Stochastic Methods for the Analysis of NUMerical COdes

Research group sponsored by the French National Center for Scientific Research
MASCOT NUM aims at coordinating research efforts in developing tools for design, modeling and analysis of computer experiments.

Many techniques of applied mathematics involved: statistics, probability, computer science, numerical analysis, operational research, mathematical physics, \ldots

**Key milestones for MASCOT NUM:**

- February 2006, first "non official" meeting in Toulouse;
- January 2008, birth of MASCOT NUM;
- January 2012, first renewal of the group;
- January 2016 remains an open issue \ldots

An increasing number of registered members (365 persons receive the diffusion letters in 2013)!
Officers, Board and Council of MASCOT NUM

Board (group leaders, webmasters)

- Mark Asch (Université de Picardie),
- Sébastien Da Veiga (IFP Energies nouvelles, Rueil-Malmaison),
- Bertrand Iooss (EDF R&D, Chatou),
- Fabien Mangeant (EADS Innovation Works),
- Amandine Marrel (CEA Cadarache),
- Hervé Monod (INRA Jouy-en-Josas, Département MIA),
- Anthony Nouy (Ecole Centrale de Nantes),
- Clémentine Prieur (Université Grenoble, LJK/MOISE),
- Luc Pronzato (I3S, CNRS Sophia Antipolis),
- Olivier Roustant (Ecole des Mines de Saint Etienne),
- Nathalie Villa-Vialaneix (Université de Perpignan, et Paris 1),
- François Wahl (IFP Energies nouvelles, Solaize).

Webmasters

- Julien Bect (SUPELEC, Gif sur Yvette),
- Alexandre Janon (Univ. de Grenoble → Univ. Paris 11).
Scientific council

- Jean-Marc Azaïs (Université Toulouse 3),
- Gérard Biau (Université Paris VI),
- Pierre Del Moral (INRIA Bordeaux-Sud Ouest),
- Fabrice Gamboa (Université Toulouse 3),
- Josselin Garnier (Université Paris VII),
- Olivier Le Maître (LIMSI, CNRS),
- Clémentine Prieur (Univ. Grenoble, LJK/MOISE),
- Luc Pronzato (I3S, CNRS Sophia Antipolis),
- Christophe Prud’homme (Univ. Strasbourg),
- Bruno Sudret (ETH Zürich),
- Emmanuel Vazquez (SUPELEC, Gif sur Yvette).
MASCOT NUM’s partners are public institutions, public labs and companies.

The complete list is available at http://www.gdr-mascotnum.fr/commitees.html

Get involved: MASCOT NUM has created a club for industrials. For more information you can meet B. Iooss and C. Prieur on Tuesday during the welcome cocktail.
MASCOT NUM members, Keep Your Blog active!
http://mascot-num.blogspot.fr/
MASCOT NUM is composed with 7 working groups. These groups regularly organize some thematic days, special issues, summer schools, . . .

**Working groups**

- **Design of numerical experiments** Luc Pronzato & Emmanuel Vazquez
- **Uncertainty and sensitivity analyses** Fabrice Gamboa & Bruno Sudret
- **Computer code approximation via metamodels** Anthony Nouy & Josselin Garnier
- **Probabilistic models** Erick Herbin & Ahmed Kebaier
- **Industrial problems** Fabien Mangeant & Mark Asch
- **Environmental problems** Clémentine Prieur & Hervé Monod
- **Software aspects** Christophe Prud’homme & Anne Dutfoy
You can put a link to publications of interest for MASCOT NUM users on the following page
http://www.gdr-mascotnum.fr/documents.html
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Note that on HAL http://hal.archives-ouvertes.fr/ you can choose the GdR MASCOT-NUM affiliation. You can choose several affiliations.
Upcoming MASCOT NUM and related events:

- Ninth IMACS Seminar on **Monte Carlo Methods**, Annecy-le-Vieux July 15-19,
- CEMRACS 2013, CIRM Marseille July 22- August 30
  **Modelling and simulation of complex systems: stochastic and deterministic approaches,**
- MASCOT NUM’s thematic day, IHP Paris November 13
  **Computer code validation & verification,**
- MASCOT NUM 2014 ETH Zürich April, 23-25,
- Spring school ASPEN 2014 Sensitivity analysis, uncertainty quantification and numerical models exploration in environmental science, May 4-9 Ecole de Physique des Houches,
- SIAM UQ 2014 Savannah, Georgia March 31- April 3,
- MCQMC14 KULeuven April, 6-11,
We now will start our annual MASCOT NUM meeting. We are pleased that this event join in 2013 the 7th *International Conference on Sensitivity Analysis of Model Output*. 
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**Ph.D. students day**

09h30-10h30 Invited speaker: J. **Blum** (University of Nice, France): Back and forth nudging for data assimilation in geophysics.

10h30-11h00 Coffee break

11h00-12h30

- F. Bachoc (CEA/University Paris VII, France), Maximum likelihood and cross validation for kriging hyper-parameters estimation,
- M. Ivanov (University Dortmund, Germany), Parallel optimization based on FANOVA graph decomposition,
- L. Le Gratiet (CEA/University Paris VII, France), Asymptotic analysis of the learning curve for Gaussian process regression with noisy observations.

12h30-14h00 Lunch break
14h00-15h00 Poster session

15h00-16h00

- C. Chevalier (University Bern, Switzerland), Sequential and batch-sequential Bayesian sampling strategies for the identification of an excursion set,

- M. Jala (Telecom ParisTech, France), Sequential design of experiments for numerical dosimetry.

16h00-16h30 Coffee break

16h30-18h00

- G. Chastaing (University of Grenoble, France), Generalized Sobol sensitivity indices for dependent variables,

- P. Rai (Ecole Centrale Nantes, France), A regression based method using sparse low rank approximations for uncertainty propagation,

- J. Fruth (University Dortmund, Germany), Sensitivity analysis for functional inputs in a sheet metal forming process.
A prize of 1000 € will be conferred by the MASCOT NUM’s scientific council to the best student communication!

Good luck and . . . have a nice meeting :-)