SPU?15 - Solving Problems with Uncertainties

3rd workshop

Problems with uncertainty need to be tackled in an increasing variety of areas ranging from problems in physics, chemistry, computational biology to decision making in economics and social sciences. Uncertainty is unavoidable in almost all systems analysis, in risk analysis in decision making and economics and financial modeling, in weather and pollution modeling, disaster modeling and simulation (earthquake modeling, forest fires simulation etc.). How uncertainty is handled and quantified shapes the integrity of the analysis, and the correctness and credibility of the solution and the results.

With the advent of exascale computing larger and larger problems have to be tackled in a systematic way and the problem of solving such problems with uncertainties and quantifying the uncertainties becomes even more important due to the variety and scale of uncertainties in such problems.

The focus of the workshop will be on methods and algorithms for solving problems with uncertainties, stochastic methods and algorithms for solving problems with uncertainty, methods and algorithms for quantifying uncertainties such as dealing with data input and missing data, sensitivity analysis (local and global), dealing with model inadequacy, model validation and averaging, software fault-tolerance and resilience, etc.

Topics covered but not limited to:

- methods for quantifying uncertainties
- methods and algorithms for solving problems with uncertainties
- stochastic methods and algorithms for solving problems with uncertainty
- hybrid (stochastic/deterministic) methods and algorithms for solving problems with uncertainties
- quantifying uncertainties while dealing with Big Data
- sensitivity analysis,
- quantifying uncertainties while dealing with model inadequacy, model validation etc.
- case studies showing efficient methods and approaches solving problems with uncertainties

Program Committee:

- Vassil Alexandrov, ICREA-BSC, Spain
- Ana Cortes, UAB, Spain
- Andrew Rau-Chaplin, University of Dalhousie, Canada
- Aneta Karaivanova, IICT, Bulgaria
- Christian Engelmann, ORNL, USA
- Daniel Rodriguez, UAH, Spain
- Raul Ramires, ITESM, Mexico

Workshop Chair:

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