

Department of Theoretical Physics

Free Meson Seminar

<i>Speaker</i>	:	Gunnar Bali (Universität Regensburg)
<i>Topic</i>	:	The meson spectrum of large-N QCD
<i>Day, Date & Time</i>	:	Thursday, February 14, 2013 at 2:30 p.m.
<i>Place</i>	:	AG 69

Abstract

QCD is the quantum field theory of the strong interactions. It is based on an $SU(N)$ gauge symmetry with the number of colours $N=3$, coupled to fermions in the fundamental representations. In the limit of infinite N this theory simplifies. For instance all physical amplitudes are given by a subset of only planar Feynman diagrams. Moreover, keeping the number of fermion flavours fixed (the so-called 't Hooft limit), the effect of sea quarks can be neglected, reducing QCD to a quenched but unitary model. In this limit the spectrum consists of stable glueballs and mesons.

Nevertheless this limit is still non-perturbative and far from trivial. Phenomenologically, it is a good starting point to investigations of strong decays, e.g., within the framework of effective field theories. From the theoretical side, the large- N limit of strongly coupled (SUSY-)QCD is conjectured to be dual to classical supergravity in an anti-de-Sitter background (AdS/QCD correspondence), allowing for non-perturbative calculations, preserving the rotational symmetry.

I will summarize recent results from our lattice simulations of the meson spectrum and decay constants in the large- N limit of QCD and compare these to real world QCD as well as to phenomenological and string theory expectations.

(Nilmani Mathur)