Diffeomorphic Approximation of almost everywhere invertible Sobolev deformations in the plane

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The talk is based on the joint work with A. Kauranen

We prove that given a Sobolev $W^{1,p}(\overline{\Omega}, \mathbb{R}^2)$ deformation f, with $1 \leq p < \infty$, from a planar Jordan domain Ω to Lipschitz domain in \mathbb{R}^2 which is injective almost everywhere, we can find a sequence f_k of diffeomorphisms with $f_k = f$ on $\partial\Omega$ such that $f_k \to f$ in the Sobolev norm. Here the deformation satisfies the (INV) condition and $J_f \neq 0$ a.e. as studied in models that allow for cavitation introduced by Müller and Spector.