# Besov-Regularity for the Stokes System in Polyhedral Cones

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In this talk we consider the regularity of solutions to the Stokes system in polyhedral Cones $\mathcal{K}$ contained in $\mathbb{R}^3$:

$$\begin{aligned} -\Delta u + \nabla p &= f \text{ in } \mathcal{K} \\ \operatorname{div} u &= g \text{ in } \mathcal{K} \\ u &= 0 \text{ on } \Gamma_j,\ j = 1, ..., d, \end{aligned}$$

where $\Gamma_j$ are the faces of the Cone. We consider the scale $B^s_\tau(L_\tau)$, $1/\tau = s/3 + 1/2$ of Besov spaces which arise in connection with adaptive numerical shemes: The Besov regularity of the solution determines the approximation order of adaptive shemes while the convergence rate of non adaptive shemes depends on the Sobolev regularity. We will show that under some conditions the Besov regularity of the solution of the Stokes System is higher than its Sobolev regularity. The proof of the main result is performed by combining regularity results in weighted Sobolev spaces (see [MR10]) with characterization of Besov spaces by wavelet expansions (see [Tri08]).

## References

[MR10] V. Maz'ya and J. Rossmann. *Elliptic equations in polyhedral domains.* Mathematical Surveys and Monographs 162. Providence, RI: American Mathematical Society (AMS). VII, 2010.

[Tri08] H. Triebel. Local means and wavelets in function spaces. *Banach Center Publ.*, 79:215–234, 2008.