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Hadron Structure from the Feynman-Hellmann Theorem

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Although hadron structure calculations in lattice QCD have improved greatly in recent years, many problems still remain.

Various techniques for determining fermion line disconnected contributions to matrix elements have produced exciting and promising results, but rely on complicated analyses.

Additionally, calculations of electromagnetic form factors at high momentum transfers remain limited by low signal-to-noise ratios.

In this talk we present results from Feynman-Hellmann motivated approaches to determinations of these quantities.

We find disconnected contributions to $\Delta\Sigma$ consistent with stochastic calculations, and are able to access significantly higher momentum transfers for electromagnetic form factors than have previously been feasible.

In conjunction with experimental data, these results may reveal interesting information regarding the possibility of a zero crossing in the ratio of electric and magnetic form factors in the nucleon.

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