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Growth Envelopes in Muckenhoupt-weighted Function Spaces

In the solution theory of elliptic partial differential equations with singular boundary functions weighted function spaces from Besov and Sobolev type play an important role, where the weights belong to some Muckenhoupt \mathcal{A}_p class. Here we use modern decomposition results (atoms, wavelets) as well as exact characterisations of singularities. A relatively new and far-reaching method consists in the investigation of growth envelopes, see moreover [1, 5]. New results thereto are the topic of my talk. Based on the papers [2, 3] we give an entire characterisation for the special weight $w_{\alpha,\beta}$ with $w_{\alpha,\beta} = |x|^\alpha$ for $|x| < 1$ and $w_{\alpha,\beta} = |x|^\beta$ for $|x| \geq 1$. Furthermore in [4] we showed for the first time a general result for \mathcal{A}_1 weights.

References

- (1) D.D. Haroske. *Envelopes and Sharp Embeddings of Function Spaces*. Chapman & Hall/CRC, 2007.
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- (5) H. Triebel. *The structure of functions*. Birkhäuser, Basel, 2001.