Boundary value problems with dynamic boundary conditions

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In this talk, we consider boundary value problems with dynamic boundary conditions and their realisation as Cauchy problems on products of L^p spaces and Besov spaces. The regularity index of the boundary Besov space is left free to vary within an admissible range. Weak traces allow us to extend this range below the classical trace threshold.

Our main result establishes existence of a bounded H^∞-calculus for the corresponding operator matrix under certain ellipticity and order assumptions. To this end, we formulate a parameter-ellipticity condition in the sense of the Newton polygon for an associated generalised Lopatinskii matrix. The proof combines a diagonalisation argument based on a similarity transformation with results on parameter-elliptic boundary value problems and pseudodifferential operators.

This talk is based on joint work with Robert Denk and Simon Bau.