Contribution ID: **29** Type: **Poster**

Subtracted dispersion relations formalism for virtual Compton scattering off the proton

In this work, we propose the formalism of subtracted dispersion relations for virtual Compton scattering (VCS) off a proton target as a tool for extracting generalized polarizabilities (GPs) of the proton. This approach offers advantages over the one based on unsubtracted dispersion relations used so far in interpreting the data, particularly in reducing the model dependence.
In this framework, the GPs appear as input parameters which can be determined by a direct fit to the experimental data for VCS.
To achieve this improvement, we evaluate the dispersion integrals in the momentum transfer t. To evaluate these integrals on the positive values of t (right-hand cut), the unitarity relation in the t-channel has been used by saturating it with the contribution of two-pion intermediate states. This has been done using recently available data on the $\gamma\gamma^* \to \pi\pi$ and $\pi\pi \to N\bar{N}$ processes.
On the other hand, to evaluate the integral on the negative values of t (left-hand cut), we approximate the left-hand cut discontinuity by the spectral function for the $\Delta(1232)$-resonance excitation in s- and u-channel for the VCS process.
We then present first results for VCS observables obtained within this framework.

Author: RONCHI, Matteo (Johannes Gutenberg University)

Co-authors: Prof. PASQUINI, Barbara (University of Pavia); DANILKIN, Igor (Johannes Gutenberg University of Mainz); Prof. VANDERHAEGHEN, Marc (Johannes Gutenberg University of Mainz)

Presenter: RONCHI, Matteo (Johannes Gutenberg University)