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Nucleon Structure Functions from the Feynman-Hellmann Theorem

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Better model-independent theoretical predictions and input to parton distribution functions are vital to improving our understanding of how the nucleon is formed by quarks and gluons. By using a second order extension of the Feynman-Hellmann theorem we examine the nucleon Compton form factor $F_1(\omega, Q^2)$ without the need for calculations of four-point correlators. The calculation is performed for multiple lattice spacings, volumes and a large range of Q^2 up to $9GeV^2$, allowing examination of lattice artefacts and higher twist contributions.

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