



Numerical Analysis Seminar

Exponentially convergent multiscale methods based on edge coupling

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Abstract

We will talk about a multiscale framework based on a non-overlapped domain decomposition and oversampling via edge coupling. The key idea is that we can identify a coarse-fine scale decomposition of the solution space adapted to the multiscale problem, inspired by MsFEM. The coarse part is of low complexity in the sense that it can be approximated with a nearly exponential rate of convergence via local basis functions due to the compactness of a restriction operator that maps operator-harmonic functions to their interpolation residues on edges, while the fine part is local such that it can be computed efficiently using the local information of the right-hand side. We demonstrate the effectiveness of the framework for elliptic problems and heterogeneous Helmholtz equations with high frequency.

Date: September 7, 2022 (Wednesday)

Time: 10:00 - 11:00am

Venue: ZOOM: <https://hku.zoom.us/j/>

Meeting ID: 913 6532 3891

Password: 310656

All are welcome