ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

Prof. Daniel Kressner

SEMINAR OF NUMERICAL ANALYSIS

Wednesday 14 decembre 2011 – Room GRA332 – 16.15 h.

Prof. Victorita **Dolean** (University of Geneva) will present a seminar [1] entitled :

"Robust Coarse Spaces for Systems of PDEs via Generalized Eigenproblems in the Overlaps"

Abstract

Coarse spaces are instrumental in obtaining scalability for domain decomposition methods for partial differential equations (PDEs). However, it is known that most popular choices of coarse spaces perform rather weakly in the presence of heterogeneities in the PDE coefficients, especially for systems of PDEs. Here, we introduce in a variational setting a new coarse space that is robust even when there are such heterogeneities. We achieve this by solving local generalized eigenvalue problems in the overlaps of subdomains that isolate the terms responsible for slow convergence. We prove a general theoretical result that rigorously establishes the robustness of the new coarse space and give some numerical examples on two and three dimensional heterogeneous PDEs and systems of PDEs that confirm this property.

Lausanne November 21st, 2011/DK/ag

1. The seminars taking place at the Section of Mathematics are announced on internet address : http ://mathicse.epfl.ch/seminars.