

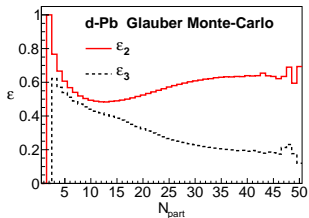
Correlations and femtoscopy in d-Au collisions

Piotr Bożek

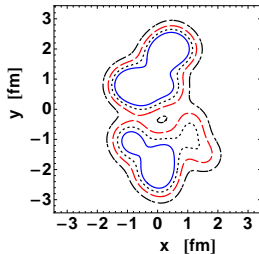
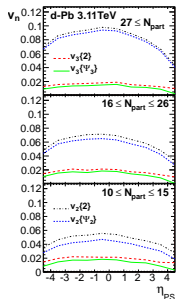
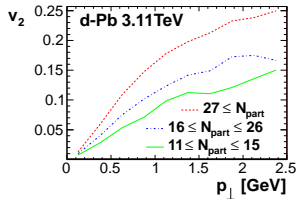
AGH University of Science and Technology
and
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d-Pb (small system with geometrical eccentricity)

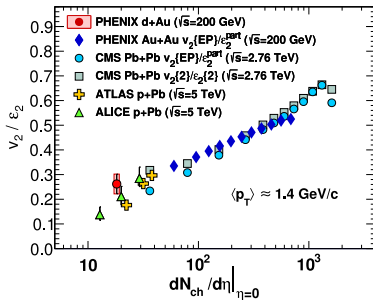
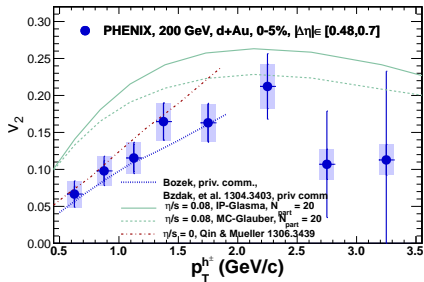


large elliptic flow



PB, arXiv:1112.0912

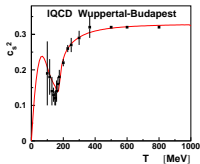
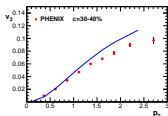
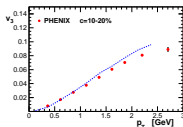
d-Au at 200GeV



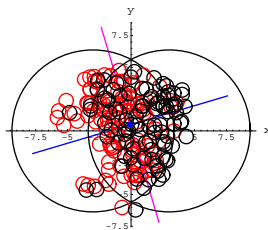
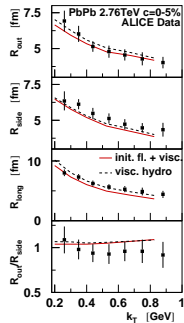
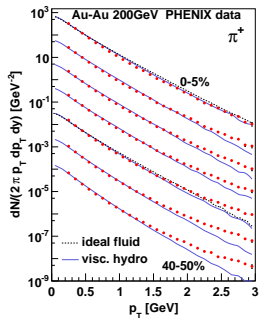
PHENIX, arXiv:1303.1794

large eccentricity - large elliptic flow

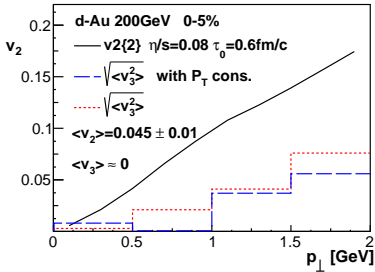
3+1D hydrodynamics



IQCD + Hadron Gas

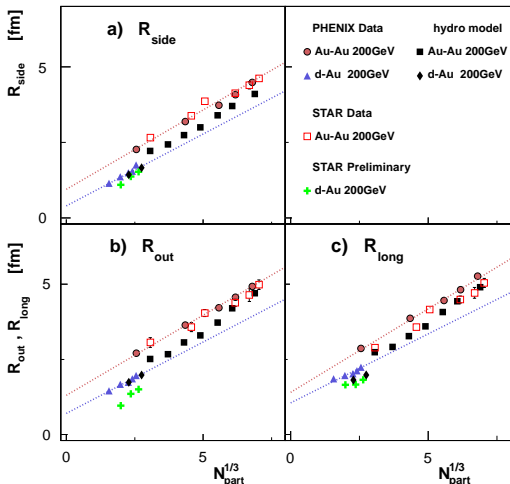


v_2 and v_3 in d-Au



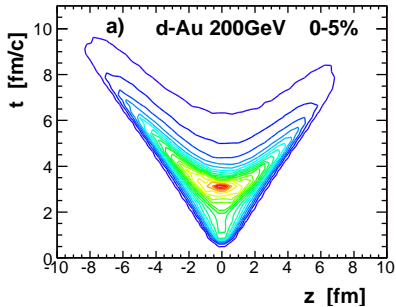
large v_2 , small v_3

$$C(q, k_{\perp}) = 1 + \lambda e^{-R_o^2 q_o^2 - R_s^2 q_s^2 - R_l^2 q_l^2}$$

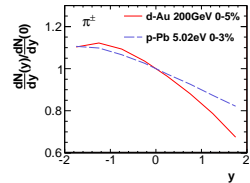


HBT in d-Au well described by hydro

different emission times in forward-backward hemispheres

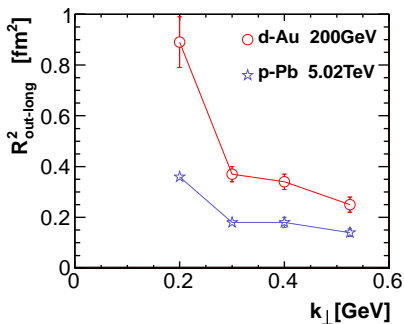


FB asymmetry



lcms of the pion

$R_{out-long} \neq 0$ in asymmetric collisions



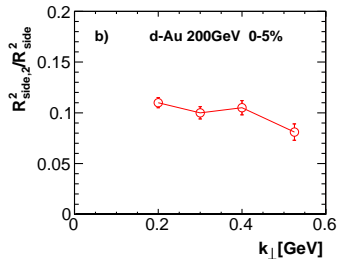
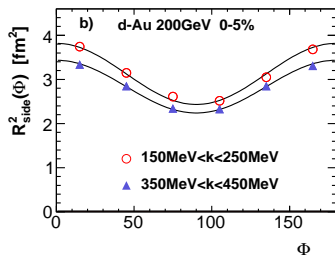
$$C(q, k_{\perp}) = 1 + \lambda e^{-R_o^2 q_o^2 - R_s^2 q_s^2 - R_l^2 q_l^2 - 2R_{ol}^2 q_o q_l}$$

$$R_{ol}^2 = H_1 + I_1 - G_0 \beta_{\perp} + (I_1 + \dots) \cos(2\Phi)$$

$$\langle zxcos(\Phi) \rangle, \langle zysin(\Phi) \rangle, \langle zt \rangle$$

azimuthally sensitive HBT in d-Au

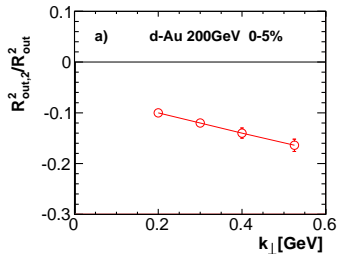
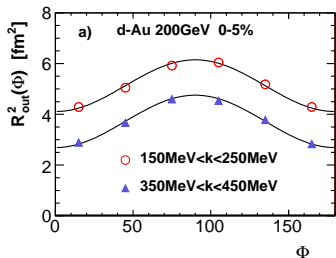
$$R_s^2(\Phi) = R_{s,0}^2 + 2R_{s,2}^2 \cos(2\Phi)$$



R_{side} larger in-plane

azimuthally sensitive HBT in d-Au - R_{out}

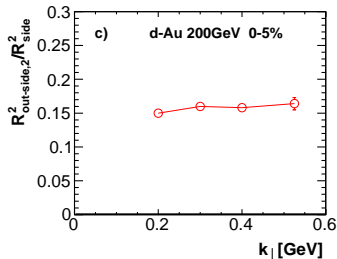
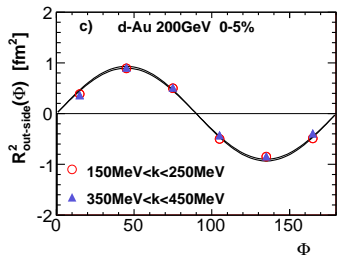
$$R_o^2(\Phi) = R_{o,0}^2 + 2R_{o,2}^2 \cos(2\Phi)$$



R_{out} smaller in-plane

azimuthally sensitive HBT in d-Au - $R_{out-side}$

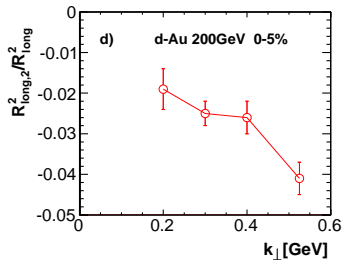
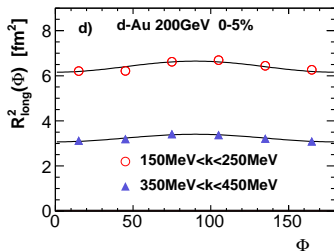
$$R_{os}^2(\Phi) = 2R_{os,2}^2 \sin(2\Phi)$$



$$R_{out-side} \neq 0$$

azimuthally sensitive HBT in d-Au - R_{long}

$$R_l^2(\Phi) = R_{l,0}^2 + 2R_{l,2}^2 \cos(2\Phi)$$



$$R_{long,2} \neq 0$$

Summary

- ▶ hydrodynamics in d-Au + large eccentricity \longrightarrow large v_2
- ▶ small v_3 in d-Au
- ▶ significant $R_{out-long}$
 - ▶ large forward-backward asymmetry in d-Au (p-Pb)
 - ▶ $R_{out-long}$ decreases for peripheral events
 - ▶ can be estimated exp.
- ▶ azimuthally sensitive HBT in d-Au
 - ▶ HBT radii angle dependent
 - ▶ large second order coefficients, $R_{s,2}$, $R_{o,2}$, $R_{os,2}$, $R_{l,2}$
 - ▶ would be a nice confirmation of the geometrical origin of the observed collective-like behavior
 - ▶ difficult exp.?