Analyse numérique

Mercredi 24 février 2010 − Salle MAA112 − 16.15 h.

Prof. Alexandre **CABOUSSAT** (University of Houston, USA) donnera un séminaire[1] intitulé :

"Least-Squares methods for the Monge-Ampère equation"

Résumé

The Monge-Ampère equation is the most important equation in the field of fully nonlinear partial differential equations.

In this talk, we present a least-squares framework for the numerical solution of the Dirichlet problem for the Monge-Ampère equation in two dimensions of space. In order to handle those situations where this problem has no classical solutions, we introduce a concept of generalized solutions. We detail in particular a relaxation method well-suited to the particular structure of the least-squares problem. This iterative method allows to decouple the differential operators from point-wise nonlinear problems. We present fast and robust algorithms relying on mixed finite element approximations, which couple a conjugate gradient algorithm and local algebraic solvers.

Numerical experiments are finally presented for various examples in two dimensions of space.

This is a joint work with Roland Glowinski (University of Houston) and Danny C. Sorensen (Rice University).

Lausanne, le 16 février 2010/JR/aa

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[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.