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Chaire de Calcul Scientifique et Quantification de l'Incertitude - CSQI



SEMINAR OF NUMERICAL ANALYSIS

➤ **WEDNESDAY 5 APRIL 2017 - ROOM ME DO 1418 - 16:15**

Prof. Ludovic CHAMOIN (ENS Cachan, FR) will present a seminar entitled:

« On the use of PGD model reduction for simplified V&V procedures »

Abstract:

A permanent issue in science and engineering activities is the verification and validation (V&V) of mathematical and numerical models, which nowadays can attain very high levels of complexity. We focus here on the Constitutive Relation Error (CRE) concept which has been widely used over the last 40 years for robust verification [1] and validation [2] of Computational Mechanics models, in which the constitutive relation is a major component. The objective of this research work is to present new numerical tools, based on Proper Generalized Decomposition (PGD) and an offline-online strategy, that can be coupled to the CRE concept to make this latter fully implementable and exploitable for practical industrial applications. The PGD is a model reduction technique that has been extensively applied over the last decade to solve multi-parametric problems [3]. Its use into the CRE concept enables to decrease the computational cost and technicality associated with the construction of so-called admissible fields, leading to faster and cheaper V&V procedures [4, 5]. Numerical illustrations, addressing both model verification and model updating, are presented to assess the performances of the proposed approach.

Lausanne, 7 March 2017/FN/rb