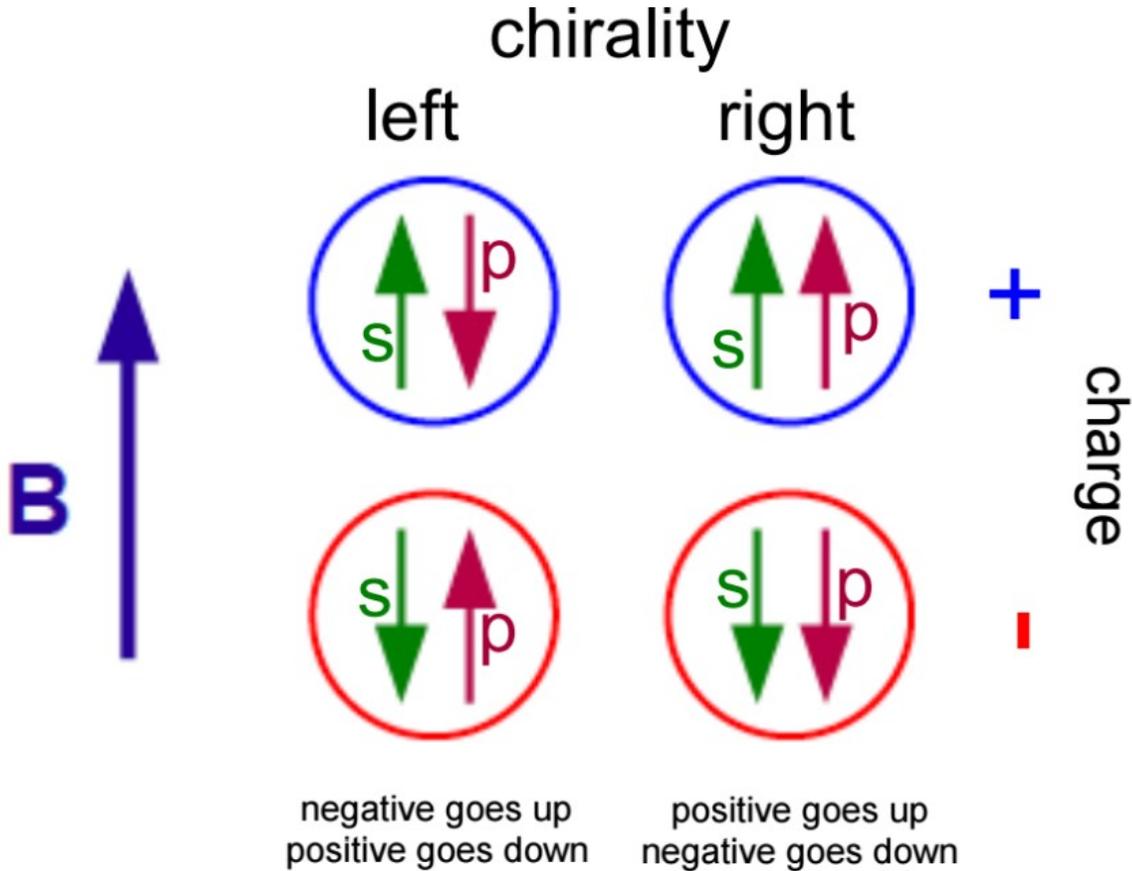


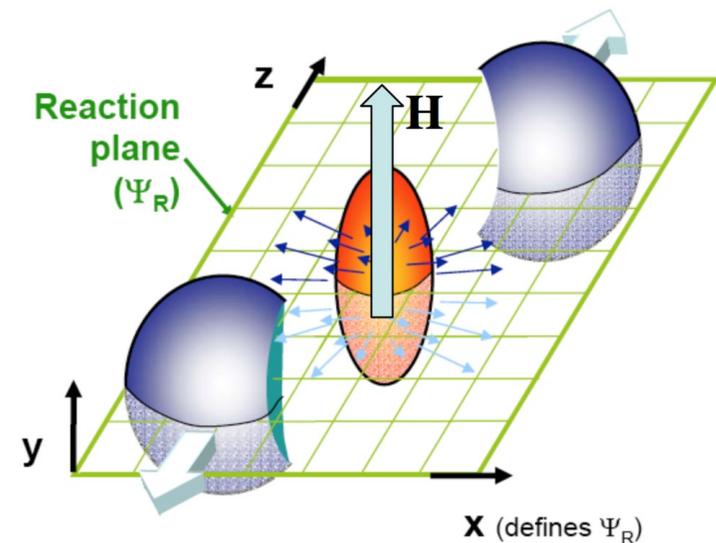
Gamma^l Measurements in Au+Au Collisions at 27 and 39 GeV

By Antonett Nunez-delPrado | UCLA

Chiral Magnetic Effect



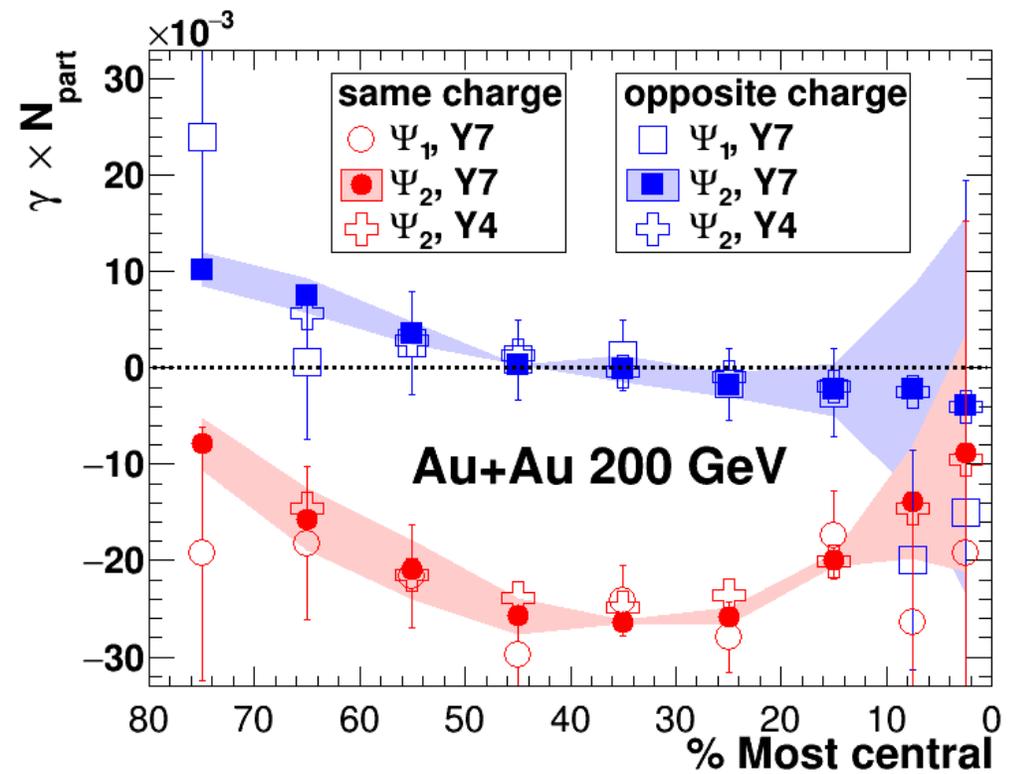
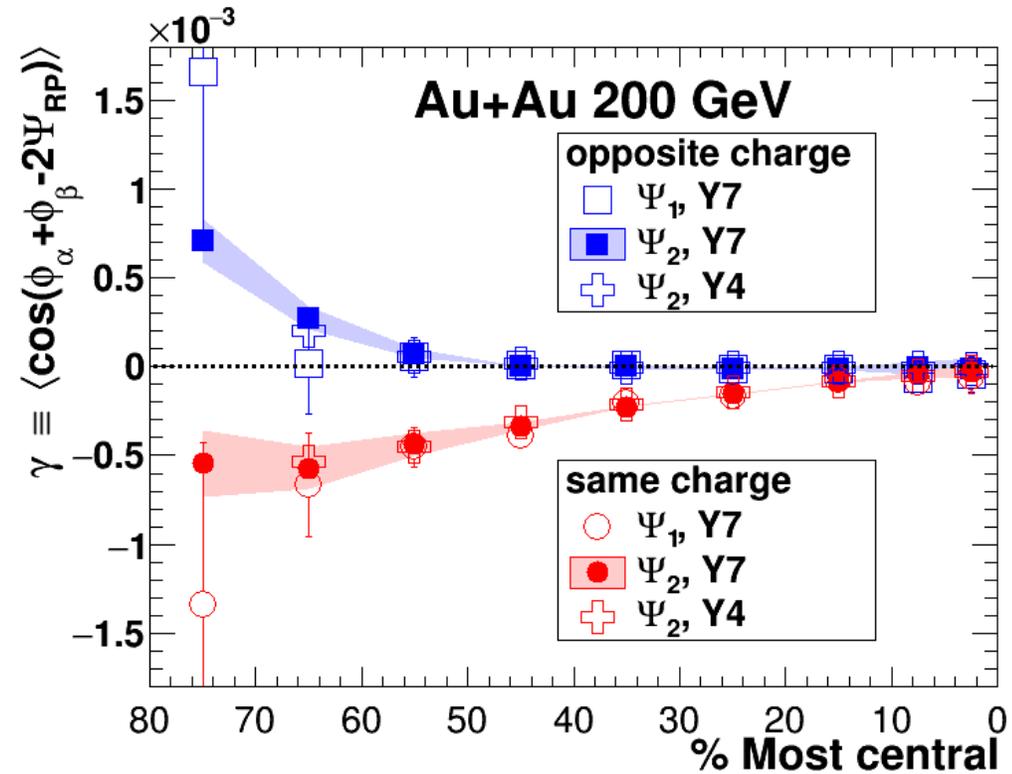
- Arises from a strong magnetic field and a finite chirality; produces an induced electric current.
- Can help to explore 3 fundamental concepts:
 - The strong magnetic field created in heavy ion collisions.
 - Vacuum transition
 - Chiral symmetry restoration



Gamma Correlator:

$$\gamma = \langle \cos(\phi_\alpha + \phi_\beta - 2\psi_{RP}) \rangle$$

$$= \left[\langle v_{1,\alpha} v_{1,\beta} \rangle + B_{in} \right] - \left[\langle a_\alpha a_\beta \rangle + B_{out} \right]$$

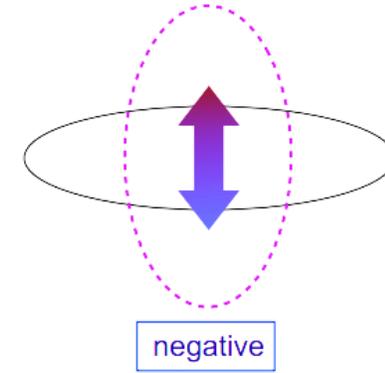
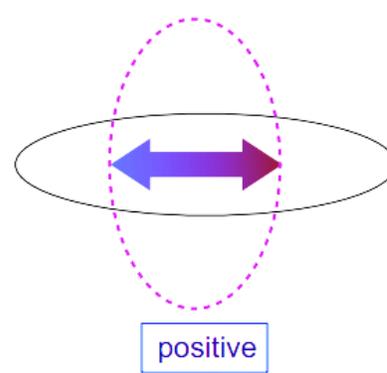


Note: Fluctuations in-plane and out-of-plane mostly cancel out; one of these residue backgrounds is the Short Range Correlation (SRC).

History: Gamma^I Correlator

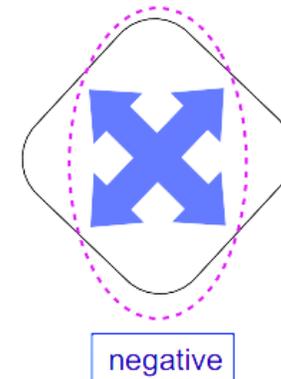
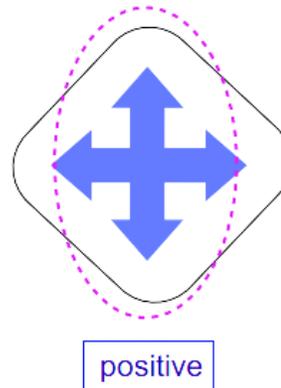
$$\gamma = \langle \cos(\phi_a + \phi_b - 2\Psi_2) \rangle = \langle \cos(\phi_a - \Psi_2) \cos(\phi_b - \Psi_2) \rangle - \langle \sin(\phi_a - \Psi_2) \sin(\phi_b - \Psi_2) \rangle$$

Directed flow fluctuations
relative to the elliptic flow
plane

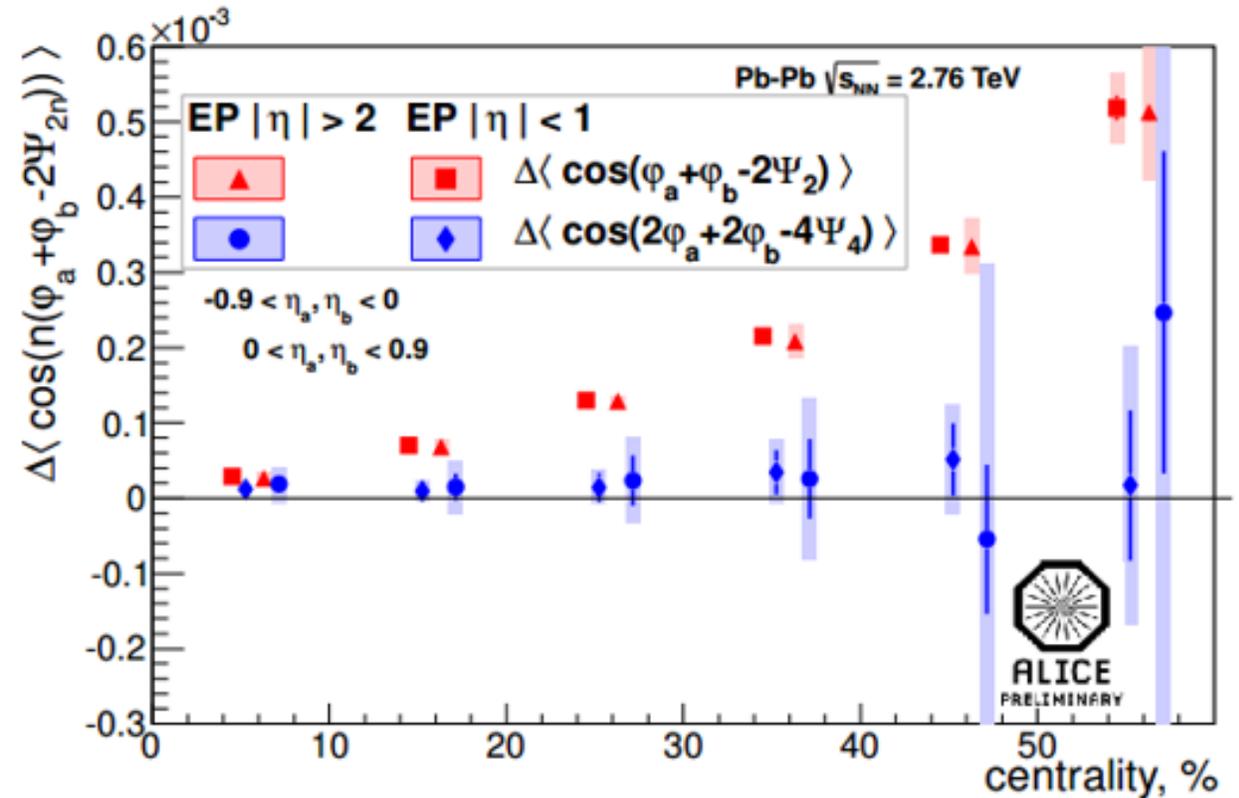
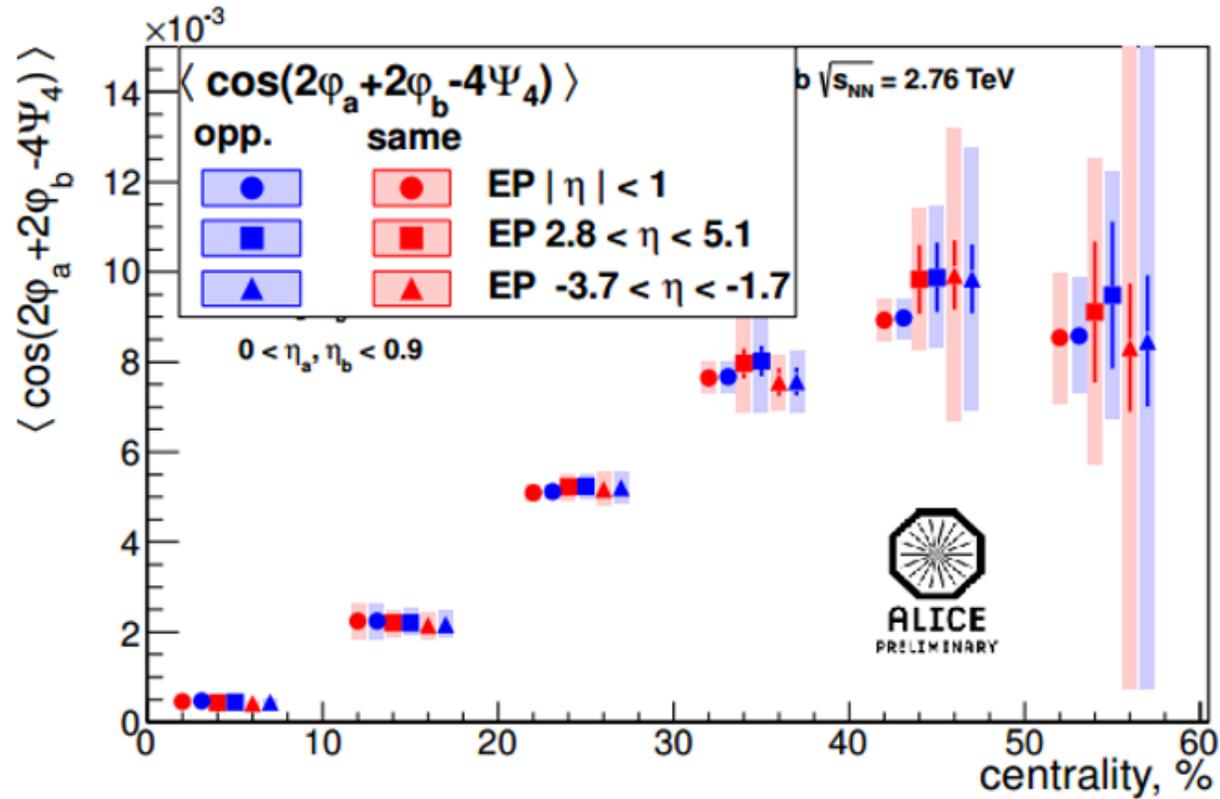


$$\gamma^{\text{II}} = \langle \cos(2\phi_a + 2\phi_b - 4\Psi_4) \rangle = \langle \cos(2\phi_a - 2\Psi_4) \cos(2\phi_b - 2\Psi_4) \rangle - \langle \sin(2\phi_a - 2\Psi_4) \sin(2\phi_b - 2\Psi_4) \rangle$$

Elliptic flow fluctuations
relative to the quadrangular
flow plane



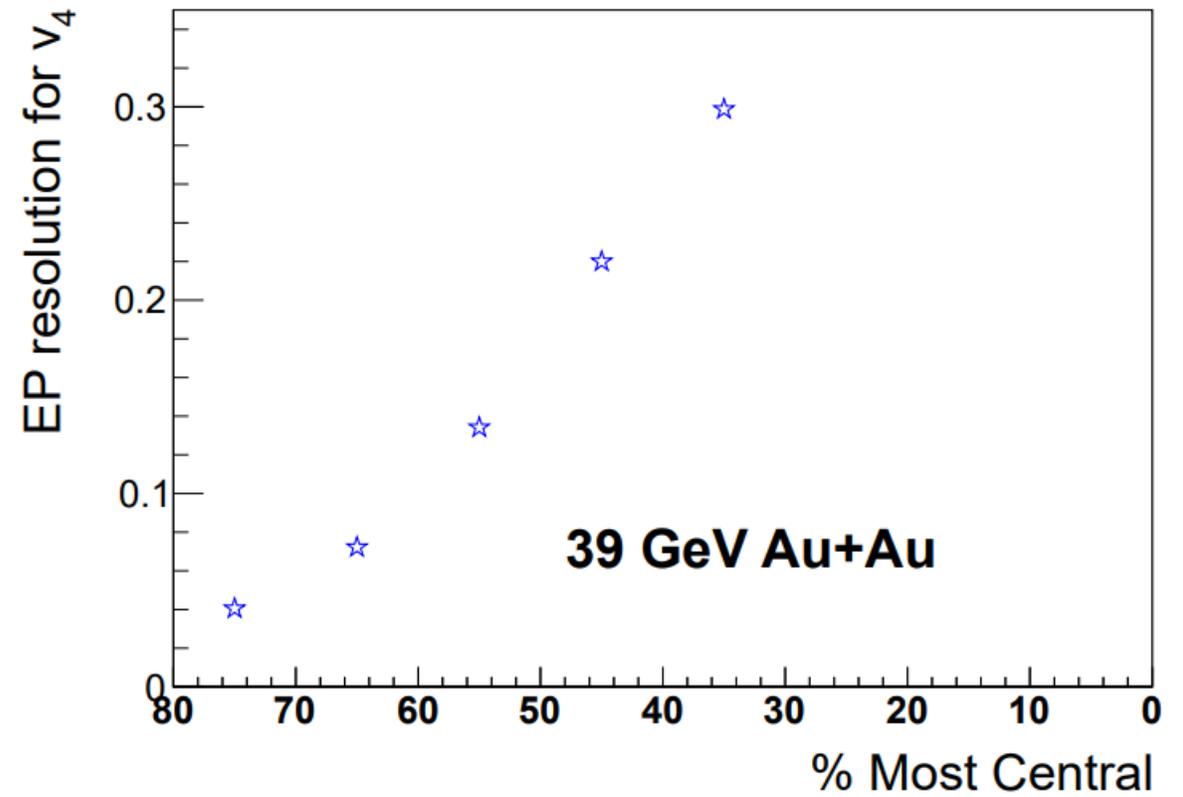
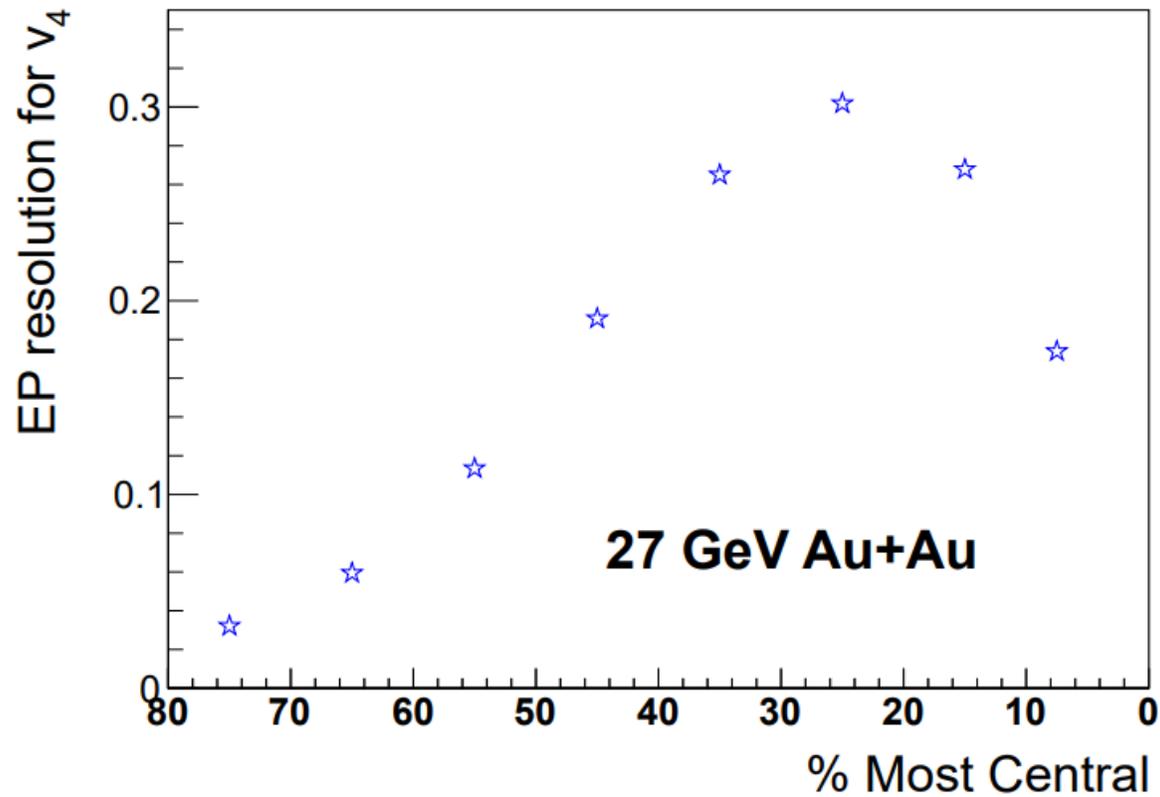
History: ALICE Results



$$\Delta \langle \dots \rangle = \langle \dots \rangle_{\text{opposite}} - \langle \dots \rangle_{\text{same}}$$

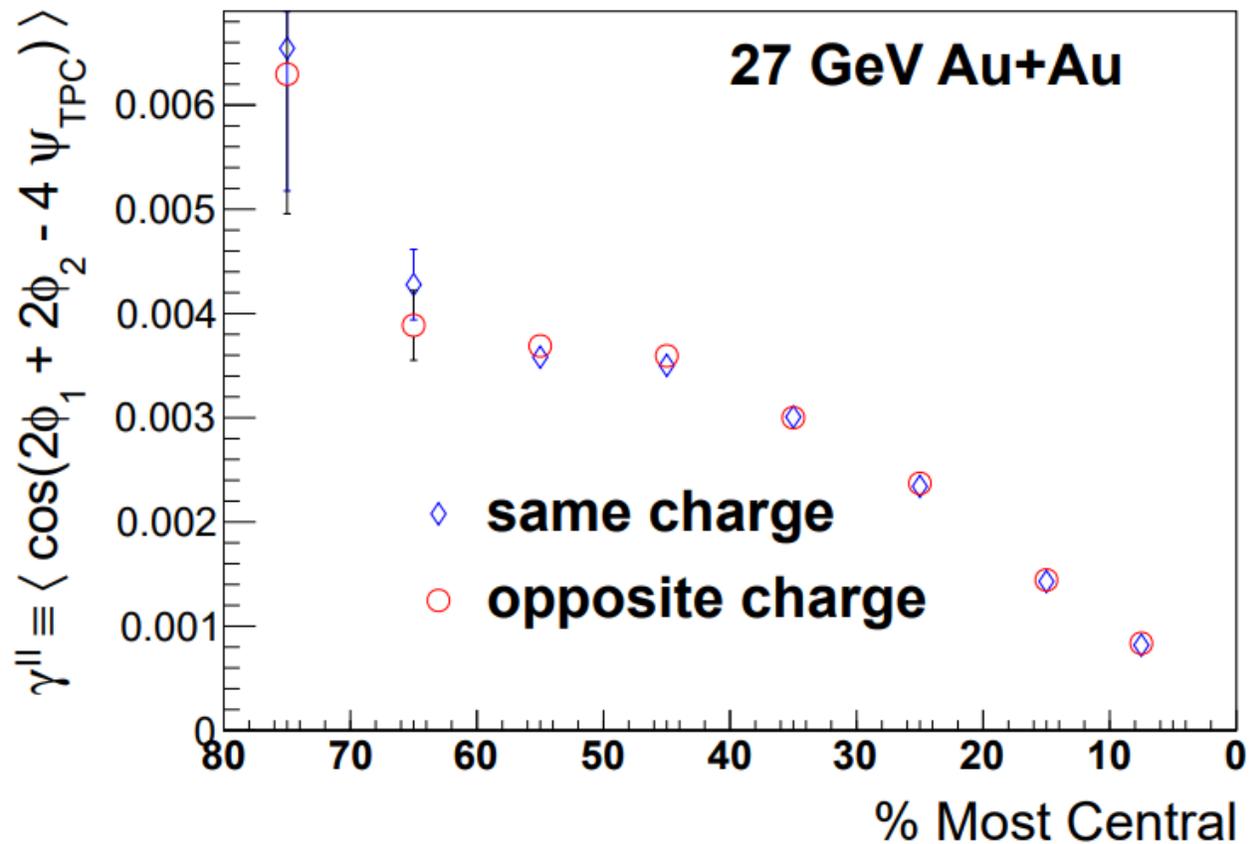
STAR Results

Resolution of 4th Harmonic Event Plane

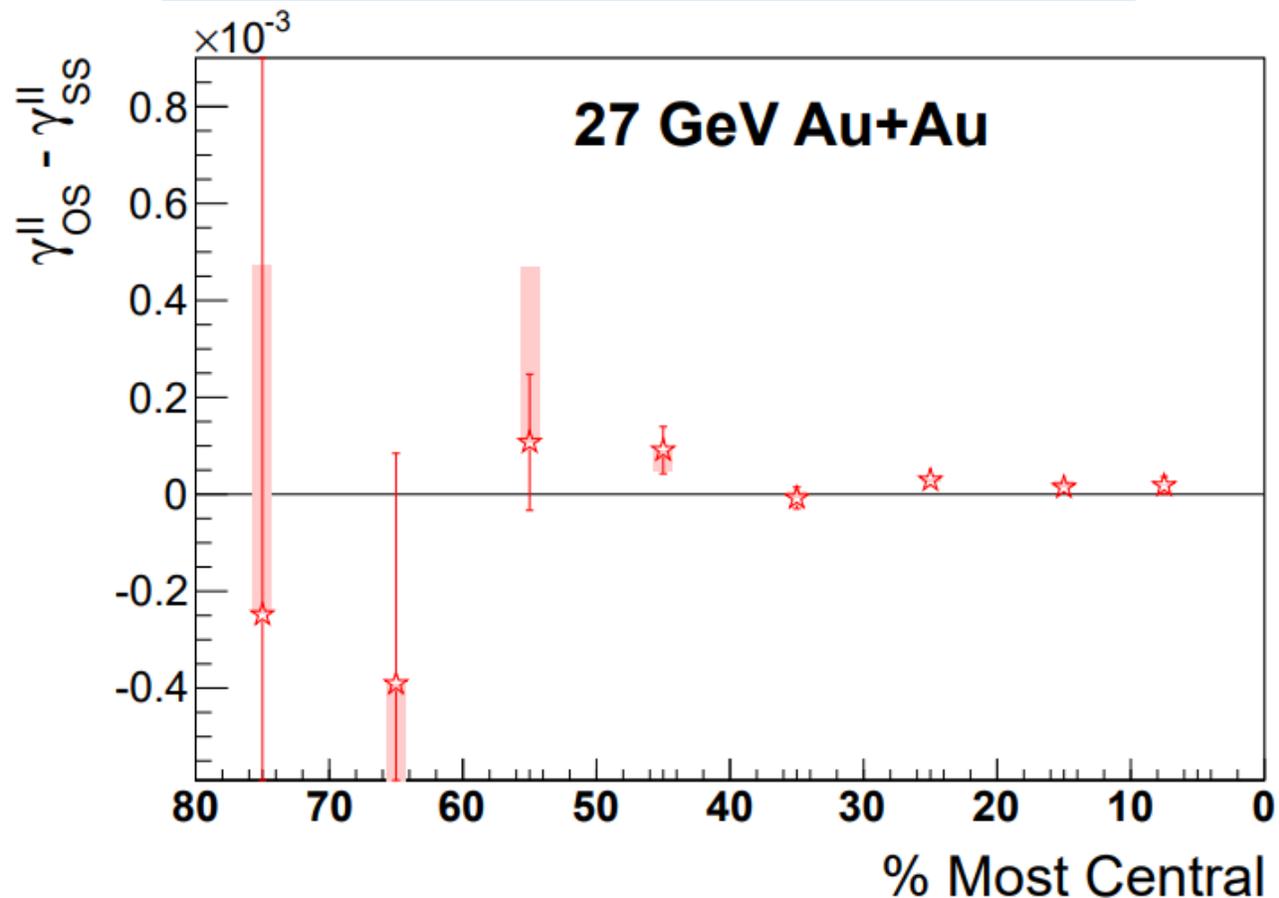


STAR Results

γ^{\parallel} correlator vs Centrality

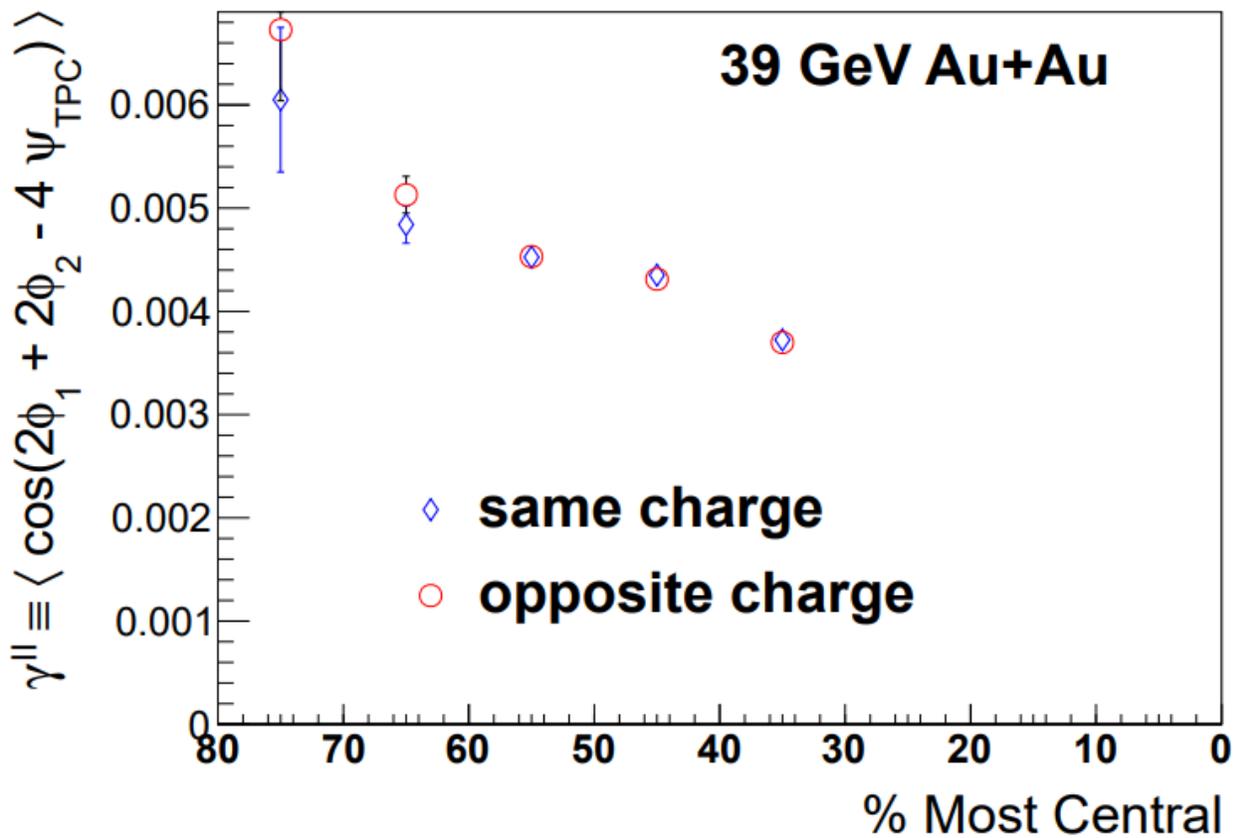


γ^{\parallel} difference vs Centrality

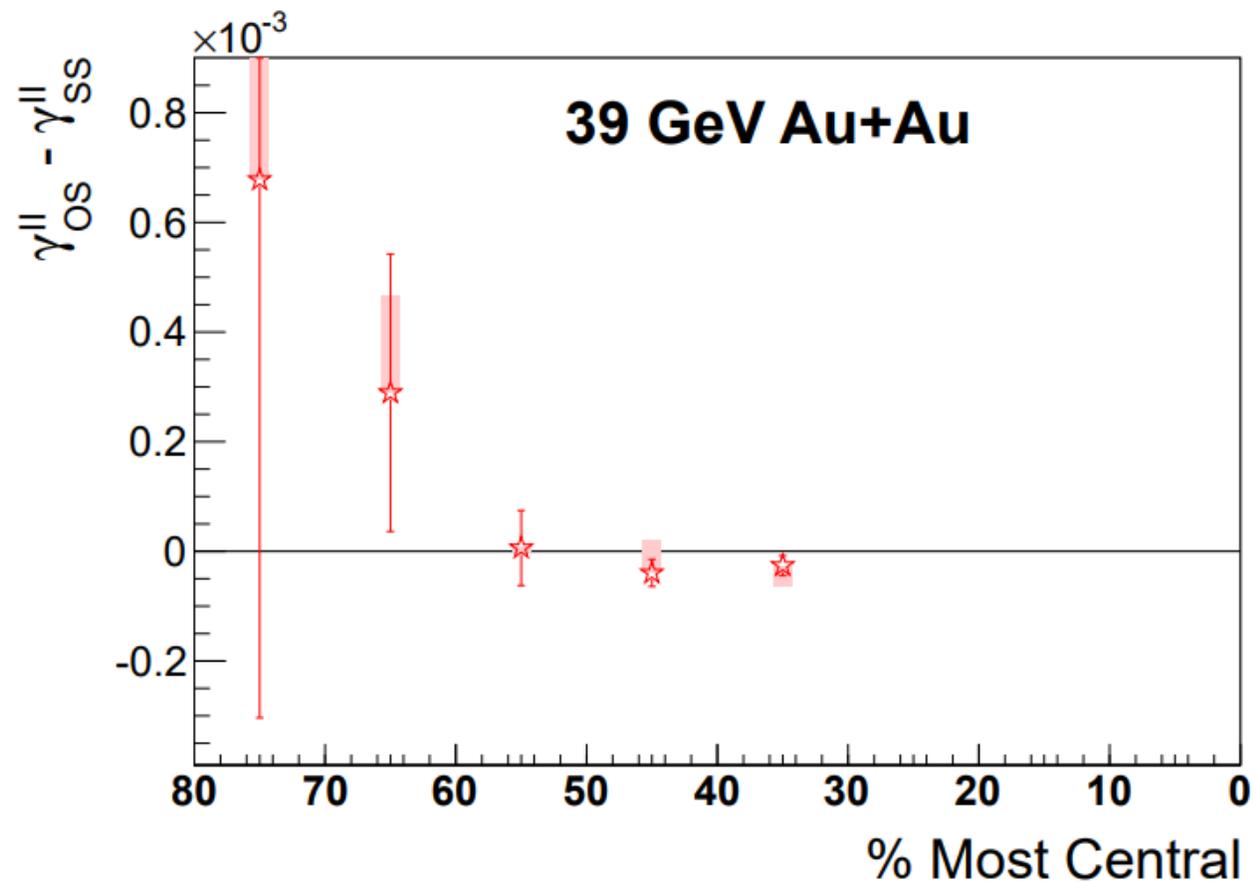


STAR Results

γ^{\parallel} correlator vs Centrality



γ^{\parallel} difference vs Centrality



Summary

- Background study.
- Finish all centralities.
- Potential more detailed analysis of v_4 .
- Submission of abstract to the CEU Poster Session at the DNP Conference.