



Contribution ID: 162

Type: not specified

The Neutron Electric Dipole Moment from lattice QCD

Tuesday 30 August 2016 18:30 (20 minutes)

We calculate the neutron electric dipole moment within the framework of lattice QCD. In particular we analyze configurations produced with $N_f = 2 + 1 + 1$ twisted mass fermions with light quark mass which corresponds to pion mass of 370 MeV. We do so by extracting the CP -odd form factor F_3 at the limit of zero momentum transfer and at small values of the θ vacuum angle. The zero momentum limit is realized via fitting the momentum dependence by a dipole fit as well as using position space methods. The computation of F_3 requires the calculation of the topological charge. We measure the field theoretical topological charge via cooling and the gradient flow using the Wilson, Symanzik tree-level improved and Iwasaki actions. Our analysis yields a value for the neutron electric dipole moment of $-0.045(6)(1) e \cdot \text{fm}$ in units of θ .

Summary

Primary author: Dr ATHENODOROU, Andreas (University of Cyprus)

Co-authors: ALEXANDROU, Constantia; Prof. KOUTSOU, Giannis (The Cyprus Institute); JANSEN, Karl (DESY); Dr OTTNAD, Konstantin (Bethe Center for Theoretical Physics, Universitat Bonn); Dr HADJIYIANNAKOU, Kyriakos (The George Washington University); Dr PETSCHLIES, Marcus (Bethe Center for Theoretical Physics, Universitat Bonn); Dr CONSTANTINO, Martha (The Cyprus Institute)

Presenter: Dr ATHENODOROU, Andreas (University of Cyprus)

Session Classification: Section B

Track Classification: Section B: Light Quarks