SFB Colloquium

TIME:
10 May 2011, 16:00 - 19:00

LOCATION:
Konrad-Zuse-Zentrum für Informationstechnik Berlin
Takustrasse 7
14195 Berlin-Dahlem

PROGRAM:

16:00 - 17:00   **Prof. Dr. Volker Schomerus**

"Harmonics of Gauge Theory"
Quantized gauge theories have enormous success in explaining many of the features of our world, though often theorists struggle to extract numerical predictions. About a decade ago, string theorists discovered the first intriguing examples of novel "geometric'' reformulations of quantum field theories.
  These relate the data of multi-color quantum gauge theory to classical string geometry, i.e. to a stringy deformation of geometric concepts which are encoded in the Einstein-Hilbert action. After a brief introduction to the relevant background, I will describe the relevant string theoretic version of harmonic analysis and its relation to the theory of magnets. Some key features of string harmonic analysis are finally illustrated through examples.

17:00 - 17:30   COFFEE BREAK

17:30 - 18:30   **Prof. Dr. Klaus Ecker**

"On the singular set for mean curvature flow of hypersurfaces"
We consider smooth, properly immersed n - dimensional hypersurfaces evolving by mean curvature in some open subset of Euclidean space on some time interval. Such hypersurfaces will

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usually develop singularities after some finite time. These are points near which the curvature blows up, so that the solution cannot be extended beyond this time. We discuss many examples where singularities of various types form.

We then survey a number of results which provide information about the dimension of the first singular set which forms and about the asymptotic shape of the solution near singularities. The main part of the talk will be centred around some recent work which derives optimal estimates for the dimension of the first singular set for several interesting classes of solutions. The main technical tool is an analytical result which states that if the norm of the curvature of the solution is integrable with an exponent p, then the first singular set must have n+2-p - measure equal to zero.

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