

Analyse numérique

Mercredi 28 juillet 2010 – Salle MAA112 – 16.15 h.

Dr. Huidong **YANG** (Radon Institute for Computational and Applied Mathematics, Linz, Austria) donnera un séminaire¹ intitulé :

“Numerical simulation of fluid-structure interaction problems on hybrid meshes with algebraic multigrid methods”

Abstract

Fluid-structure interaction problems arise in many application fields such as flows around elastic structures or blood flow problems in arteries. One method for solving such a problem is based on a reduction to an equation at the interface, involving the so-called Steklov-Poincaré operators.

This interface equation is solved by a Newton iteration for which directional derivatives with respect to the interface perturbation have to be evaluated appropriately. One step of the Newton iteration requires the solution of several decoupled linear sub-problems in the structure and the fluid domains.

These sub-problems are spatially discretized by a finite element method on hybrid meshes containing different types of elements. For the time discretization implicit first order methods are used. The discretized equations are solved by algebraic multigrid methods for which a stabilized coarsening hierarchy is constructed in a proper way.

Lausanne, le 19 juillet 2010/AQ/aa

1. Les séminaires qui ont lieu à la Section de Mathématiques sont annoncés sur Internet à l'adresse <http://www.epfl.ch/cgi-bin/memento/memento>.