

Numerical Aspects of Multiscale Approximation

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Abstract

In many practical applications naturally arise the needs to construct high-fidelity models from discretely given data. Kernel methods are a popular choice as they can cope with unstructured point clouds as data. The main drawback is, however, that usually a dense linear system with high condition number has to be solved.

Kernel-based multiscale methods are an attempt to overcome those limitations. These methods are characterised by an appropriate choice of a scaled kernel and an hierarchical organisation of the data. The resulting approximant is known to be accurate as well, but its computation is substantially more stable. In this talk, we will introduce this method, present a novel numerical solution strategy and give some numerical examples.

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