



Contribution ID: 120

Type: Talk

Induced QCD with N_c auxiliary bosonic fields

Tuesday, 24 June 2014 17:30 (20 minutes)

We investigate an alternative lattice discretization of continuum $SU(N_c)$ Yang-Mills theory in which the self-interactions of the gauge field are induced by a path integral over N_c auxiliary bosonic fields which are coupled linearly to the gauge field. In two dimensions there exists an analytic proof that the new discretization reproduces Yang-Mills theory in its non-perturbative continuum limit. We provide numerical evidence that this is also the case in three and four dimensions and that, after a suitable matching between the free parameters, the results of the induced theory agree with results from the ordinary plaquette action up to lattice artifacts. The new discretization is ideally suited to change the order of integration in the QCD path integral to arrive at formulations in which the gauge fields have been integrated out. The resulting theories might be amenable to methods previously used in the infinite-coupling limit, and we briefly discuss a possible dual representation of lattice QCD.

Primary author: Dr BRANDT, Bastian (University of Regensburg)

Co-author: Prof. WETTIG, Tilo (University of Regensburg)

Presenter: Dr BRANDT, Bastian (University of Regensburg)

Session Classification: Theoretical Developments

Track Classification: Theoretical Developments