

# Rate-Optimal Sparse Approximation of Compact Break-of-Scale Embeddings

Markus Weimar  
Julius-Maximilians-Universität Würzburg (JMU)  
MARKUS.WEIMAR@UNI-WUERZBURG.DE

The poster addresses the approximation problem of functions in new scales of function spaces with hybrid smoothness. In these scales we combine classical (isotropic) regularity measured in  $L_p$  with so-called dominating mixed smoothness which arises in high-dimensional real-world applications, e.g., related to the electronic Schrödinger equation. Sharp dimension-independent rates of convergence for linear and non-linear best approximations using  $n$  hyperbolic wavelets are presented. Important special cases include the approximation of function having dominating mixed smoothness w.r.t.  $L_p$  in the norm of the (isotropic) energy space  $H^1$ .

The presented results are based on a recent paper [1] which represents the first part of a project in joint work with Janina Hübner (RUB), Glenn Byrenheid (FSU Jena), and Markus Hansen (PU Marburg).

## REFERENCES

- [1] G. Byrenheid, J. Hübner, and M. Weimar. *Rate-optimal sparse approximation of compact break-of-scale embeddings*. Appl. Comput. Harmon. Anal., in press, 2023 (arXiv:2203.10011).