



Classification of Wavelet Coorbit Spaces in Dimension Two

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Abstract

Coorbit spaces are families of Banach spaces of functions defined in terms of their coefficient decay, associated with a wavelet system constructed using a square-integrable representation of a locally compact group. Many established function spaces, such as Besov spaces, shearlet coorbit spaces, Sobolev-Shubin spaces, and modulation spaces, are fundamental examples of this construction. The joint work with Hartmut Führ and Noufal Asharaf seeks to achieve a comprehensive classification of generalized wavelet coorbit spaces in dimension two, i.e, the function spaces associated with the generalized wavelet system arise from the quasi-regular representation to semidirect product groups in dimensions two, based on their approximation-theoretic properties. The theory is generally well-established by now, at least as far as the study of a single such scale is concerned. Comparing these scales for two fundamentally different generalized wavelet systems is a fundamental problem in this area that is only partially understood. We aim to provide a complete answer to this question for this particular subclass of generalized wavelet systems in dimension two.

Keywords: Coorbit spaces, wavelet transforms, classification

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