

MascotNum 2014

Computer experiments & Metamodels for Uncertainty Quantification

B. Sudret¹, D. Ginsbourger²

¹Chair of Risk, Safety & Uncertainty Quantification

²University of Bern, Institute of Mathematical Statistics and Actuarial Sciences

April 23rd, 2014



What is MascotNum ?

- A network of academics and industrial partners created in France in 2006



<http://www.gdr-mascotnum.fr/>

- Gathering researchers interested in:
 - Design, modeling and analysis of computer experiments
 - Stochastic methods
 - Sensitivity analysis
 - Uncertainty quantification
- At the boundary of applied statistics and probability, numerical analysis, computer science
- With strong links to applications in engineering and natural sciences

What is MascotNum ?

- A network of **academics** and **industrial partners** created in France in 2006



<http://www.gdr-mascotnum.fr/>

- Gathering researchers interested in:
 - Design, modeling and analysis of computer experiments
 - Stochastic methods
 - Sensitivity analysis
 - Uncertainty quantification
- At the boundary of applied statistics and probability, numerical analysis, computer science
- With strong links to applications in engineering and natural sciences

What is MascotNum ?

- A network of **academics** and **industrial partners** created in France in 2006



<http://www.gdr-mascotnum.fr/>

- Gathering researchers interested in:
 - Design, modeling and analysis of computer experiments
 - Stochastic methods
 - Sensitivity analysis
 - Uncertainty quantification
- At the boundary of **applied statistics and probability**, **numerical analysis**, **computer science**
- With strong links to **applications** in engineering and natural sciences

The Spring Conference is a **three-day** annual meeting organized as follows:

- The **PhD students** day with oral presentations and a poster session
- Two days of **invited lectures** covering the edition's **specific topic**

The Spring Conference is a **three-day** annual meeting organized as follows:

- The **PhD students** day with oral presentations and a poster session
- Two days of **invited lectures** covering the edition's **specific topic**

The 2014 edition of the MascotNum annual conference is the **9th edition**, following

- ◇ Toulouse (inaugural session, 2006)
- ◇ Lyon (2007)
- ◇ Cadarache (2008)
- ◇ Paris (2009)
- ◇ Avignon (2010)
- ◇ Villard-de-Lans (2011)
- ◇ Bruyères-le-Châtel (2012)

MascotNum Spring Conference

The Spring Conference is a **three-day** annual meeting organized as follows:

- The **PhD students** day with oral presentations and a poster session
- Two days of **invited lectures** covering the edition's **specific topic**

The 2014 edition of the MascotNum annual conference is the **9th edition**, following

- ◇ Toulouse (inaugural session, 2006)
- ◇ Lyon (2007)
- ◇ Cadarache (2008)
- ◇ Paris (2009)
- ◇ Avignon (2010)
- ◇ Villard-de-Lans (2011)
- ◇ Bruyères-le-Châtel (2012)

In 2013, the MascotNum Spring Conference was jointly organized with the **7th International Conference on Sensitivity Analysis of Model Output (SAMO'2013)**



Aim of MascotNum'2014 in Zurich

- Extend the MascotNum network beyond the frontiers of France
- Promote collaboration on the network's topics with Swiss-based researchers and academics
- Contribute to a future European network by a stronger collaboration with other initiatives (GAMM-UQ in Switzerland/Germany, UCM in the United Kingdom, SAMO summer schools in Italy)

“Traditional” objectives

Pursuing the tradition of previous MascotNum conferences, the scientific program was set up with a few essential objectives in mind:

- Invite excellent lecturers spanning the interests of MascotNum
- Select promising Ph.D. students for oral presentations and posters
- Foster industry/academia initiatives (joint projects, software)

2014 additional objectives

- Put a focus on [Uncertainty Quantification and Metamodels](#)
- Benefit from the density of prominent researchers in CH, FR, GE
- Link researchers and ideas from different disciplines

An interdisciplinary program

The invited lectures and talks will be given by a dream team of nine invited speakers with affiliations in different research fields:

- Applied mathematics, Machine Learning, Computational physics and mechanics, Geosciences, Biology

The dream team

- J. Irving** (University of Lausanne)
- P. Koumoutsakos** (ETH Zürich)
- P. Koutsourelakis** (TU Munich)
- A. Krause** (ETH Zürich)
- F. Nobile** (EPF Lausanne)
- P. Renard** (Université de Neuchâtel)
- C. Schillings** (ETH Zürich)
- J.P. Vert** (Institut Curie)
- J. Wiart** (Orange Labs)

In addition to the invited lectures and the oral+poster presentations by PhD students, further contributions include

Industry/academia initiatives and software

- Presentation of [UQLab](#), by S. Marelli (ETH): A framework for Uncertainty Quantification in Matlab
- Presentation of [the ReDICE Consortium](#) by C. Chevalier (Univ. of Bern), Y. Richet (IRSN), and O. Roustant (Ecole des Mines de St-Etienne)

Further communications

- Presentation by W. Kröger, executive director of [ETH Risk Center](#)
- MascotNum News by B. Iooss (EDF R&D)
- Scientific talk by D. Ginsbourger (Univ. of Bern)

Ph.D students contest

- 22 abstracts submitted by Ph.D students from France, Germany, Italy and Switzerland
- 7 abstracts selected by the Scientific Committee for oral presentation
- 15 posters

MascotNum award for the best oral presentation

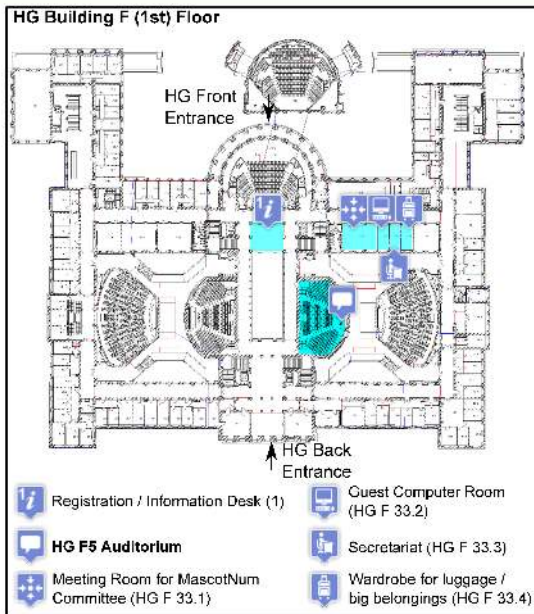
Invited lecturers

9 invited speakers from France, Germany and Switzerland

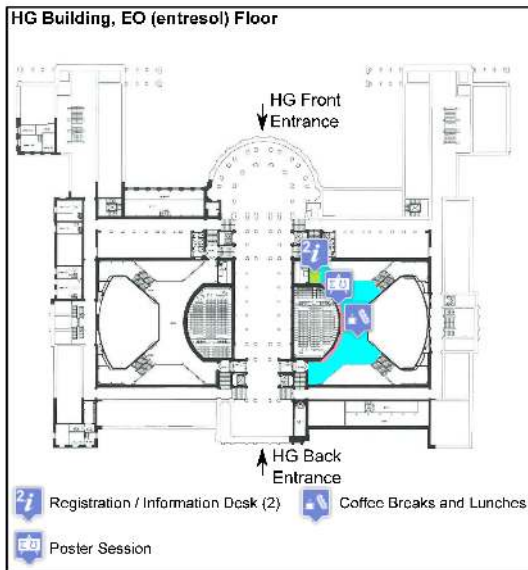
Participants (including lecturers)

- 59 academics
- 28 researchers (public research centers and companies)

Conference room



Coffee breaks, lunches and poster session



Thursday, April 24th, 2014 at 19:30

Where?

University of Zurich - Mensa

(1st Floor)

Künstlergasse 10

8001, Zürich

(3-5 min walk from HG Building)





MascotNum Research Network

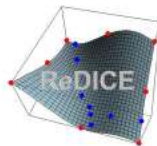


**Chair of Risk, Safety
and Uncertainty Quantification, ETH Zürich**



Kanton Zürich

Kanton Zürich, Staatskanzlei



**Department of Civil, Environmental
and Geomatic Engineering, ETH Zürich**



Stadt Zürich

Stadt Zürich, Präsidialdepartement