Bounded functional calculus 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.

We extrapolate the bounded functional calculus in the Lebesgue scale. In particular, this implies maximal regularity as a starting point to treat nonlinear equations.

Our strategy relies on extending a contractivity criterion due to Nittka and a non-linear heat flow method popularized by Carbonaro–Dragičević. This is joint work with Moritz Egert and Joachim Rehberg.