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Compression using quasi-interpolation[†]

Martin D. Buhmann and Feng Dai

Abstract

In this article we consider quasi-interpolation with a main application in radial basis functions approximations and compression. On constructing and using these quasi-interpolants, we consider wavelet and compression-type approximations from their linear spaces, and we provide convergence estimates. The results include an error estimate for nonlinear approximation by radial basis functions and quasi-interpolation, positive and negative results about compression in the space of continuous functions and a pointwise convergence estimate for approximands of low smoothness.

Keywords: scattered data approximation, quasi-interpolation, radial basis functions, compression.

MSC: 41A15, 41A30, 65D15, 41A05, 65D05.

§1. Introduction

In this article we wish to study very useful multivariate approximation schemes called quasi-interpolation methods. We have in mind as principal useful context – but not the only one – the one related to the so-called radial basis functions and the linear spaces spanned by their translates because they, in particular, provide an excellent method for multivariate approximation in d -dimensional spaces. They are known in a variety of types

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