$ep \to ep\pi^0$: access to chiral-odd GPDs

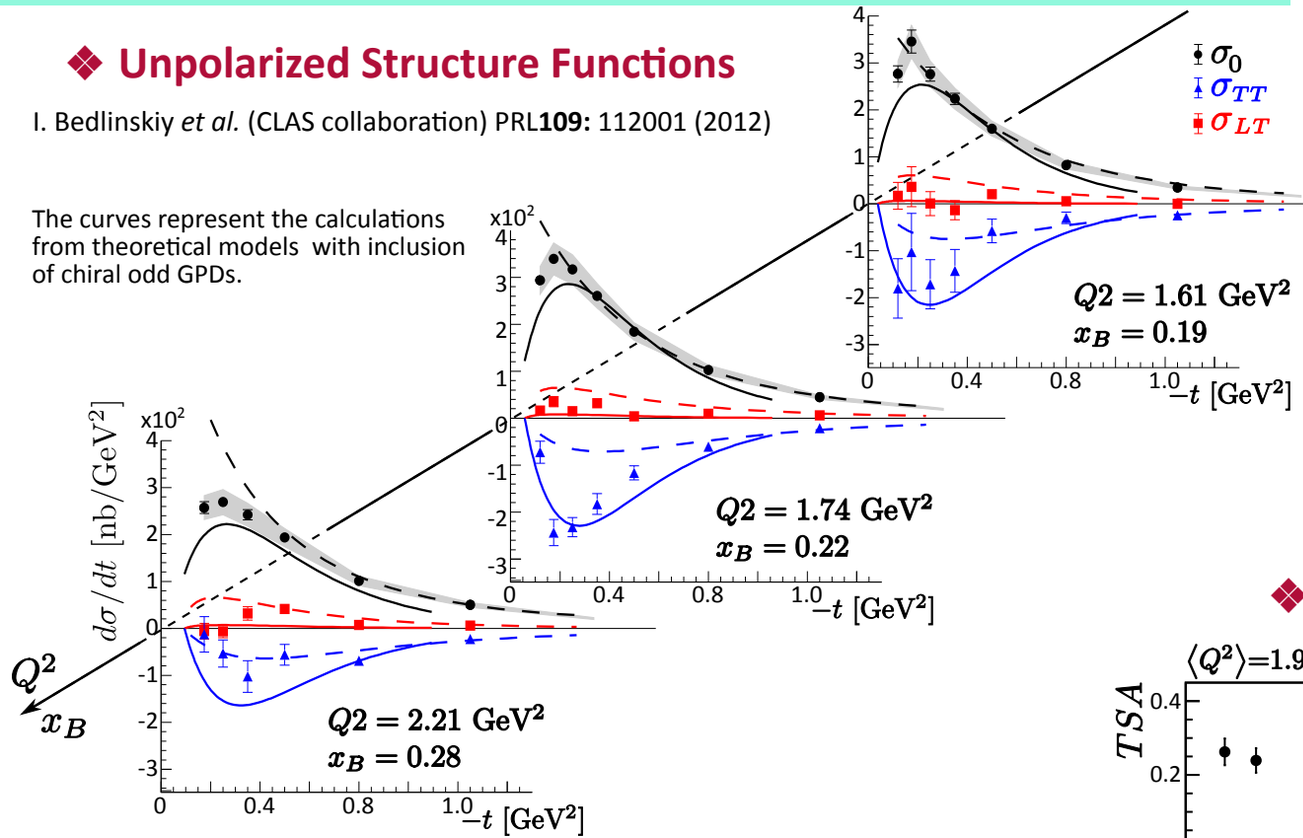
$$\sigma_T \sim (1-\xi^2)|\langle H_T\rangle|^2 - \frac{t'}{8m^2}|\langle \bar{E}_T\rangle|^2 \qquad A_{LU}^{\sin\phi}\sigma_0 \sim \mathrm{Im}\left[\langle H_T\rangle^*\langle \tilde{E}\rangle\right]$$

$$\sigma_{TT} \sim \frac{t'}{8m^2}|\langle \bar{E}_T\rangle|^2 \qquad A_{LL}^{const}\sigma_0 \sim |\langle H_T\rangle|^2$$

❖ Unpolarized Structure Functions

I. Bedlinskiy *et al.* (CLAS collaboration) PRL**109:** 112001 (2012)

The curves represent the calculations from theoretical models with inclusion of chiral odd GPDs.



Dominated by transverse virtual photons contribution

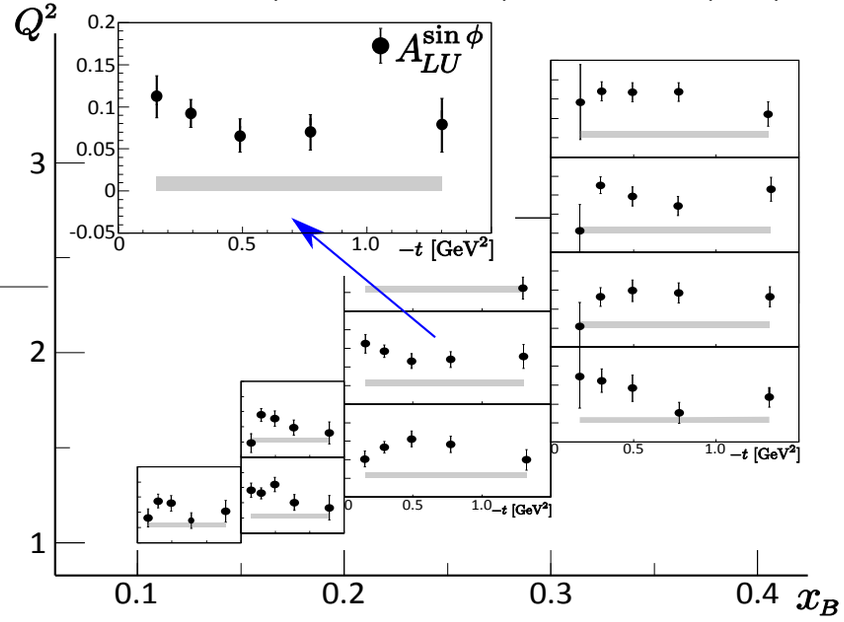
⇓

Unique sensitivity

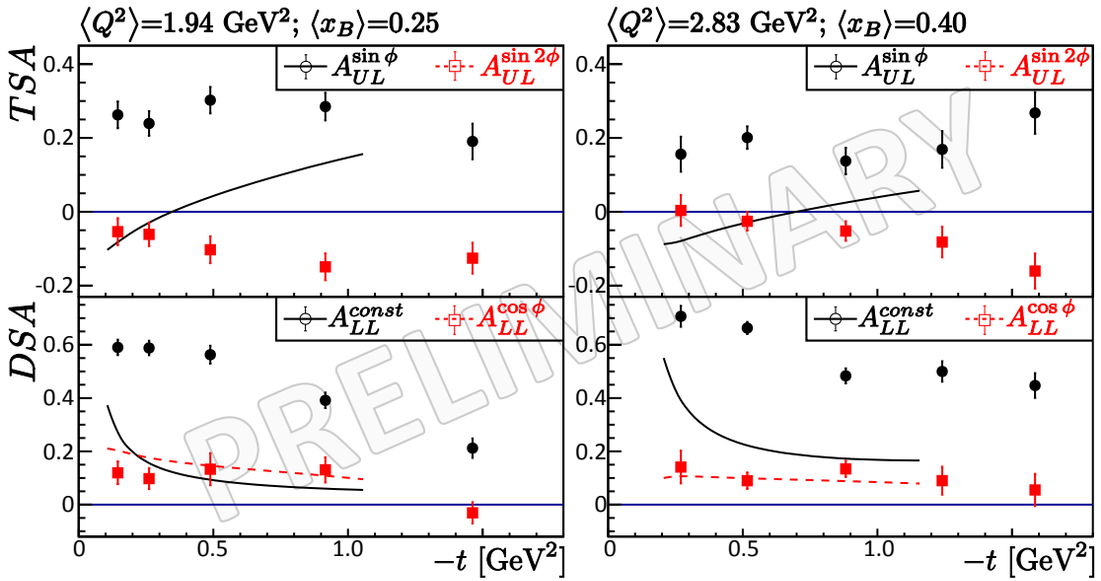
for constraining the chiral-odd GPDs

❖ Beam Spin Asymmetries

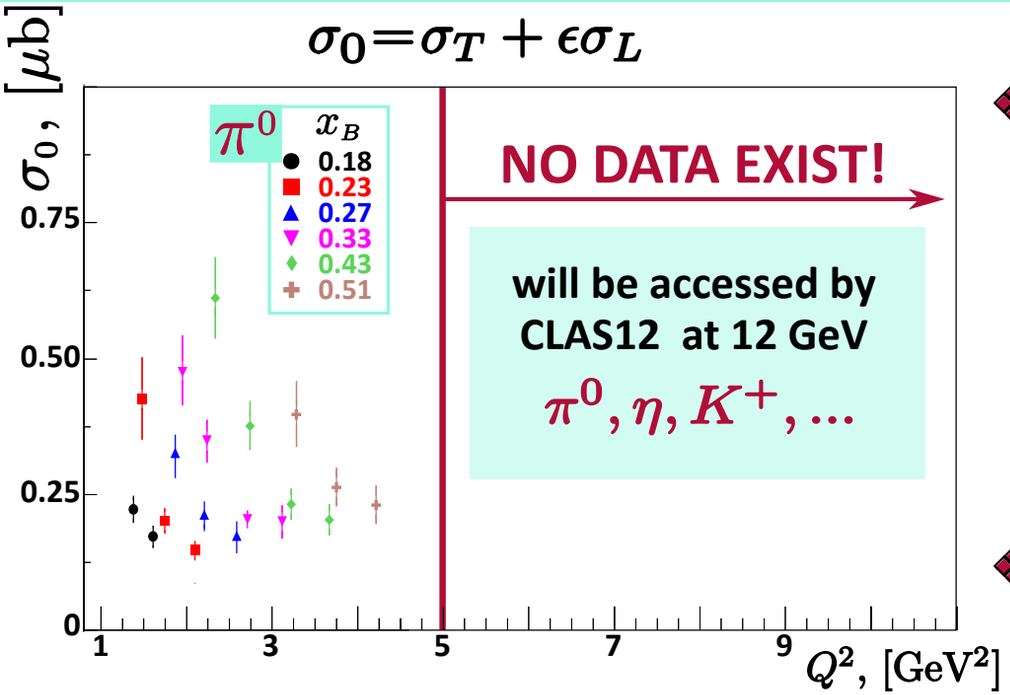
R. De Masi *et al.* (CLAS collaboration) PRC**77:** 042201 (2008)



❖ Target and Double Spin Asymmetries



12 GeV Upgrade and Variety of Pseudoscalar Meson Production

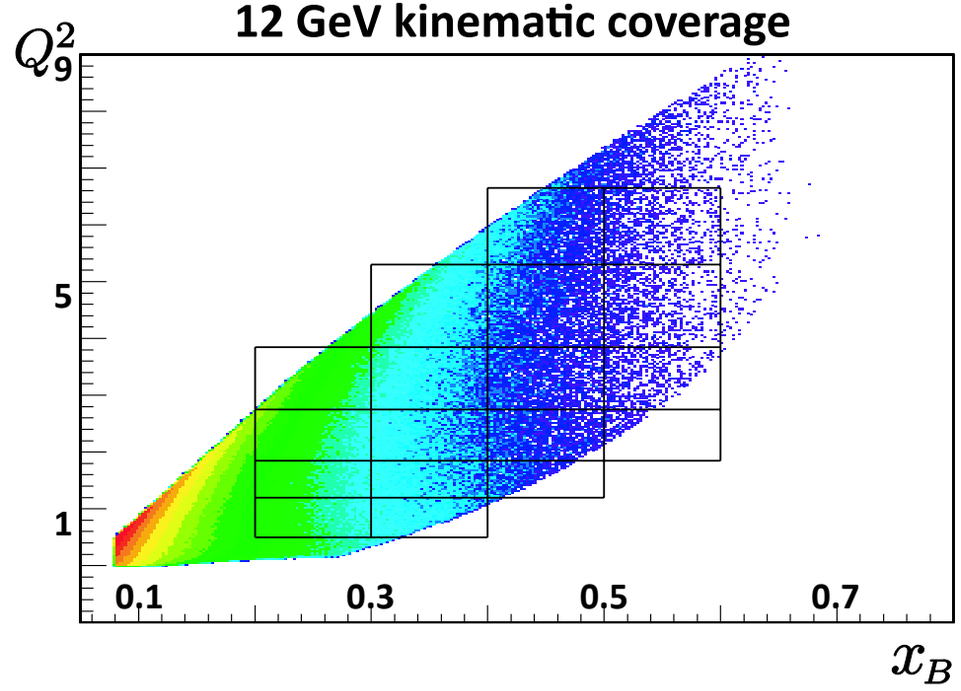


- **Quark flavor decomposition:**

$$F_i^{\pi^0} = \frac{(e_u F_i^u - e_d F_i^d)}{\sqrt{2}} \qquad F_{ip\to\Lambda} = -\frac{(2F_i^u - F_i^d)}{\sqrt{6}}$$

$$F_i^{\eta} = \frac{(e_u F_i^u + e_d F_i^d)}{\sqrt{6}} \qquad F_{ip\to\Sigma^0} = -\frac{F_i^d}{\sqrt{2}}$$

- **Flavor ratios: cancellation of higher twist effects** $\pi^0/\eta, \ldots$



- **The combination of high beam intensity with large acceptance detectors allows for precise measurements of "rare" processes such as deep exclusive reactions: CLAS12 is uniquely suited for simultaneous detection of various DVMP channels**

- **Expansion of the kinematic coverage provides the opportunity to test the mechanism of pseudoscalar meson electroproduction in great details and perform the separation of the contributions from the different chiral-odd GPDs**