Contribution ID: **125** Type: **Talk in workshop 2: "QCD analysis of nucleon structure"**

Axial and trace anomalies in DVCS

Wednesday, 1 November 2023 17:00 (25 minutes)

In this presentation, we delve into the calculation of perturbative corrections for the Deeply Virtual Compton Scattering process within a unique kinematic domain, specifically where $t \gg \Lambda^2_{\mathrm{QCD}}$, with t representing the change in nucleon momentum following scattering. Working within this unconventional domain necessitated a distinctive approach, particularly dealing with non-zero values of t. Our calculation unveiled a previously undisclosed connection between Generalized Parton Distributions (GPD) and the chiral, as well as trace, anomalies of QCD. Of particular interest is the emergence of anomalies as infrared singularities when t approaches zero. Subsequently, we validate factorization up to one-loop order by systematically incorporating these singularity-related anomalies into the GPDs. This development not only expands the horizons of GPD research to encompass quantum anomalies but also opens up novel avenues for exploring their implications in both high-energy exclusive processes and the domain of lattice QCD investigations.

Primary authors: BHATTACHARYA, Shohini (BNL); VOGELSANG, Werner (Univ. Tuebingen); HATTA, Yoshitaka

Presenter: BHATTACHARYA, Shohini (BNL)

Session Classification: Parallel Workshop 2