Chiral Extrapolations of Nucleon Properties from Lattice QCD

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We are analysing the quark-mass dependence of the anomalous magnetic moments [1] and the axial vector coupling [2] of the nucleon. (Quenched) Lattice data for these quantities are only available for quark-masses heavier than 20 times the physical light quark masses [3], making extrapolation schemes necessary to bridge the gap between lattice data and the physical moments of the nucleon. We report on recent work of such extrapolations performed within the framework of chiral effective field theories. In the case of the anomalous magnetic moments we also compare our extrapolation with the Pade-formula recently suggested by the Adelaide group [4].

References

[1] T.R. Hemmert and Weise, preprint no. hep-lat/0204005.

[2] T.R. Hemmert, M. Procura and W. Weise, forthcoming.

[3] *e.g.* see G. Schierholz, Proceedings of Baryons 2002.

[4] D.B. Leinweber, D.H. Lu and A.W. Thomas, Phys.Rev.D60:034014 (1999).