

Contribution ID: 137

Type: Talk

The isospin-violating part of the hadronic vacuum polarisation

Thursday, 1 August 2024 10:00 (20 minutes)

The experimental precision for the muon (g-2) currently exceeds that of the Standard-Model based prediction. In the latter, the biggest contribution to the uncertainty results from the calculation of the Hadronic Vacuum Polarisation (HVP). To achieve a higher precision, one needs in particular to determine the small, QED induced corrections to the HVP. These corrections can be calculated at leading order in the fine-structure constant using lattice QCD.

Here we present a calculation of the isospin-violating part of the HVP. We use a covariant coordinate-space approach, where the photon propagator is treated in the continuum. In order to handle the divergence originating from large photon virtualities, we use a (doubly) Pauli-Villars regulated photon propagator and calculate the required isovector mass-counterterm, which is determined from the Kaon mass splitting. These calculations are performed on four SU(3) flavour-symmetric CLS ensembles with different lattice spacings and with varying Pauli-Villars masses.

Primary authors: GERARDIN, Antoine (Centre de Physique Théorique de Marseille); ERB, Dominik (JGU Mainz); HAGELSTEIN, Franziska (JGU, PSI); MEYER, Harvey B. (University of Mainz); PARRINO, Julian (Johannes Gutenberg-Universität Mainz); Dr PASCALUTSA, Vladimir (JGU Mainz); Mr BILOSHYTSKYI, Volodymyr (JGU Mainz)

Presenter: ERB, Dominik (JGU Mainz)

Session Classification: Quark and lepton flavour physics

Track Classification: Quark and Lepton Flavour Physics