THE UNIVERSITY OF CHICAGO

Departments of Computer Science, Mathematics, Statistics, and the Computation Institute

SCIENTIFIC AND STATISTICAL COMPUTING SEMINAR

CLAUDE LE BRIS

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Finite Element Methods for Multiscale Perforated Domains

THURSDAY, October 31, 2013, at 4:30 PM

Eckhart 133, 5734 S. University Avenue

ABSTRACT

We consider a multiscale elliptic problem set on a perforated domain, with perforations possibly heterogeneously located throughout the domain. We introduce a MsFEM type approach well suited for the situation under consideration, using Crouzeix-Raviart type finite element functions and adapting them to the multiscale context. We provide a numerical analysis of the approach in the periodic case, and show numerical experiments that demonstrate the robustness of the approach when applied to nonperiodic geometries of perforations.

The works are joint works with Frederic Legoll (Ecole des Ponts) and Alexei Lozinski (Universite de Besancon)

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