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OBERSEMINAR IM INSTITUT FÜR ANGEWANDTE ANALYSIS Sommersemester 2025

Im Rahmen des Oberseminars spricht am Dienstag, den **13. Mai 2025**:

PROF. TOM TER ELST
University of Auckland

Dynamic boundary conditions for divergence form operators with Hölder coefficients

We consider a second-order symmetric elliptic operator in divergence form with merely Hölder continuous coefficients on a bounded open set Ω with $C^{1,\kappa}$ -boundary Γ and Wentzell boundary conditions of the type $\operatorname{Tr} Au = \beta \partial_\nu u + \alpha \operatorname{Tr} u$ on Γ . For strictly positive bounded measurable β we prove maximal regularity on $L_p(\Omega) \times L_p(\Gamma)$ for all $p \in (1, \infty)$, the generation of a holomorphic C_0 -semigroup with angle $\frac{\pi}{2}$ for all $p \in [1, \infty)$ and also the generation of a holomorphic C_0 -semigroup with angle $\frac{\pi}{2}$ on $C(\overline{\Omega})$.

In the proof we use the Dirichlet-to-Neumann operator $\mathcal{N}$ on the boundary Γ and show that $-\beta \mathcal{N}$ generates a C_0 -semigroup on $L_2(\Gamma)$ which extends consistently to a C_0 -semigroup on $L_p(\Gamma)$ and the latter semigroup is holomorphic with angle $\frac{\pi}{2}$ for all $p \in [1, \infty)$. Moreover, the semigroup extends to a holomorphic C_0 -semigroup on $C(\Gamma)$ with angle $\frac{\pi}{2}$ and it has Poisson kernel bounds on the right half-plane.

This is joint work with T. Binz (Darmstadt).

Der Vortrag findet in **Raum E03, Helmholtzstr. 22** statt.

Beginn: 16 Uhr (s.t.). Alle Interessierten sind herzlich eingeladen.

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