

Prof. Jacques Rappaz

Mathematics Institute of Computational Science and Engineering - MATHICSE

SEMINAR OF NUMERICAL ANALYSIS

WEDNESDAY 25 MAY 2011 - ROOM MA A110 - 16h15

Prof. Andrea Bonito, (Texas A&M Univeristy, Tamu / USAf) will present a seminar intitled:

"A-PRIORI AND A-POSTERIORI HIGHER ORDER ESTIMATES IN TIME FOR THE ARBITRARY LAGRANGIAN EULERIAN FORMULATION IN MOVING DOMAINS"

Abstract:

Arbitrary Lagrangian Eulerian (ALE) formulations arise naturally in the context of parametric representations of deformable domains. As an illustration, we first provide numerical simulations of red blood cell with emphasize on the need for ALE formulations, higher order methods, and a-posteriori error control in time.

Then, we present a discontinuous Galerkin methods in time for advection-diffusion problems on moving domains. This approach leads to unconditionally stable numerical schemes with optimal a-priori and a-posteriori error estimates. We also discuss the critical role of integration in time and give a sufficient condition for preserving the stability and the accuracy of the numerical schemes. The latter is a generalization of the Geometric Conservation Law.

This is joint work with I. Kyza and R.H. Nochetto.

Lausanne, May 4, 2011/JR/cr

The seminars taking place at the Section of Mathematics are announced on internet address : [www
http://mathicse.epfl.ch/seminars](http://mathicse.epfl.ch/seminars)