



Leibniz
Universität
Hannover

Oberseminar Analysis und Theoretische Physik

Prof. Dr. Moritz Egert

TU Darmstadt

Maximal regularity and dynamical boundary conditions

We consider divergence form operators with complex coefficients on an open subset of Euclidean space. Boundary conditions in the corresponding parabolic problem are dynamical, that is, the time derivative appears on the boundary. As a matter of fact, the elliptic operator and its semigroup act simultaneously in the interior and on (a part of) the boundary.

Over L^2 we have a beautiful m -sectorial operator by an abstract form method, provided we can give a meaning to traces on lower-dimensional sets. In the first part of the talk, we discuss admissible geometries including fractal configurations.

We are then interested in extrapolating maximal regularity for the parabolic problem to L^p -spaces. This will be possible under a purely algebraic condition on the coefficients, called ' p -ellipticity'. Our proof uses a non-linear heat flow that has recently been popularised by Carbonaro-Dragičević. The second part of the talk will consist of a very gentle introduction to this technique that the speaker had to learn about from scratch before starting the project.

Joint work with Tim Böhnlein (TU Darmstadt) and Joachim Rehberg (WIAS Berlin).

**Dienstag, 19.11.2024, 15:00 Uhr, Raum c311
Hauptgebäude der Leibniz Universität**

Dazu laden herzlich ein:

Prof. Dr. Wolfram Bauer, Prof. Dr. Joachim Escher, Prof. Dr. Johannes Lankeit,
Prof. Dr. Elmar Schrohe, Prof. Dr. Alexander Strohmaier,
Prof. Dr. Christoph Walker, PD Dr. Alden Waters