Gemeinsame Veranstaltung von
Humboldt-Universität zu Berlin, Institut für Physik
(Theorie der Elementarteilchen / Computerorientierte Theoretische Physik)
DESY, Zeuthen

SEMINAR
Feldtheorie auf dem Gitter und Phänomenologie der Elementarteilchen

Am Dienstag, dem **13. November, um 15:00 Uhr s.t.** spricht

Dr. **Badis Ydri**
Humboldt Universität zu Berlin

zum Thema

Nonperturbative study of noncommutative gauge theory in 2 dimensions using Monte Carlo simulation on the fuzzy sphere

Abstract

We study a 3 matrix model with global $SO(3)$ symmetry containing at most quartic powers of the matrices. We find the model in one limit of the parameters has two clear phases separated by a line of discontinuous phase transition of 1st order yet with divergent critical fluctuations of the specific heat characterised by the critical exponent $\alpha = 1/2$. One phase involves gauge fields fluctuating on a round 'fuzzy sphere" and as the coupling of the model is varied the sphere evaporates and the model undergoes a transition to a pure matrix phase. This line of first order transitions terminate at a line of second order continous transitions. In the other limit of the parameters the model undergoes instead a third order transition between the sphere phase and the matrix phase. We also argue that in the continuum limit this could be a 2nd order discontinous transition with a jump discontinuity in the specific heat instead of a singularity. In all these transitions both the geometry and the gauge fields are emergent concepts and they are determined dynamically.

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(Lageplan: `http://linde.physik.hu-berlin.de/images/lageplan_neu.gif`)

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