

Low-energy constants in the chiral Lagrangian with baryon octet and decuplet fields from Lattice QCD data on CLS ensembles

We perform an analysis of Lattice QCD data on baryon octet and decuplet masses based on the chiral $SU(3)$ Lagrangian. Low-energy constants (LEC) are adjusted to describe baryon masses from a large set of CLS ensembles, where finite-box and discretization effects are considered. The set is successfully compared against previous Lattice QCD data from ensembles generated with distinct QCD actions by the ETMC, QCDSF-UKQCD and HSC groups. Discretization effects are modelled by the use of action and lattice-scale dependent leading orders LEC, where uniform values are imposed in the limit of vanishing lattice scales. From the CLS data set we extract a pion-nucleon sigma term,

$\sigma_{\pi N} = 58.7(1.2)$ MeV, compatible with its empirical value.

Parallel Session

Low-Energy Nucleon Structure

Primary author: LUTZ, Matthias F.M. (GSI)

Co-authors: HEO, Yonggoo; GUO, Xiao-Yu

Presenter: LUTZ, Matthias F.M. (GSI)

Session Classification: Low Energy Nucleon Structure