JOHANNES GUTENBERG-UNIVERSITÄT MAINZ - 55099 Mainz

JOHANNES GUTENBERG UNIVERSITÄT MAINZ

JG|U

FACHBEREICH 08

INSTITUT FÜR MATHEMATIK

Juniorprofessor
Dr. Patrick Tolksdorf

Johannes Gutenberg-Universität Mainz
Staudingerweg 9
55128 Mainz

Tel. +49 6131 39-26099
Mail tolksdorf@uni-mainz.de

Sekretariat:
Christiane Scheld
Raum: 04-625
Tel. +49 6131 39-26275
Mail cscheld@uni-mainz.de

Einladung zum Vortrag
im Oberseminar Analysis

Off-diagonal estimates for Dirichlet–to–Neumann operators

Sebastian Bechtel
(Université Bordeaux)

In this talk, we will investigate the so-called Dirichlet–to–Neumann operator N associated with an elliptic differential operator L in divergence form in a domain Ω. The operator N is defined on the boundary $\partial\Omega$ of Ω, and transforms, roughly speaking, Dirichlet boundary data to the corresponding Neumann boundary data. We will make this precise in the talk.
The operator $-L$ generates a contraction semigroup on L^2 which has off-diagonal decay of exponential order. This allows to extrapolate the semigroup to a bounded analytic semigroup on L^p in a non-trivial range around $p = 2$.
To the contrary, $-N$ also generates a contraction semigroup on L^2, but if it admits off-diagonal decay of any sort was completely absent from the literature. Consequently, L^p bounds for the semigroup generated by $-N$ were only known in the case that N is associated with a real equation in divergence form, in which domination arguments can be invoked.
The goal of this exposition is to explain how one can obtain off-diagonal estimates of order 1 on L^2 if N is associated with a real, symmetric system whose coefficients are Hölder-continuous. As a consequence, we conclude L^p-boundedness for all $p \in (1, \infty)$ for the semigroup generated by $-N$ in the case of a one-dimensional boundary.

Alle Interessierten sind herzlich eingeladen!

Datum: Freitag, 08.07.2022
Uhrzeit: 10:15 Uhr
Ort: 04-512