Karlsruher Institut für Technologie
Fakultät für Mathematik
Institut für Algebra und Geometrie
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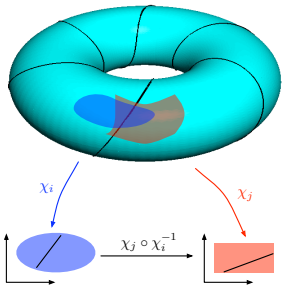
Summer term 2011

Riemannian Geometry

The course gives an introduction into the study of smooth manifolds and Riemannian metrics. Riemannian metrics are a fundamental tool in the geometry and topology of manifolds, and they are also of equal importance in mathematical physics and relativity.

We will cover the basic concepts of differentiable manifolds and the properties of Riemannian and Pseudo-Riemannian metrics, the Levi-Civita connection, geodesics and Riemannian curvature. We will also study the geometry of basic examples, such as constant curvature space forms, submanifolds, and Lie groups.



In the second part of the course we will be concerned with the influence of the Riemannian curvature on the global and local geometry, and on the topology of manifolds.

Textbooks

B. O'Neill, Semi-Riemannian Geometry
S. Gallot - D. Hulot - J. Lafontaine, Riemannian Geometry
I. Chavel, Riemannian Geometry: A modern Introduction

Prerequisites Basic Calculus, Linear Algebra.

Die Vorlesung findet auf Englisch statt. Sie richtet sich an Diplom- oder Masterstudierende in Mathematik und Physik, Studierende des Lehramts, sowie insbesondere an Teilnehmer des International Master Program in Mathematik.

Termine der Vorlesung:

Dienstag 9:45-11:15, Raum AOC 101 (Gebäude 30.45)
Mittwoch 11:30 -13:00, Raum 1C03 (Gebäude 05.20)

Beginn: Dienstag, 12. April 2011, Raum AOC 101 (30.45)