



Contribution ID: 307

Type: Talk

Study of the couplings of QED and QCD from the Adler function

Friday, 27 June 2014 15:15 (20 minutes)

The QCD contributions to the vacuum polarisation function are responsible for a large fraction of the theoretical uncertainty in the running of the QED coupling and therefore limit its impact on electroweak precision tests. We use lattice simulations with $N_f=2$ $O(a)$ improved Wilson fermions to determine the Adler function in a broad range of momentum transfer Q^2 . The running of the QED coupling, including valence contributions from u, d, s and c quarks, is compared to phenomenological results at intermediate Q^2 values. In the large Q^2 regime, the lattice determination of the Adler function is fitted to perturbation theory in order to explore the feasibility of a determination of the strong coupling constant.

Primary author: HERDOIZA, Gregorio (KPH Mainz and IFT Madrid)

Co-authors: FRANCIS, Anthony (KPH Mainz); JÄGER, Benjamin (Swansea U.); HORCH, Hanno (KPH Mainz); WITTIG, Hartmut (KPH Mainz); MEYER, Harvey (KPH Mainz)

Presenter: HERDOIZA, Gregorio (KPH Mainz and IFT Madrid)

Session Classification: Hadron Structure