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Hadron matrix elements, lattice QCD and the Feynman-Hellmann approach

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A major objective of lattice QCD is the computation of hadronic matrix elements. The standard method is to use three-point and four-point correlation functions. An alternative approach, requiring only the computation of two-point correlation functions is to use the Feynman-Hellmann theorem. In this talk we develop this method up to second order in perturbation theory, in a context appropriate for lattice QCD. This encompasses the Compton Amplitude (which forms the basis for deep inelastic scattering) and hadron scattering. Some numerical results are presented showing results indicating what this approach might achieve.

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