

Mathematical Physics Seminar

Robert Lohmeyer
University of Regensburg

Induced QCD

We explore an alternative discretization of continuum $SU(N_c)$ Yang-Mills theory on a Euclidean spacetime lattice, originally introduced by Budzies and Zirnbauer. In this discretization the self-interactions of the gauge field are induced by a path integral over N_b auxiliary boson fields, which are coupled linearly to the gauge field. The main progress compared to earlier approaches is that N_b can be as small as N_c . In the main part of this talk we (i) extend the proof that the continuum limit of the new discretization reproduces Yang-Mills theory in two dimensions from gauge group $U(N_c)$ to $SU(N_c)$, (ii) derive refined bounds on N_b for non-integer values, and (iii) perform a perturbative calculation to match the bare parameter of the induced gauge theory to the standard lattice coupling. Furthermore, we will present some numerical evidence in support of the conjecture that the induced gauge theory reproduces Yang-Mills theory also in more than two dimensions.

Thursday, 02.02.2017, 16:00 Uhr
D5-153