



## Workshop on Seiberg-Witten Theory

### **ZEIT:**

2.12.2006, 10:00 Uhr - 18:00 Uhr

### **ORT:**

Freie Universitaet Berlin (ZIB)  
Takustr. 7, Hoersaal ZIB  
14195 Berlin

### **PROGRAMM:**

10:00 - 11:00 **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.

11:15 - 12:15 **Frederik Witt**

#### **SpinC-structures and their Dirac operator**

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

13:00 - 14:00 **Damien Gayet**

#### **Seilberg-Witten theory I**

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

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

#### **Seilberg-Witten theory II**

### **Kontakt:**

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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.

16:00 - 17:00 **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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