

Optimal Approximation of Sobolev Functions in the L_2 and in the Supremum Norm

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Using tools taken from the theory of operator ideals and s -numbers, we develop a general approach to transfer estimates for L_2 -approximation of Sobolev functions into results for L_∞ -approximation under a detailed control of all involved constants. As illustration, we derive some results for isotropic Sobolev spaces $H^s(\mathbb{T}^d)$ and Sobolev spaces of dominating mixed smoothness $H_{\text{mix}}^s(\mathbb{T}^d)$, always equipped with natural norms. Also some comments to related questions for Besov spaces will be given.

This is joined work with Fernando Cobos (Madrid) and Thomas Kühn (Leipzig).