



Contribution ID: 62

Type: **Parallel-Hadron Structure**

VCS and generalized polarizabilities from Mainz and JLab: Overview and new results

The Generalized Polarizabilities (GPs) are fundamental properties of the nucleon. They characterize the nucleon's response to an applied electromagnetic field, giving access to the polarization densities inside the nucleon. As such the GPs represent a central path towards a complete understanding of the nucleon dynamics. Previous measurements of the proton electric GP at intermediate four-momentum transfer squared have challenged the predictions of theoretical calculations, raising questions in regard to the underlying reasons responsible for a local enhancement of the electric GP. The measurement of the magnetic GP on the other hand promises to quantify the interplay of the paramagnetism and diamagnetism contributions inside the proton. An overview on this topic, new results from JLab and future prospects will be discussed in this talk.

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