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Nucleon Form Factors from the Feynman-Hellmann Method in Lattice QCD

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Lattice QCD calculations of the nucleon electromagnetic form factors are of interest at the high and low momentum transfer regions. For high momentum transfers especially there are open questions, such as the zero crossing in the proton's electric form factor, which require more calculations. We will present recent progress from the QCDSF/UKQCD/CSSM collaboration on the calculations of these form factors using the Feynman-Hellmann method in lattice QCD. This method provides an efficient method allowing us to reach high momentum transfers. In this talk we present results of the form factors up to 9 GeV^2, using N$_f$=2+1 flavour fermions for three different pion masses in the range 310-470 MeV. The results are extrapolated to the physical point through the use of a flavour breaking expansion at two different values of the lattice spacing, allowing for a study of discretisation effects.

Primary author: BATELAAN, Mischa (The University of Adelaide)

Co-authors: ZANOTTI, James (University of Adelaide); YOUNG, Ross; QCDSF/UKQCD/CSSM COLLABORATION

Presenter: BATELAAN, Mischa (The University of Adelaide)

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