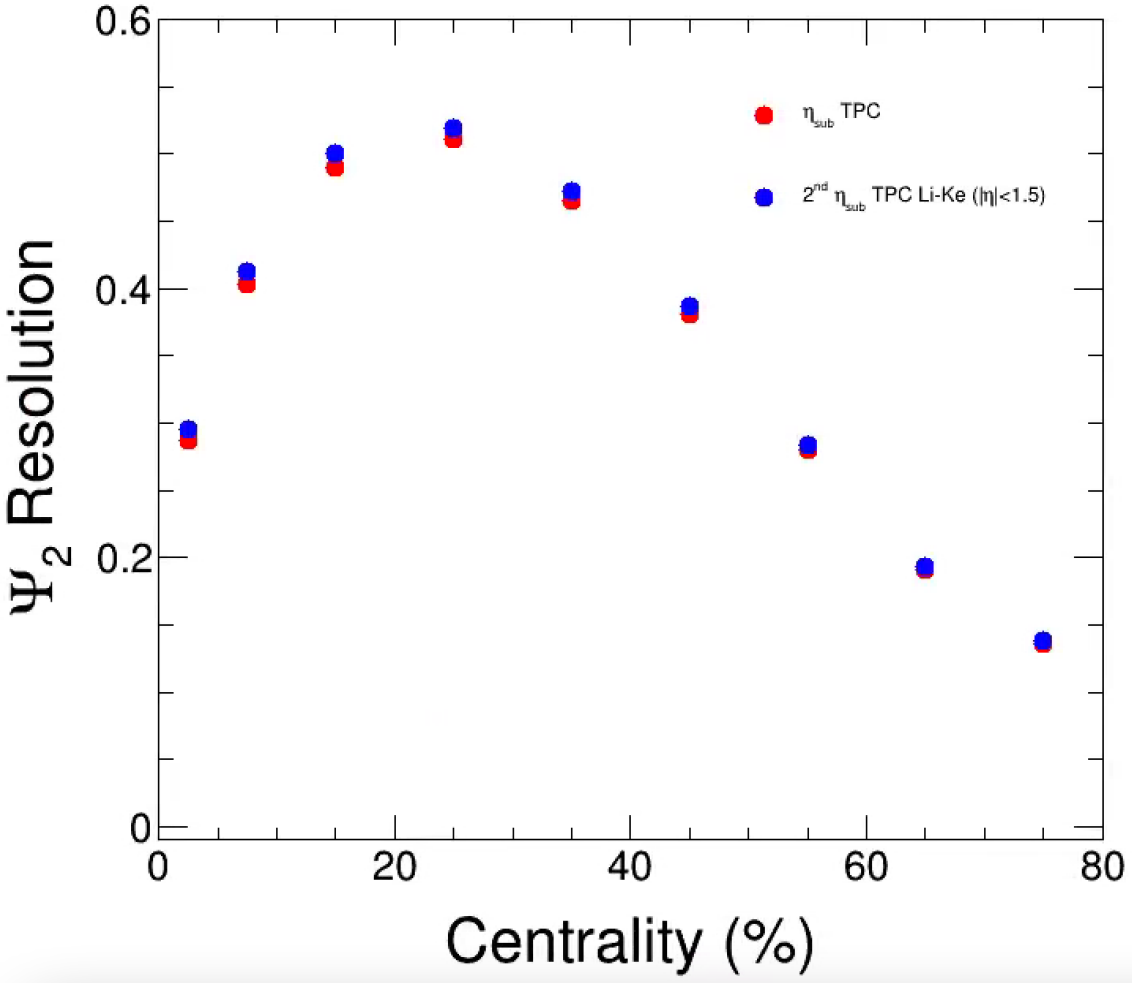
Questions for Xu

- What is the current state of the acceptance parameters?
  - What tests have been run?
  - What are the input kinematics?

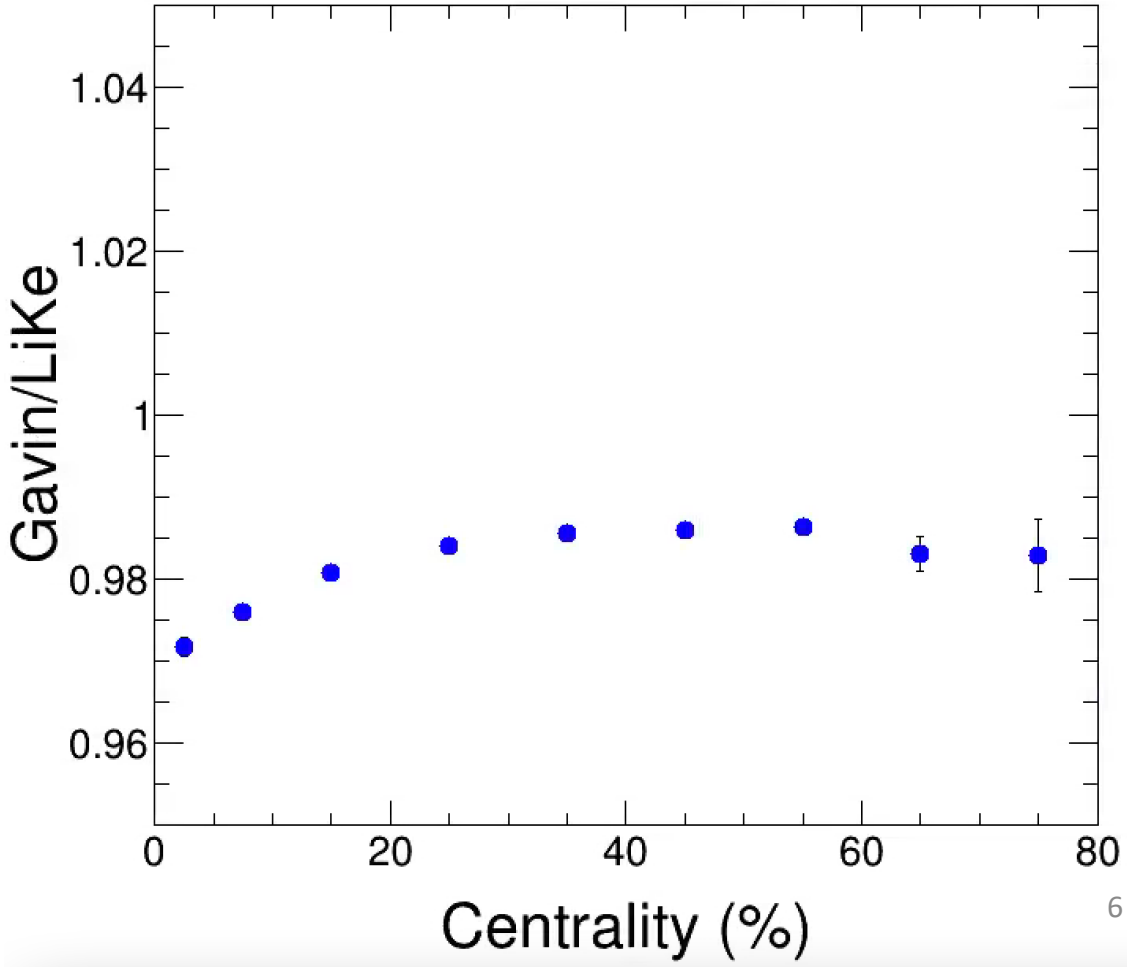
- Centrality dependence study:
  - What ToF matching efficiency was used?

Resolution Comparison with Li-Ke

This analysis:
0.15 < pT < 2 GeV/c
|η| < 1.5
|DCA| < 1.0



Li-Ke's analysis:
0.2 < pT < 2 GeV/c
p < 5 GeV/c
|η| < 1.5
|DCA| < ??



Outlook

- Producing same event and mixed event TTrees for $|\eta| < 1.5$.
- Code for rapidity dependence is in place (Filling histograms and macros)
- rho00 w.r.t 1st order EP ($|\eta| < 1.0$) to compare with BESI.
  - Submitted some test tree productions. ~10% of files.