



Workshop on Seiberg-Witten Theory

ZEIT:

1.12.2006, 9:00 Uhr - 17:00 Uhr

ORT:

Freie Universität Berlin (ZIB)
Takustr. 7, Hörsaal ZIB
14195 Berlin

PROGRAMM:

9:00 - 10:00 **Frederik Witt**

Vector bundles, Clifford algebras and Spin groups

I will lay the algebraic fundament of gauge theory, which describes vector bundles in terms of group actions, and introduce Clifford algebras and SpinC groups.

10:15 - 11:15 **Frederik Witt**

SpinC-structures and their Dirac operator

This lecture is devoted to the differential-geometric aspects of gauge theory. This involves SpinC-structures and a canonical differential operator associated with it, the Dirac operator.

12:00 - 13:00 **Damien Gayet**

Seiberg-Witten theory I

On a compact Riemannian 4-manifold, we introduce a pair of non-linear PDE's, the Seiberg-Witten equations. We show that the moduli space of solutions is smooth and compact. Finally, we define the Seiberg-Witten invariants in some easy cases.

13:15 - 14:15 **Damien Gayet**

Seiberg-Witten theory II**Kontakt:**

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

www.raumzeitmaterie.de

We discuss two applications of Seilberg-Witten theory. The first concerns the topology of 4-manifolds. The second will prove Thom's conjecture: smooth holomorphic curves in $\mathbb{C}P^2$ are genus minimizing.

15:00 - 16:00 **Florian Gmeiner**

Physical background of Seilberg-Witten theory

We talk about the original physical motivation of Seilberg-Witten theory. In particular, we introduce super Yang-Mills theories and discuss their connection to string theory.

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