

Electromagnetic structure of the Proton from Generalized Polarizabilities

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The polarizabilities of a composite system such as the proton are elementary structure constants. They describe its response to an external electromagnetic (EM) field and quantify the deformation of the charge and magnetization distributions inside the proton caused by the electric or magnetic field, respectively. When studied through the virtual Compton scattering process, the virtuality of the photon gives access to the generalized polarizabilities and allows to map out the resulting deformation of the densities in a proton subject to an EM field. These measurements provide unique access to the underlying system dynamics and are a key for decoding the proton structure in terms of the theory of the strong interaction that binds its elementary quark and gluon constituents together. Of particular interest are puzzling measurements of the proton's electric generalized polarizability, that have challenged the theoretical predictions in recent years. This talk will present an overview on the topic, followed by the discussion of new results and of future prospects.

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