



## SFB Seminartag/ 2. Andrejewski Vorlesung

### ZEIT:

10.1.2006, 15:00 Uhr - 18:00 Uhr

### ORT:

AEI Golm  
Am Muehlenberg 1  
Hauptgebäude, Z-050  
14476 Golm

### PROGRAMM:

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  $Q_A$  and  $Q_B$ . We will show that  $Q_A$  exists on every symplectic manifold while  $Q_B$  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 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**

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## 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 Kaffeepause

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: arXiv math.DG/0510087)

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