

Gluon GPDs: ϕ e-production far-from-threshold

Kemal Tezgin

Virginia Tech

kemaltezgin@gmail.com

Hall C Winter Meeting

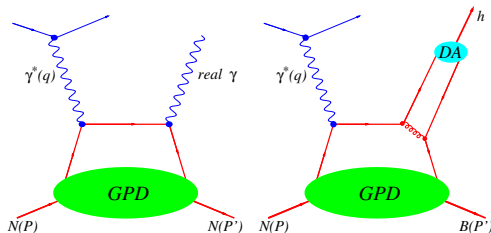
Flash Talk

14 January 2025



GPDs and Factorization

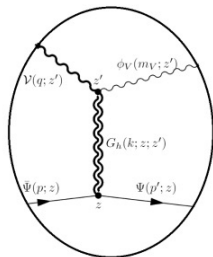
- GPD extractions are mainly based on factorization theorems



- Deeply Virtual Compton Scattering (DVCS) is factorizable
A. Radyushkin Phys.Rev.D 56 (1997); X. Ji and J. Osborne, Phys.Rev.D 58 (1998)
J. Collins and A. Freund, Phys.Rev.D 59 (1999)
- Deeply Virtual Meson Production (DVMP) is factorizable for longitudinally polarized photons J. Collins, L. Frankfurt, M. Strikman, Phys.Rev.D 56 (1997)

Gluon GPDs with Holographic QCD

- Holographic QCD: no explicit separation of scales is needed
- Near threshold:
 - Gravitational Form Factors
 - Enhanced sensitivity to strange quark GPDs
- Far from the threshold:
 - Higher-spin contributions
 - Highly sensitive to gluon GPDs



Mamo, Zahed, Phys.Rev.D (2021)

Conformal space representation of GPDs:

$$H_q(x, \eta, t; \mu) = \frac{1}{2i} \int_{\mathbb{C}} dj \frac{1}{\sin(\pi j)} p_j(x, \eta) \mathbb{F}_q(j, \eta, t; \mu)$$

$$H_g(x, \eta, t; \mu) = \frac{1}{2i} \int_{\mathbb{C}} dj \frac{(-1)}{\sin(\pi j)} p_j^g(x, \eta) \mathbb{F}_g(j, \eta, t; \mu^2)$$