Prof. Assyr Abdulle
Mathematics Institute of Computational Science and Engineering - MATHICSE

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SEMINAR OF NUMERICAL ANALYSIS

➢ **WEDNESDAY 29 APRIL 2015 - ROOM INF 119 - 16h15**

Prof. Illia HORENKO, (Institute of Computational Science,USI, Lugano) will present a seminar entitled:

"Challenges of data analysis in a multiscale context: causality inference and unresolved scales""

Abstract:

Data analysis for multiscale applications is an important issue in context of such application areas as biophysics, geophysics and economics.
One of the challenges is to learn about the causality relations in the considered systems, based on the available experimental and/or simulation data. Proper inference of such causality relations, giving an additional insight into such processes, can allow improving the respective mathematical and computational models as well as enable comparing the data sets coming from measurements and simulations. Implications of missing/unresolved scales for this problem will be discussed and an overview of methods for data-driven causality inference will be given. Presented mathematical and statistical concepts will be illustrated on two applications: (i) analysis of torsion angles time series obtained in the molecular dynamics simulation; (ii) analysis of historical climate teleconnection series and inference of their mutual influences.
The talk will be based on the recently published paper
S. Gerber and I. Horenko
"On inference of causality for discrete state models in a multiscale context"
Proceedings of the National Academy of Sciences of USA (PNAS), 111 (41), 14651-14656, 2014

Lausanne, 11 March 2015/AA/cr

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The MATHICSE seminars are announced at http://mathicse.epfl.ch/seminars