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Leibniz
Universität
Hannover

Oberseminar Analysis und Theoretische Physik

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Why is the index of an operator useful?

This talk will start as a gentle introduction to index of a Fredholm operator, noting its most remarkable feature that it is unchanged under small perturbations. I will explain its use in classifying (essentially) normal operators, in particular also the unitary operators. Then as a natural application of this classification one has to only produce a normal/unitary operator associated to a problem of interests. Such operators are easy to provide for on manifolds with an orientation and a Riemannian metric. In fact any (hypo) elliptic operator on a closed manifold is an example. This brings us to the problem of computing the index. I shall dwell on the most simple example of this namely the Toeplitz operators and provide the classical description of their index as winding numbers. The next class of examples where index can be computed corresponds to the celebrated Atiyah-Singer theorem, which works for elliptic pseudodifferential operators on closed manifolds. I shall describe the Atiyah-Singer theorem in simple terms before making a short advertisement of our result that extends it to certain hypoelliptic operators.

Dienstag, 24.11.2015, 15:00h, Raum g005
Hauptgebäude der Leibniz Universität

Dazu laden herzlich ein:
Prof. Dr. Wolfram Bauer
Prof. Dr. Joachim Escher
Prof. Dr. Olaf Lechtenfeld
Prof. Dr. Elmar Schrohe
Prof. Dr. Christoph Walker

Weitere Informationen finden Sie auch unter http://www.ifam.uni-hannover.de/os_analysis.html