SFB Colloquium/ 2nd Andrejewski Lecture

TIME:
10 Jan 2006, 15:00 - 18:00

LOCATION:
AEI Golm
Am Muehlenberg 1
Hauptgebaeude, Z-050
14476 Golm

PROGRAM:

15:00 - 16:00 **Prof. Dr. Albrecht Klemm, University of Wisconsin/ Madison**

Mirror symmetry and the topological A- and B-model
Mirror symmetry on CY manifolds exchanges the symplectic structure on M, actually a complexified Kähler structure, with the complex structure on a mirror dual CY manifold W. The deformation theory of each of these structures can be described by a topological string theory called the topological A- and the B-model respectively. These models are cohomological theories defined by nilpotent operators QA and QB. We will show that QA exists on every symplectic manifold while QB exists only on CY manifolds and certain generalizations thereof. The latter fact is related to the Tian & Todorov theorem on the unobstructedness of complex structure deformations on CY spaces and generalizations by Hitchin. We will then discuss properties of cohomological theories theories notably the descend- and topological recursion relations. The solution of the topological B-model using these recursion relations and some classical methods of complex structure deformation theory on W is worked out and related by mirror symmetry to the Gromov-Witten theory captured by the topological A-model on M.

16:00 - 17:00 **Prof. Dr. Jens Hoppe (Stockholm Institute of**

Contact:
Humboldt-Universität zu Berlin . Institut für Mathematik
SFB 647 . Unter den Linden 6 . 10099 Berlin
Tel. +49 30 2093 1804 . Fax. +49 30 2093 2727
sfb647@math.hu-berlin.de

Technology)

Aspects of Membrane Dynamics
The classical problem of 3-manifolds with vanishing mean curvature in Minkowski-space, locally equivalent to the dynamics of an irrotational 2-dimensional gas, has many fascinating aspects, including its non-commutative analogue, a 25 years old M(atrix)-Theory Model of physical relevance, still poorly understood, full of surprises.

17:00 - 17:30 Coffee Break

17:30 - 18:30 **Dr. Simon Chiossi (HU)**

G2 structures on solvmanifolds
Conformally G2 manifolds are Riemannian manifolds with a G2 structure whose metric can be modified to a holonomy structure by a conformal change.
There is an interesting construction of homogeneous conformally G2 structures on solvmanifolds built from underlying SU(3) structures. I will show how the corresponding non-homogeneous G2 metrics can be obtained also by evolving the SU(3) structure in time. (Possible reference: arXive math.DG/0510087)

Contact:
Humboldt-Universität zu Berlin . Institut für Mathematik
SFB 647 . Unter den Linden 6 . 10099 Berlin
Tel. +49 30 2093 1804 . Fax. +49 30 2093 2727
sfb647@math.hu-berlin.de