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Leibniz  
Universität  
Hannover

Oberseminar  
Analysis und Theoretische Physik  
**Prof. Dr. Michal Wrochna**

Université Joseph Fourier, Grenoble 1

The Klein–Gordon operator with  
Atiyah–Patodi–Singer–type boundary conditions  
on asymptotically Minkowski spacetimes

In this talk I will consider the Klein–Gordon equation on a class of asymptotically Minkowski spacetimes. I will introduce Feynman scattering data and present a result that gives the Fredholm property of the Klein–Gordon operator with the associated Atiyah–Patodi–Singer–type boundary conditions. This can be seen as a non-compact generalization of a theorem proved recently by Bär and Strohmaier, and it has also a counterpart in the Fredholm setup for the wave equation developed by Gell–Redman, Haber and Vasy in their recent work on the Feynman problem. The method is however different and relies on an approximate diagonalization of the Cauchy evolution by means of time-dependent pseudodifferential operators, supplemented by arguments from scattering theory. This allows to construct a rather explicit parametrix (with compact remainder terms), which also turns out to be a Feynman parametrix in the sense of Duistermaat and Hörmander. Applications in Quantum Field Theory will be outlined.

(This is joint work with Christian Gérard.)

**Dienstag, 12.1.2016, 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

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