Contribution ID: **240** Type: **Invited/Leading contribution**

Effective field theories and phenomenology for electron and neutrino-induced processes

Obtaining a physically well-founded theoretical description of hadrons across energy scales is of high importance for the extraction of precision quantities such as hadronic contributions to the Lamb shift or the impact of neutrino-nucleon interactions on neutrino oscillation experiments. However, the strong force behaves remarkably differently at high and low energies: effective field theories (EFTs) are called for for the description in the different regimes.

When probing hadrons with electron or neutrino beams, at high energies the underlying physics is well understood in terms of perturbative QCD, as well as Regge phenomenology. At low energies, the connection to the physics of the constituents becomes obscured and it becomes justified to use chiral perturbation theory (ChPT) or pionless EFT.

Moreover, to connect the low and high-energy regimes, the wealth of resonances appearing in the spectrum needs to be accounted for, whose description is highly convoluted. Many of them, the exotic resonances, do not even follow the usual 2 or 3-valence-quark picture.

I present an overview of low-energy processes described in ChPT, as well as advances towards connecting low-energy and resonance regimes to high-energy processes with the help of phenomenological frameworks and Regge theory.

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