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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  $\Omega$  with  $C^{1,\kappa}$ -boundary  $\Gamma$  and Wentzell boundary conditions of the type  $\operatorname{Tr} Au = \beta \partial_\nu u + \alpha \operatorname{Tr} u$  on  $\Gamma$ . For strictly positive bounded measurable  $\beta$  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  $\Gamma$  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 E.03, Helmholtzstr. 22** statt.

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

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