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Besov regularity of elliptic and parabolic PDEs with inhomogeneous boundary conditions on Lipschitz domains

This short talk is concerned with the regularity of solutions of elliptic and parabolic PDEs with inhomogeneous boundary conditions on bounded polyhedral cones $K \subset \mathbb{R}^3$ and polyhedral domains $D \subset \mathbb{R}^3$, respectively. Special attention is paid to the regularity in the specific scale $B^{\alpha}_{\tau,\tau}$, $\frac{1}{\tau} = \frac{\alpha}{3} + \frac{1}{p}$ of Besov spaces. The regularity of the solution in these spaces determines the order of approximation that can be achieved by adaptive numerical schemes. For our purposes we consider also weighted Sobolev spaces with mixed weights. These weights measure the distance to the edges and vertices of K and D and can 'compensate' possible singularities of the solutions of the PDEs, which may occur at the boundary of K and D. In particular, as one of our main tools we provide an embedding between the weighted Sobolev and Besov spaces, which afterwards allows us to investigate the regularity of the solutions in the Besov scale.