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).

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