Einladung
zum Mathematischen Kolloquium
mit Vor-Kolloquium

16:00 - 16:45 Uhr Vor-Kolloquium im N14 für Studierende und Promovierende, moderiert von Sophia Jahns

„An introduction to the Atiyah-Singer index theorem"

Es spricht am

Montag, den 29.01.2018, um 17:15 Uhr

Prof. Dr. Christian Bär

(Universität Potsdam)

über das Thema

„Index theory on spacetimes"

Starting with Atiyah and Singer's famous theorem, index theory for elliptic operators has grown into a very active area of mathematical research with numerous applications in fields such as geometry, topology, mathematical physics, and number theory. Index theory relates the solution space of a partial differential equation to geometric quantities of the underlying manifold. Usually, the existence of an index requires ellipticity of the differential operator.

On a curved spacetime, mathematically modeled by a Lorentzian manifold, the natural operators such as the Dirac operator are not elliptic but hyperbolic and hence show a totally different analytic behavior. It therefore came as a surprise that under certain reasonable conditions there is an index theorem in this case nonetheless. It has been applied to compute anomalies in quantum field theory.

In the talk I will explain this in more detail without becoming too technical. This is joint work with Alexander Strohmaier (Leeds University, UK).

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Der Hauptvortrag findet im Hörsaal N14 (M1) des Mathematischen Instituts (Gebäude C, Auf der Morgenstelle 10) statt. Zuvor wird zum Tee im Konferenzzimmer (3 H 05) (3. Stock, ab 16 Uhr 45) eingeladen.

Tübingen, den 23.01.18   Die Dozenten für Mathematik