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SEMINAR OF NUMERICAL ANALYSIS

➢ **WEDNESDAY 13 FEBRUARY 2013 - ROOM MA A1 10 - 16h15**

Dr. Thomas Carraro, *(Ruprecht-Karls-University, Heidelberg, Germany)* will present a seminar entitled:

"Uncertainty reduction of model parameters by optimal experimental design

Abstract:

The capability to incorporate stochastic components in predictive simulations is becoming essential in many design steps. We consider a model whose parameters represent the stochastic elements. Since they are estimated using experimental data, their probability distribution is linked to the data statistic. The uncertainty of the data hence propagates to the parameters through the fitting procedure. A local sensitivity analysis of the latter is often a powerful mathematical tool to reduce the uncertainty in the mathematical models. This analysis is performed in the framework of optimal experimental design (OED).
In the last decades the application of optimal experimental design
(OED) has been extended to various fields. Concurrently, the advances of the OED theory allowed treating more complex models based on partial differential equations (PDE). Although important developments have been made on the numerical methods, further progresses can be done applying the state-of-the-art approaches for optimization problems constrained with PDE systems.
We focus on some aspects of OED in PDE context introducing a primal-dual active set strategy for the numerical solution of reduced OED problems with constraints on the design variables.

Lausanne, 8 November 2012/FN/cr

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