



Colloquium of the SFB 647

TIME:

1 Dec 2009, 16:00 - 19:00

LOCATION:

Urania Berlin e. V.
An der Urania 17
10787 Berlin
Room: Loft

PROGRAM:

16:00 - 17:00 **Dr. Christoph Stephan**

Noncommutative Geometry, Spectral Geometry and Particle Physics

Alain Connes' noncommutative geometry (NCG) allows to unify the classical Yang-Mills-Higgs theory and General relativity in a single geometrical framework. Much of the physical information of particle models is obtained by the "spectral action" which can be computed from the eigenvalues of the generalised Dirac operator. This unification implies restrictions on the couplings of the Standard Model (SM) at a given cut-off energy. This reduces the number of free parameters, compared to the classical SM.

I will give an introduction to the basic ideas of NCG, of the spectral action and its application to particle physics. Furthermore I plan to present an overview of the most recent developments (particle model building in NCG, Dirac operators with torsion, etc.) and I will also comment on latest experimental data relevant to the NCG framework.

17:00 - 17:30 Coffee Break

17:30 - 18:30 **Dr. Wellington Galleas**

Exact results and Yang-Baxter methods

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The Yang-Baxter equation has played the central whole in the modern theory of integrable systems and for derivation of exact results. In this talk I shall discuss how the Yang-Baxter equation has been and how it can still be explored in order to provide exact solutions of integrable systems with a variety of boundary conditions.

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