speculative signals from $U(1)_A$ restoration

hadronisation into metastable states with spontaneously broken parity

(D.Kharzeev,R.Pisarski,M.Tytgat,PRL 81 (1998) 512)

suggestion of observable P-violation in the momentum distribution of pions:

$$P = \sum_{\pi^+,\pi^-} \frac{(\vec{p}_{\pi^+} \times \vec{p}_{\pi^-})_z}{p_{\pi^+} \cdot p_{\pi^-}}$$

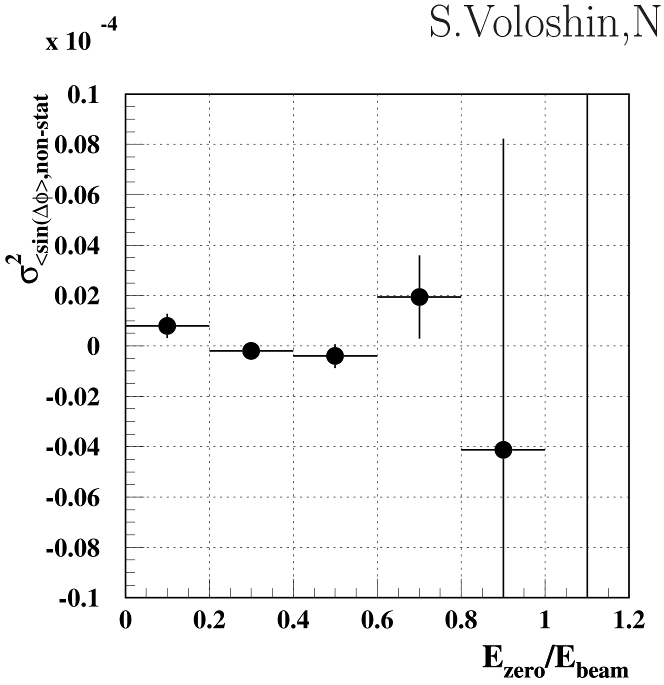
projection into transverse plane:

$$P = \sum_{\pi^+,\pi^-} sin(\Delta\Phi) \qquad \Delta\Phi = \Phi_{\pi^+} - \Phi_{\pi^-}$$

evaluated by subevent method:

$$\langle\langle sin(\Delta\Phi)\rangle^{\{a\}}\langle sin(\Delta\Phi)\rangle^{\{b\}}\rangle = \sigma^2_{sin(\Delta\Phi),non-stat}$$

S.Voloshin,NA49 preliminary



$\Longrightarrow$ no evidence seen in NA49 data