



SFB-Seminartag

TIME:

24 Apr 2007, 16:00 - 19:00

LOCATION:

Humboldt-Universität zu Berlin
Invalidenstr. 42, Nordbau, Hörsaal 8

PROGRAM:

16:00 - 17:00 **Prof. Dr. Christian Bär**

Introduction to QFT on curved spacetimes

In General Relativity spacetime is described mathematically by a Lorentzian manifold. Gravitation manifests itself as the curvature of this manifold. Physical fields, such as the electromagnetic field, are defined on this manifold and have to satisfy a wave equation. We will summarize the basic analytic theory of linear wave equations on a suitable class of Lorentzian manifolds.

The aim of quantum field theory on curved spacetimes is to provide a partial unification of General Relativity with Quantum Physics where the gravitational field is left classical while the other fields are quantized. We show how to construct the quantization functors such that the Haag-Kastler axioms of a local quantum field theory are satisfied. We also construct Fock space representations and the corresponding quantum field.

17:00 - 17:30 Coffee Break

17:30 - 18:30 **Dr. Gottfried Curio**

String Theory and Geometry

In this talk we will give examples for the tight connection between physical and geometrical reasoning in string theory. After a general introduction to the Standard Model of Particle Physics we describe

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

www.raumzeitmaterie.de

parts of the physics/mathematics dictionary that evolves by embedding particle physics into string theory. Then we outline the "2. Superstring revolution" of the 90's and describe some investigations in the framework of string dualities. Finally examples of specific string models - some of them related to phenomenology - are constructed and an outlook on the connection of string theory and mathematics is given.

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