Detailed

Curriculum vitæ

Prof. Dr. Bruno Sudret

Chair of Risk, Safety and Uncertainty Quantification
Institute of Structural Engineering

ETH Zurich

February 1st, 2024

Contents

1 Curriculum vitæ (summary)

Personal information

Surname:	Sudret
First name:	Bruno
Date of birth:	December 1st, 1972 – Périgueux (France)
Nationality:	French

Professional address:	ETH Zurich Institute of Structural Engineering (IBK) Stefano-Franscini-Platz 5 CH-8093 Zurich Switzerland Email: sudret@ethz.ch
Social networks:	Google Scholar: lkIklpIAAAAJ Researchgate LinkedIn

Current position

Since Aug. 2012 **Professor of Risk, Safety and Uncertainty Quantification in Engineering**

Institute of Structural Engineering, Department of Civil, Environmental and Geomatic Engineering, ETH Zurich.

Feb. 2017 - Jan. 2019: **Head of the Institute of Structural Engineering**.

Work experience

2011-2012 **Senior researcher (*Directeur de recherche*)**, *Laboratoire Navier (Ecole des Ponts ParisTech/IFSTTAR/ CNRS (UMR 8205))*, Marne-la-Vallée.

Associate professor in structural mechanics, *Ecole des Ponts ParisTech*.

Part-time lecturer in probabilistic engineering mechanics, *Ecole Supérieure d'Ingénieurs Léonard de Vinci*, Paris La Défense, France.

2008-2011 **Director of Research and Strategy**, *Phimeca Engineering*, Paris.
Phimeca Engineering is a consulting company (25 employees) specialized in mechanical design, computational mechanics, structural reliability analysis and uncertainty engineering (application of statistics and probability theory to the modelling of uncertainty in engineering problems).

Associate Researcher, *Laboratoire de Mécanique et Ingénieries (LaMI), French Institute of Advanced Mechanics (IFMA)*, Clermont-Ferrand.

- I created the R&D Department of Phimeca.
- I defined the research strategy of the company including the research topics, the public and private partnerships and associated fundings.
- I wrote proposals for joint research projects funded by the French National Research Agency (ANR) and the European Community (FP7 program).
- I supervised Ph.D students through the affiliation to the *Laboratoire de Mécanique et Ingénieries* (IFMA).
- I did consulting in *uncertainty engineering* and *structural safety* for industrial companies including EDF (nuclear engineering), SNCF (railways), DCNS (naval engineering), Commissariat à l'Energie Atomique (nuclear weapons), Lafarge (cement & construction materials), etc.

2004-2008 **Head of a research group on structural reliability**, *EDF R&D*, Moret-sur-Loing, France.

- I built and managed a research group of 5 on structural reliability and probabilistic methods for uncertainty quantification at the *Department of Materials and Mechanics of Components*.
- I co-supervised Ph.D students on time-variant reliability methods, stochastic finite element analysis, Bayesian updating and stochastic inverse problems together with Pr. Lemaire (*Laboratoire de Mécanique et Ingénieries (LaMI), French Institute of Advanced Mechanics (IFMA)*, Clermont-Ferrand).

2001-2003 **Research engineer in structural reliability**, *EDF R&D*, Moret-sur-Loing.
I carried out finite element reliability analysis of nuclear components including concrete containment vessels, cooling towers, reactor vessels, fuel rods, pipes under thermal fatigue, etc.

2000 **Post-doctoral stay**, *University of California at Berkeley, Dept. of Civil and Environmental Engineering* (12 months), CA, USA.
I wrote a state-of-the-art report on stochastic finite element methods and reliability (Supervisor: Pr. Der Kiureghian). [PDF file]

Education

2010 **Qualification to full professorship** by the *Conseil National des Universités* (National University Council), 60th Section (Mechanical and Civil Engineering)
This qualification is obtained by submitting a detailed research and teaching curriculum vitæ that is reviewed by a national evaluation committee. It is a prerequisite for the application to full professor positions in French universities.

2007 **Habilitation à diriger des recherches**, *Université Blaise Pascal*, Clermont-Ferrand, France.
This habilitation thesis is required by the French law for the application to full professorship in a French university. [PDF file]

Title:	Uncertainty propagation and sensitivity analysis in mechanical models – Contributions to structural reliability and stochastic spectral methods.
Laboratory:	Institut Français de Mécanique Avancée, Laboratoire de Mécanique et Ingénieries, EA 3867, BP 10448, F-63000 Clermont-Ferrand.
Defence:	October 12, 2007.
Committee:	Pr. Didier CLOUTEAU, *Ecole Centrale Paris*, President Pr. Armen DER KIUREGHIAN, *University of California at Berkeley*, Reviewer Pr. Maurice LEMAIRE, *Institut Français de Mécanique Avancée*, Reviewer Pr. Christian SOIZE, *Université Paris-Est Marne-la-Vallée*, Reviewer Pr. Stéphane ANDRIEUX, *Ecole Polytechnique*, Examiner Dr. Olivier LE MAITRE, *CNRS, Université Paris-Sud Orsay*, Examiner Pr. John SØRENSEN, *University of Aalborg, Danemark*, Examiner

1996–1999 **Ph.D thesis**, *Ecole Nationale des Ponts et Chaussées*, Marne-la-Vallée.
[PDF file]

Speciality:	Structural mechanics
Title:	Multiphase modelling of reinforced materials and structures (original French title: *Modélisation multiphasique des ouvrages renforcés par inclusions*).
Laboratory:	Centre d'Enseignement et de Recherche en Modélisation des Matériaux et des Ouvrages, Ecole Nationale des Ponts et Chaussées (now Ecole des Ponts ParisTech).
Supervisor:	Pr. Patrick de BUHAN

Defence: October 6, 1999, with honors (*mention très honorable avec félicitations du jury*).

Committee: Pr. Bernard HALPHEN, *Ecole Polytechnique*, President
Pr. Jean-Baptiste LEBLOND, *Université Pierre et Marie Curie*, Reviewer
Pr. Isam SHAHROUR, *Université de Lille*, Reviewer
Pr. Joseph PASTOR, *Université Joseph Fourier*, Examiner
Pr. Olivier COUSSY, *Laboratoire Central des Ponts et Chaussées*, Examiner
Pr. Patrick de BUHAN, *Ecole Nationale des Ponts et Chaussées*, Supervisor

1995–1996 *Technical University of Munich (TUM)*, Germany.
One year as an exchange student in the Department of Civil Engineering (*Lehrstuhl für Baumechanik*, Pr. H. Grundmann).

1993–1995 *Ecole Nationale des Ponts et Chaussées (ENPC)*, Paris.
ENPC belongs to the top 4 French engineering schools and is ranked first in the domain of civil engineering.

1990–1993 *Ecole Polytechnique*, Palaiseau.
Ecole Polytechnique is the top 1 French engineering school and provides a three year general program in mathematics, mechanics, physics, chemistry, biology, economy and social sciences.
At the end of the cursus, I was enrolled by civil service examination in the "Corps des Ponts et Chaussées" within the Ministry of Ecology & Sustainable Development.

1989–1990 *Classes préparatoires aux Grandes Écoles*, Lycée Montaigne, Bordeaux.
These two-year highly selective classes prepare for the national competitive entrance exams to the leading French "Grandes Écoles".

Personal skills and competences

Languages

		Listening	Reading	Speaking	Writing
French	Mother tongue				
Foreign	English	C2	C2	C2	C2
	German	C1	C1	C1	C1
	Spanish	B1	B1	B1	B1

Level of the Common European Framework of Reference for Languages: A: basic – B: independent: C: proficient

Computer skills

Computing	Matlab, Octave	*Languages*	Python, Fortran
Statistics	UQLab, R	*Text processing*	MS Office, LaTeX

Scientific awards and honors

2000 *Best Ph.D thesis of Year 1999* at the *Ecole Nationale des Ponts et Chaussées*, awarded by the Foundation of the *Ecole Nationale des Ponts et Chaussées*, Paris, France.

2003 *SMIRT Junior Award* awarded by the *International Association for Structural Mechanics in Reactor Technology* (IASMIRT) to the best paper of the SMIRT17 Conference (Prag) by a young researcher: "Reliability of the repairing of double wall containment vessels in the context of leak tightness assessment"

2005 *Jean Mandel Prize*. National distinction awarded by the *Ecole des Mines ParisTech* and the *Association Française de Mécanique* (AFM) every second year to a young researcher in mechanics under 35 for a substantial contribution in an original field of mechanics.

Award statement: *"for his work on numerical methods in probabilistic mechanics and structural reliability"*.

Research topics, supervision, publications (summary)

Research topics

1996–1999 Structural mechanics models applied to reinforced materials and structures: multiphase modelling, generalized Cosserat continuum mechanics, applications to geotechnical structures such as pile and piled-raft foundations, rock-bolted tunnels.

2000- Probabilistic methods in mechanics:

- Statistics and probability theory applied to the modelling of uncertainty in engineering, copula theory
- Surrogate models (polynomial chaos expansions, Kriging, support vector machines, low-rank tensor approximations)
- Global sensitivity analysis
- Bayesian statistics for model updating (Markov chain Monte Carlo simulation); stochastic inverse problems
- Structural reliability methods including time- and space-dependent reliability methods
- Reliability-based design optimization
- Random field discretization and identification

Research supervision

- 21 master's thesis
- 17 completed Ph.D thesis supervised since 2002
- 4 Ph.D thesis ongoing

Publications

- 1 book as single author, 2 edited book, 4 monographs
- 13 book chapters
- 124 articles in peer-reviewed international and national journals
- 241 papers, posters and talks at international conferences (with or without proceedings)
- 46 papers in national conferences and workshops (with or without proceedings)
- 75 invited talks and lectures (plenary lectures, keynotes, summer schools, etc. since 2012)

Citations and h-index **As of February 1st, 2024**

	Google scholar	Web of Science
h-index	58	41
Number of citations	19,644	8,471

Approved research projects

2023	ETH Board Open Research Data (ORD), **CHF 15'000** *Benchmarking platform for uncertainty quantification algorithms*
2022	ETH Innovedum Grant, **CHF 169'200** *Bachelor course "Programming for Engineers"*
2021	ETH Innovedum Grant, **CHF 60'000** *Web-based apps for teaching structural mechanics*
2021-2024	European Commission, Horizon 2020 Program, **406'125 €** *Highly advanced probabilistic design and enhanced reliability methods for high-value, cost-efficient offshore wind (HIPERWIND)*, Grant Agreement 101006689.
2021-2024	European Commission, Innovative Training Network (ITN), **562'550 €** *Grey-box models for safe and reliable intelligent mobility systems (GREYDIENT)* (co-PI: Dr. S. Marelli), Grant Agreement 955393.
2018-2021	SNSF project, Swiss National Science Foundation (Switzerland), **CHF 600'000** *SurrogAte Modelling for stOchastic Simulators (SAMOS)*, Grant #175524.
2018-2020	ETH grant, ETH Zurich (Switzerland), **CHF 166'800** *Efficient Computational Bayesian Inversion for Risk and Uncertainty Quantification in Engineering and the Sciences* (PI: Prof. C. Schwab, (ETH-MATH). Total amount of the grant: CHF 433'300).
2018-2020	SNSF project, Swiss National Science Foundation (Switzerland), **CHF 133'465** *Robust and reliable sustainability assessment for building renovation strategies* (PI: Prof. G. Habert, (ETH-BAUG). Total amount of the grant: CHF 393'882), Grant #172545.
2016-2017	Seed Project grant, ETH Zurich (Switzerland), **CHF 82'720** *Copulas for big data analysis in engineering sciences* (co-PI: Prof. P. Embrechts (ETH-MATH)).
2015-2016	Seed Project grant, ETH Zurich (Switzerland), **CHF 86'700** *Uncertainty quantification in economics* (co-PI: Prof. A. Bommier (ETH-MTECH)).
2013-2014	Research contract, Orange Labs (France), **55'000 €** *Adaptive designs in polynomial chaos expansions for uncertainty quantification in computational dosimetry*

2 Teaching activities

ETH Zurich, Chair of Risk, Safety and Uncertainty Quantification

I teach a course on *structural reliability and risk analysis* (Ref: 101-0187-00L) since Fall 2012. Structural reliability aims at quantifying the probability of failure of systems due to uncertainties in their design, manufacturing and environmental conditions. Risk analysis combines this information with the consequences of failure in view of optimal decision making. The course presents the underlying probabilistic modelling and computational methods for reliability and risk assessment.

I teach a course on *uncertainty quantification in engineering* (Ref: 101-0178-01L) since spring 2014. Uncertainty quantification aims at studying the impact of aleatory- (e.g. natural variability) or epistemic uncertainty onto computational models used in applied sciences and engineering. The course introduces the basic concepts of uncertainty quantification: probabilistic modelling of data (using copula theory), uncertainty propagation techniques (Monte Carlo simulation, polynomial chaos expansions) and sensitivity analysis (Sobol' indices).

I teach the introductory course on structural mechanics (*Baustatik I* in German, Ref: 101-0113-00L) since Fall 2017. In this mandatory course of the second year of the Bachelor of Civil Engineering, statically determinate and indeterminate systems are defined. Global and local static equilibrium equations are derived and applied to beams and beam structures, arches and trusses. Basics of continuum mechanics are reminded to derive the Euler-Bernoulli and Timoshenko beam models. Stresses and deflection of elastic beams are presented. Finally the force method is used to solve statically indeterminate systems. Since Fall 2019, the first half of the course is taught to environmental engineers (*Baustatik für Umweltingenieurwissenschaften* in German, Ref: 101-0113-10L). The course has been published as a textbook by Springer Vieweg in 2022.

I designed and teach the course *Programming for Engineers* together with Dr. N. Lüthen (Ref: 101-0700-00L) since Fall 2022. In this mandatory course of the first year of the Bachelor of Civil Engineering, we introduce the basic concepts of programming using MATLAB. The course consists in frontal lectures, followed by online tutorial and exercises that students solve at their home pace at home. Every second week, they validate a module by presenting their solutions to teaching assistant in a one-to-one coaching session. This allows us to provide relevant feedback to students who start their universities studies with extremely different experience in programming (from complete beginner to experienced developer). The course is focused on solving engineering problems, in particular through the development of an app all along the semester. Finally the Python language is introduced to bridge with the follow-up bachelor courses.

Together with Dr. S. Marelli, we teach in the block course *Uncertainty Quantification and Data Analysis in Applied Sciences* (Ref: 101-0190-08L) a 20-hour course on *Uncertainty Quantification and Rare Event Estimation in Engineering*. The course presents fundamental concepts and advanced methodologies for handling and interpreting data in relation with models. It elaborates on methods and tools for identifying, quantifying and propagating uncertainty through models of systems with applications in various fields of engineering and applied science.

1998–2012

École Nationale des Ponts et Chaussées (*École des Ponts ParisTech*)

I have taught *structural mechanics* classes at the École des Ponts ParisTech from 1998 to 2012 (except during the post-doctoral stay at the University of California at Berkeley (2000)). The lectures have been successively given by Pr. Yves Bamberger (EDF, 1998-1999), Pr. Adnan Ibrahimbegovic (ENS Cachan, 2001) and Pr. Philippe Bisch (EGIS, 2002-2012). This corresponds to 32 hours per year. The course also included a structural mechanics project which requires circa 50 hours of work by the students. I have supervised projects on the design of cooling towers concrete shells (10 students per year).

From 2010 to 2012 I have taught a course on *"Uncertainty quantification in engineering mechanics"*. This master's degree course (21 hours) covers the basics of uncertainty quantification in engineering: probabilistic description for model input parameters, uncertainty propagation methods (Monte Carlo simulation, second moment methods, polynomial chaos expansions), structural reliability methods (Monte Carlo, FORM/SORM, importance sampling). It is complemented by industrial application examples.

Ecole Supérieure d'Ingénieurs Léonard de Vinci

I started as an invited lecturer in spring 2004 to present seminars on the applications of structural reliability methods to industrial problems. These seminars were given to master's students (4 lectures of 2 hours). I was then asked to design a full course (28 hours) on *probabilistic engineering mechanics and structural safety*. This course covers uncertainty propagation and structural reliability methods. It has been taught once a year from 2004 to 2012 (starting from spring 2010 it has been taught in English).

3 Research activities

Supervision of Ph.D students

Céline ANDRIEU

Title:	*Fiabilité mécanique des structures soumises à des phénomènes physiques dépendant du temps* Structural reliability methods applied to time-variant problems
Supervision:	Co-supervision with Prof. Maurice LEMAIRE (2nd and 3rd year).
Defence:	December 13, 2002
Committee	Prof. Jean-Marie REYNOUARD, *INSA, Lyon*, President Prof. Christian BES, *Université Paul Sabatier, Toulouse*, Reviewer Prof. Alain MILLARD, *CEA Saclay et Ecole Polytechnique, Palaiseau*, Reviewer Prof. Pierre BERNARD, *Université Blaise Pascal, Clermont-Ferrand*, Examiner Prof. Maurice LEMAIRE, *Institut Français de Mécanique Avancée*, Supervisor Prof. Jean-Claude MITTEAU, *Institut Français de Mécanique Avancée, Clermont-Ferrand*, Co-supervisor Dr. Bruno SUDRET, *EDF R&D, Moret-sur-Loing*, Co-supervisor

Zakoua GUÉDÉ

Title:	*Approche probabiliste de la durée de vie des structures sollicitées en fatigue thermique* Probabilistic modelling of the life time of structures submitted to thermal fatigue
Supervision:	Co-supervision with Prof. Maurice LEMAIRE (half time).
Defence:	June 8, 2005
Committee:	Prof. Jean-Louis ROBERT, *Institut Universitaire de Technologie, Montluçon*, President Prof. Sylvie POMMIER , *Ecole Normale Supérieure de Cachan*, Reviewer Prof. Stéphane ANDRIEUX, *EDF R&D, Clamart et Ecole Polytechnique, Palaiseau*, Reviewer Prof. Maurice LEMAIRE, *Institut Français de Mécanique Avancée, Clermont-Ferrand*, Supervisor Dr. Bruno SUDRET, *EDF R&D, Moret-sur-Loing*, Co-supervisor

Marc BERVEILLER

Title:	*Eléments finis stochastiques : approches intrusive et non intrusive pour des analyses de fiabilité* Spectral stochastic finite element methods: intrusive and non intrusive approaches for structural reliability
Supervision:	Full supervision at EDF R&D, Les Renardières.
Defence:	October 18, 2005
Committee:	Prof. Christian SOIZE, *Université Paris-Est, Marne-la-Vallée*, President Prof. Didier CLOUTEAU, *Ecole Centrale Paris*, Reviewer Prof. Alain MILLARD, *CEA Saclay et Ecole Polytechnique, Palaiseau*, Reviewer Dr. Olivier LE MAITRE, *CNRS et Université Paris-Sud, Orsay*, Examiner Dr. Bruno SUDRET, *EDF R&D, Moret-sur-Loing*, Supervisor Prof. Maurice LEMAIRE, *Institut Français de Mécanique Avancée, Clermont-Ferrand*, Co-supervisor

Frédéric PERRIN

Title:	*Prise en compte des données expérimentales dans les modèles probabilistes pour la prévision de la durée de vie des structures* Bayesian updating techniques for the probabilistic modelling of the life time of structures
Supervision:	Full supervision at EDF R&D, Les Renardières.
Defence:	January 28, 2008
Committee:	Prof. Gilles CELEUX, *INRIA*, President Prof. Didier CLOUTEAU, *Ecole Centrale Paris*, Reviewer Prof. Gilles FLEURY, *Ecole Supérieure d'Electricité, Gif-sur-Yvette*, Reviewer Prof. Stéphane ANDRIEUX, *EDF R&D, Clamart et Ecole Polytechnique, Palaiseau*, Examiner Prof. Maurice LEMAIRE, *Institut Français de Mécanique Avancée, Clermont-Ferrand*, Examiner Dr. Maurice PENDOLA, *Phimeca Engineering, Clermont-Ferrand*, Examiner Dr. Bruno SUDRET, *EDF R&D, Moret-sur-Loing*, Supervisor

Géraud BLATMAN

Adaptive sparse polynomial chaos expansions for uncertainty propagation and sensitivity analysis

Supervision:	Full supervision at EDF R&D (2 first years) and Phimeca Engineering (last year).
Defence:	October 8, 2009
Committee:	Prof. Anestis ANTONIADIS, *Université Joseph Fourier, Grenoble*, President Prof. Gilles FLEURY, *Ecole Supérieure d'Electricité, Gif-sur-Yvette*, Reviewer Dr. Anthony NOUY, *Université de Nantes*, Reviewer Dr. Marc BERVEILLER, *EDF R&D, Moret-sur-Loing*, Examiner Prof. Maurice LEMAIRE, *Institut Français de Mécanique Avancée, Clermont-Ferrand*, Examiner Dr. Didier LUCOR, *Université Pierre et Marie Curie*, Examiner Dr. Bruno SUDRET, *Phimeca Engineering, Paris*, Supervisor

Vincent DUBOURG

Adaptive surrogate models for reliability analysis and reliability-based design optimization

Supervision:	Co-supervision with Prof. Jean-Marc Bourinet, assistant professor at the French Institute of Advanced Mechanics (IFMA, Clermont-ferrand, France).
Defence:	December 5th, 2011
Committee:	Prof. John D. SØRENSEN, *University of Aalborg, Danemark*, President Dr. Bertrand IOOSS, *EDF R&D, Chatou*, Reviewer Dr. Rodolphe LERICHE, *École des Mines de Saint-Étienne (CNRS)*, Reviewer Prof. Pierre-Alain BOUCARD, *LMT-Cachan, Cachan*, Examiner Prof. Alaa CHATEAUNEUF, *Université Blaise Pascal, Clermont-Ferrand*, Examiner Prof. Josselin GARNIER, Université Paris VII, Paris, Examiner Prof. Jean-Marc BOURINET, *Institut Français de Mécanique Avancée, Clermont-Ferrand*, Co-Supervisor Dr. Bruno SUDRET, *Laboratoire Navier, Ecole des Ponts ParisTech, Paris*, Supervisor

Hung Xuan DANG

Identification de la variabilité spatiale des champs de contrainte dans les agrégats polycristallins – Application à l'approche locale de la rupture
Modelling the random spatial variability of stress fields in polycrystalline aggregates – Application to the local approach to fracture mechanics

Supervision: Co-supervision with Dr. Marc Berveiller (EDF R&D, Moret-sur-Loing) and Dr. Thierry Yalamas (Phimeca Engineering, Paris).

Defence: October 11th, 2012

Committee:
Prof. Clotilde BERDIN-MERIC, *Université Paris-Sud Orsay, Paris*, President
Prof. Samuel FOREST, *Ecole des Mines ParisTech, Paris*, Reviewer
Prof. Didier CLOUTEAU, *Ecole Centrale, Paris*, Reviewer
Dr. Jean-Marc BOURINET, *Institut Français de Mécanique Avancée, Clermont-Ferrand*, Examiner
Dr. Marc BERVEILLER, *EDF R&D, Moret-sur-Loing*, Co-Supervisor
Dr. Thierry YALAMAS, *Phimeca Engineering*, Co-Supervisor
Prof. Bruno SUDRET, *ETH Zurich*, Supervisor

Yann CANIOU

Global sensitivity analysis for nested and multi-scale models

Supervision: Co-supervision with Dr. Thierry Yalamas (Phimeca Engineering, Paris).

Defence: November 29th, 2012

Committee:
Prof. Clémentine PRIEUR, *Université de Grenoble*, President
Dr. Bertrand IOOSS, *EDF R&D, Chatou*, Reviewer
Prof. Zohra CHERFI-BOULANGER, *Université Technologique de Compiègne*, Reviewer
Dr. Nicolas GAYTON, *Institut Français de Mécanique Avancée, Clermont-Ferrand*, Examiner
Prof. Emer. Maurice LEMAIRE, *Institut Français de Mécanique Avancée, Clermont-Ferrand*, Examiner
Dr. Thierry YALAMAS, *Phimeca Engineering*, Co-Supervisor
Prof. Bruno SUDRET, *ETH Zurich*, Supervisor

Maliki MOUSTAPHA

Adaptive meta-models for the robust multi-constraint optimization of the mass of automotive vehicles

Supervision:	Student registered at the Université Blaise Pascal, Clermont-Ferrand, France. Co-supervision with Prof. Jean-Marc Bourinet (Institut Pascal, Clermont-Ferrand).
Defence:	January 27th, 2016
Committee:	Dr. Rodolphe LERICHE, *École des Mines de Saint-Étienne (CNRS)*, President Prof. Alaa CHATEAUNEUF, *Université Blaise Pascal, Clermont-Ferrand* Prof. Pierre-Alain BOUCARD, *LMT-Cachan, Cachan*, Reviewer Dr. Bertrand IOOSS, *EDF R&D, Chatou*, Reviewer Dr. Benoît GUILLAUME, *PSA Peugeot Citroën*, Examiner Prof. Jean-Marc BOURINET, *Institut Français de Mécanique Avancée, Clermont-Ferrand*, Co-Supervisor Prof. Bruno SUDRET, *ETH Zurich*, Supervisor

Chu Van MAI

Polynomial chaos expansions for uncertain dynamical systems – Applications in earthquake engineering

Supervision:	Full supervision at ETH Zurich
Defence:	September 28th, 2016
Committee:	Prof. Andreas WIESER, *ETH Zurich*, Head of the Committee Prof. Eleni CHATZI, *ETH Zurich*, Reviewer Prof. Anthony NOUY, *École Centrale Nantes*, Reviewer Prof. Bozidar STOJADINOVIC, *ETH Zurich*, Reviewer Prof. Bruno SUDRET, *ETH Zurich*, Supervisor

Joseph NAGEL

Bayesian techniques for inverse uncertainty quantification

Supervision:	Full supervision at ETH Zurich
Defence:	January 26th, 2017
Committee:	Prof. Robert FLATT, *ETH Zurich*, Head of the Committee Prof. Eleni CHATZI, *ETH Zurich*, Reviewer Prof. Costas PAPADIMITRIOU, *University of Thessaly*, Reviewer Prof. Bruno SUDRET, *ETH Zurich*, Supervisor

Roland SCHÖBI

Surrogate models for uncertainty quantification in the context of imprecise probability modelling

Supervision:	Full supervision at ETH Zurich
Defence:	February 9th, 2017
Committee:	Prof. Robert FLATT, *ETH Zurich*, Head of the Committee Prof. Michael BEER, *University of Hannover*, Reviewer Prof. Edoardo PATELLI, *University of Liverpool*, Reviewer Prof. Bruno SUDRET, *ETH Zurich*, Supervisor

Christos LATANIOTIS

Machine learning techniques for uncertainty quantification in engineering

Supervision:	Full supervision at ETH Zurich
Defence:	November 8th, 2019
Committee:	Prof. Ioannis ANASTASOPOULOS, *ETH Zurich*, Head of the Committee Prof. Eleni CHATZI, *ETH Zurich*, Reviewer Prof. Costas PAPADIMITRIOU, *University of Thessaly*, Reviewer Prof. Bruno SUDRET, *ETH Zurich*, Supervisor Dr. Stefano MARELLI, *ETH Zurich*, Co-supervisor

Soumaya AZZI

Surrogate modeling of stochastic simulators

Supervision:	Co-supervision with Prof. J. Wiart, Télécom Paris
Defence:	June 4, 2020
Committee:	Prof. Martine Liénard, *Université de Lille*, Head of the Committee Prof. Jean-Marc BOURINET, *SIGMA Clermont*, Reviewer Prof. Philippe DE DONCKER, *Université Libre de Bruxelles*, Reviewer Prof. Laurent DECREUSEFOND, *Télécom Paris*, Examiner Prof. Alain SIBILLE, *Télécom Paris*, Examiner Prof. Joe WIART, *Télécom Paris*, Supervisor Prof. Bruno SUDRET, *ETH Zurich*, Co-supervisor

Paul-Remo WAGNER

Stochastic spectral embedding in forward and inverse uncertainty quantification

Supervision:	Full supervision at ETH Zurich
Defence:	September 3rd, 2021
Committee:	Prof. Ioannis ANASTASOPOULOS, *ETH Zurich*, Head of the Committee Prof. Eleni CHATZI, *ETH Zurich*, Reviewer Prof. Costas PAPADIMITRIOU, *University of Thessaly*, Reviewer Prof. Bruno SUDRET, *ETH Zurich*, Supervisor Dr. Stefano MARELLI, *ETH Zurich*, Co-supervisor

Paul-Remo Wagner received the ETH Medal for his PhD.

Nora LÜTHEN

Surrogate modelling for stochastic simulators using random field representations

Supervision:	Full supervision at ETH Zurich
Defence:	September 15, 2022
Committee:	Prof. Ioannis ANASTASOPOULOS, *ETH Zurich*, Head of the Committee Prof. Olivier ROUSTAND, *University of Toulouse*, Reviewer Prof. Sébastien DA VEIGA, *University of Rennes*, Reviewer Prof. Bruno SUDRET, *ETH Zurich*, Supervisor Dr. Stefano MARELLI, *ETH Zurich*, Co-supervisor

Xujia ZHU

Surrogate modelling for stochastic simulators using statistical approaches

Supervision:	Full supervision at ETH Zurich
Defence:	December 16, 2022
Committee:	Prof. Ioannis ANASTASOPOULOS, *ETH Zurich*, Head of the Committee Prof. Josselin GARNIER, *Ecole Polytechnique*, Reviewer Prof. Marco BROCCARDO, *University of Trento*, Reviewer Prof. Bozidar STOJADINOVIC, *ETH Zurich*, Reviewer Prof. Stefano MARELLI, *ETH Zurich*, Reviewer Prof. Bruno SUDRET, *ETH Zurich*, Supervisor

Styfen SCHÄR

High-dimensional surrogate models for applications in offshore wind turbine design

Supervision: Full supervision at ETH Zurich

April 2021-

Katerina GIANNOUKOU

Multi-fidelity surrogates in the context of grey-box modelling

Supervision: Full supervision at ETH Zurich

Sept. 2021-

Anderson PIRES

Structural reliability analysis in the context of grey-box modelling

Supervision: Full supervision at ETH Zurich

Sept. 2021-

Lucas BRUNEL

Multi-fidelity modelling for uncertainty quantification on random geometries – Application to the design of aerospace vehicles

Supervision: Co-supervision with Prof. R. Leriche (Clermont University), Dr. M. Balesdent and Dr. L. Brevault (ONERA)

Oct. 2022 -

Supervision of master's theses and semester projects

1998 **Stefan LENZ**, Technical university of Munich, master's thesis (Diplom Arbeit)
Modélisation multiphasique de matériaux renforcés
Multiphase models of reinforced materials

2001 **Sébastien DRON**, Institut Français de Mécanique Avancée, Clermont-Ferrand, master's thesis
Etude fiabiliste d'un aéro-réfrigérant avec prise en compte de la corrosion des armatures
Reliability analysis of cooling towers including concrete rebars corrosion

2001 **Sonia BLAYAC**, Institut Français de Mécanique Avancée, Clermont-Ferrand, master's thesis
Utilisation des réseaux de neurones pour l'optimisation de la maintenance des tuyauteries de centrale nucléaire
Use of neural networks for the optimization of maintenance of pipes in nuclear power plants

2002 **Marc BERVEILLER**, Institut Français de Mécanique Avancée, Clermont-Ferrand, master's thesis
Etude mécano-fiabiliste de la réparation par revêtement des enceintes de confinement
Reliability analysis of the repairing of concrete containement vessels of nuclear power plants

2002 **Imane CHERRADI**, Institut National Polytechnique de Grenoble, master's thesis
Méthodes de quadrature pour la fiabilité des structures
Quadrature methods for structural reliability problems

2003 **Thomas SGARBI**, Institut Français de Mécanique Avancée, Clermont-Ferrand, master's thesis
Couplages mécano-probabilistes pour des problèmes statiques et dépendant du temps
Probabilistic-mechanics couplings for time-invariant and time-variant reliability problems

2006 **Géraud BLATMAN**, Université Blaise Pascal, Clermont-Ferrand, master's thesis
Méthodes non intrusives pour les analyses de sensibilité en modélisation probabiliste.
Non intrusive methods for global sensitivity analysis in probabilistic modelling

2009 **Hung Xuan DANG**, Université Paris-Est, Marne-la-Vallée, master's thesis
Identification de champs aléatoires gaussiens par krigeage
Identification of Gaussian random fields by kriging

2010 **Vincent PIQUARD**, Ecole des Ponts ParisTech, Marne-la-Vallée, master's thesis
Evaluation de courbes de fragilité par chaos polynomial
Computation of fragility curves using polynomial chaos expansions

2011 **Cyrielle GUYONNET**, Ecole des Ponts ParisTech, Marne-la-Vallée, master's thesis
Application du chaos polynomial creux pour le calcul de courbes de fragilité sismique
Use of sparse polynomial chaos expansions for evaluating seismic fragility curves

2012 **Chu Van MAI**, Ecole des Ponts ParisTech, Marne-la-Vallée, master's thesis

Calcul de courbes de fragilité de constructions à comportement non linéaire sous sollicitations sismiques
Computing fragility curves of buildings with non linear structural behaviour under earthquake excitation

2012 **Marius Kosy TOANDRO**, Ecole des Ponts ParisTech, Marne-la-Vallée, master's thesis
Identification de la variabilité spatiale des propriétés matériaux par champs aléatoires non gaussiens
Identification of non Gaussian random fields for modelling the spatial variability of material properties

At ETH

2013 **Dimitrios PISKAS**, Kriging estimation methods for structural reliability, semester project

2014 **Charel EICHER**, Reliability analysis of ten-story reinforced-concrete building, semester project

Alessandra EICHER, Bayesian multilevel model calibration of a simplified dam breach model, master's thesis.
Award: 1st Heinrich Hatt-Bucher Preis

2015 **Matthias REUTIMANN**, Calibration of partial safety factors for assessing the durability of concrete structures, semester project

Raphaël WEGMANN, Reliability analysis with subset simulation, semester project

Matteo BERCHIER, Orthogonal matching pursuit for sparse polynomial chaos expansions, semester project

2016 **Matteo BERCHIER**, Multi-fidelity surrogate modelling with polynomial chaos expansions, master's thesis.
Award: ETH Medal and 2. Heinrich-Hatt-Bucher-Preis for outstanding master's thesis

2017 **Jochen RIEGER, Stefan TOBLER**, Optimization of truss structures, semester project

Florian SCHMID, Line sampling for reliability analysis, semester project

Kleio SAMPATAKAKI, Asymptotic sampling method for reliability problems, semester project

Philippe WIEDERKEHR, Sensitivity analysis for models with dependent input parameters, master's thesis

2018 **Elena GIACOMAZZI**, Directional importance sampling for reliability analysis, semester project

Andrin KASPER, Average weighted Monte Carlo simulation for reliability analysis, semester project

Viviane ROGENMOSER, Reliability-based design optimization of truss structures, semester project

Florian SCHMID, A new moment-independent measure for reliability-sensitivity analysis, master's thesis
Award: 3rd Heinrich Hatt-Bucher Preis

2019 **Lukas BACHMANN, Alexander HAMMETT, Mingpeng ZHU, Urias MORF**, Python-based structural design tool, semester project

Yan THILL, Python-based structural design tool, bachelor's thesis

Riccardo ARRIGONI, Partial least-squares for polynomial chaos expansions, semester project

Minxiang GAO, Reliability-based design optimization of truss structures, semester project

Raphael FÄSSLER, Marco ZUMSTEIN, Python-based structural design tool (concrete design), semester project

2020 **Riccardo ARRIGONI**, Uncertainty propagation and sensitivity analysis in hydrology, master's thesis

Pietro PARISI, Meta-ensembling: ensemble methods for metamodelling, semester project

2021 **Pietro PARISI**, Active learning for system rare event estimation, master's thesis

Matthias SCHNEIDER, Extension of the python-based structural design tool, semester project

Raphael SIEBER, Reliability-based design optimization of truss structures, semester project

2022 **Tobias FILIBERTI**, Reducing the cost of concrete structures using reliability-based design optimization, master's thesis

Philip SCHNABEL, Polynomial chaos expansion for dependent inputs, semester project

2023 **Rafaele ANCAROLA**, Bayesian inversion by likelohood active learning, master's thesis (collaboration with EPFL)

Mariana OSORIO OLVERA, Data-driven regression at the boundary between machine learning and uncertainty quantification, master's thesis

Antonia SCHITTICH & Maxime LANTER, Cross entropy importance sampling, semester project

4 Collective responsibilities

Membership in scientific and professional organizations

Since 2004	Member of the *Joint Committee on Structural Safety* (JCSS) `https://www.jcss-lc.org/`
Since 2005	Member of the *Working Group on Reliability and Optimization of Structural Systems*, International Federation for Information Processing (IFIP WG 7.5) `http://ifip-tc7.impan.pl/wg.html`
2007-2015	Member of the *Board of Directors* of the *International Civil Engineering Risk and Reliability Association* (CERRA) This association organizes the ICASP conferences (*International Conferences on Applications of Statistics and Probability in Civil Engineering*) every four years. `http://www.ce.berkeley.edu/projects/cerra/`
Since 2008	Member of the *Technical Committee TC3 – Structural Reliability and Optimization* of the *International Association for Structural Safety and Reliability* (IASSAR) Objectives: This association organizes the ICOSSAR conferences (*International Conferences on Structural Safety and Reliability)* every four years. `http://www.columbia.edu/cu/civileng/iassar/`
Since 2009	Member of the *Scientific Committee* of the *GDR-MascotNUM* (France) The GDR MASCOT-NUM "*is a French Research Group dealing with stochastic methods for the analysis of numerical codes. Its main objective is to coordinate research efforts in this scientific area, which is often called* design, modeling and analysis of computer experiments." `http://www.gdr-mascotnum.fr/`
2013-2019	Member of the *Scientific and Technological Council* of the *System-X* (Palaiseau, France) The mission of SystemX is to foster public/private research partnerships in the broad domain of digital simulation with applications in transport, telecommunications and energy by gathering on a single campus private R&D and academic institutions. `http://www.irt-systemx.fr/`
Since June 2018	Member of the Scientific Committee of the SAMO Conferences The International Conferences on Sensitivity Analysis of Model Output are organized every three years.
Since Sept. 2020	Member of the Scientific Committee "Mathematics and Statistics" at the *Laboratoire National de Métrologie et d'Essais* (LNE), Paris, France

Editorial boards

Since Jan. 2015	Member of the Editorial Board of Reliability Engineering and Systems Safety
Since Mar. 2015	Member of the Editorial Board of Sustainable and Resilient Infrastructure

Since Apr. 2017	Member of the Editorial Board of the journal Probabilistic Engineering Mechanics
Since Oct. 2017	Member of the Editorial Board of the journal Structural Safety
2014-2019	Member of the Editorial Board of the ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems
2015-2018	Member of the Editorial Board of the Journal of Smart Cities

Guest editor

2017-2018 **ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems** Special Issue SC022A on the *Treatment of Uncertainty in Risk and Reliability Modeling and Decision Making*
Guest Eds.: Bruno Sudret, Luca Podofillini and Enrico Zio

2017-2018 **ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems** Special Issue SC026A on the *Advances in Simulation-based Uncertainty Quantification and Reliability Analysis*
Guest Eds.: Michael D. Shields, Siu-Kui Au and Bruno Sudret

2018-2019 **Reliability Engineering and System Safety** Special Issue on *Surrogate Models for Uncertainty Quantification*
Guest Eds.: Bruno Sudret, Sankaran Mahadevan

2019-2020 **Reliability Engineering and System Safety** Special Issue on *Sensitivity Analysis of Model Outputs*
Guest Eds.: Bertrand Iooss, Bruno Sudret

Organization of international conferences

2014 Chair of the MascotNum Workshop on *Computer Experiments and Meta-models for Uncertainty Quantification*, ETH Zurich, Switzerland, April 23rd-25th.

2015 Technical Co-Chair of the *25th European Safety and Reliability Conference (ESREL'2015)*, ETH Zurich, Switzerland, September 7-10.

2018 Chair of the *19th IFIP WG7.5 Conference on Reliability and Optimization of Structural Systems*, ETH Zurich, Switzerland, June 26-29.

Scientific committee of international conferences

Since 2003, I have been a member of the Scientific Committee (and a reviewer for abstracts and/or full-length papers) of the following conferences:

2003 9th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP'9), San Francisco, USA.

2007 18e Congrès Français de Mécanique, Grenoble, France.

2007 10th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP'10), Tokyo, Japan.

2008 Journées Nationales de Géotechnique et de Géologie de l'Ingénieur JNGG'08, Nantes, France.

2009 10th International Conference on Structural Safety and Reliability (ICOSSAR'2009), Osaka, Japan.

2010 6th National Conference on Reliability of Materials and Structures (Fiabilité des matériaux et des structures (JNFiab'10)), Toulouse, France.

2011 11th International Conference on Applications of Statistics and Probability in Civil Engineering, Zurich, Switzerland.

2012 7e Conférence internationale francophone d'automatique (CIFA2012), Grenoble, France.

2012 7th National Conference on Reliability of Materials and Structures (Journées Fiabilité des Matériaux et des Structures (JNFiab'12)), Chambéry, France.

2012 16th IFIP WG7.5 Conference on Reliability and Optimization of Structural Systems, Yerevan, Armenia.

2013 7th International Conference on Sensitivity Analysis of Model Output (SAMO'2013).

2013 32nd International Conference on Ocean, Offshore and Arctic Engineering, Nantes (OMAE'2013).

2013 21e Congrès Français de Mécanique, Bordeaux, France.

2013 11th International Conference on Structural Safety and Reliability (ICOSSAR'2013), New York, USA.

2014 8th National Conference on Reliability of Materials and Structures (Journées Fiabilité des Matériaux et des Structures (JNFiab'14)), Aix-en-Provence, France.

2014 2nd International Symposium on Uncertainty Quantification and Stochastic Modelling (Uncertainties 2014), Rouen, France.

2014 7th International Conference on Computational Stochastic Mechanics, Santorini, Greece.

2014 2nd International Conference on Vulnerability and Risk Analysis and Management (ICVRAM) and the 6th International Symposium on Uncertainty Modelling and Analysis (ISUMA), University of Liverpool, United Kingdom.

2014 17th IFIP WG7.5 Conference on Reliability and Optimization of Structural Systems, Huangshan, China.

2015 25th European Safety and Reliability Conference (ESREL'2015), Zurich, Switzerland

2015 1st International Conference on Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP'2015), Crete Island, Greece

2015 12th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP12), Vancouver, Canada

2015 Symposium on reliability of engineering systems (SRES'2015), Hangzhou, China.

2016 18th IFIP WG7.5 Conference on Reliability and Optimization of Structural Systems, Carnegie Mellon University, Pittsburgh, USA.

2016 Probabilistic Mechanics and Reliability Conference (PMC'2016), Vanderbilt University, Nashville, USA.

2017 2nd International Conference on Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP'2017), Rhodos Island, Greece.

2017 Frontiers of Uncertainty Quantification in Engineering (FrontUQ), Technical University of Munich, Germany.

2018 3rd International Conference on Vulnerability, Risk Analysis and Management (ICVRAM2018); 7th International Symposium on Uncertainty Modelling and Analysis (ISUMA2018); 4th International Symposium on Uncertainty Quantification and Stochastic modelling, Florianopolis, Brazil.

2019 14ème Colloque National en Calcul des Structures, Giens, France.

2019 13th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP13), Seoul, South Korea.

2019 3rd International Conference on Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP'2019), Crete Island, Greece.

2019 9th International Conference on Sensitivity Analysis of Model Output (SAMO'2019), Barcelona, Spain.

2020 SIAM Conference on Uncertainty Quantification (UQ20), Munich, Germany

2020 9th International Workshop on Reliable Engineering Computing Risk and Uncertaintiy in Engineering Computations (REC2020), Taormina, Italy

2020 30th European Safety and Reliability Conference and 15th Probabilistic Safety Assessment and Management Conference, Venice, Italy.

2021 18th International Probabilistic Workshop (IPW'2021), University of Minho, Guimarães, Portugal.

2021 4th International Conference on Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP'2021), Athens, Greece.

2022 20th IFIP WG7.5 Conference on Reliability and Optimization of Structural Systems, Kyoto University, Japan.

2022 19th International Probabilistic Workshop (IPW'2022), Stellenbosch University, South Africa.

2022 10th International Conference on Sensitivity Analysis of Model Output (SAMO'2022), Florida State University, USA.

2022 8th International Symposium on Reliability Engineering and Risk Management (ISRERM), Hannover, Germany.

2022 Mascot-Num Annual Meeting, Clermont-Ferrand, France.

2023 5th International Conference on Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP'2023), Athens, Greece.

2023 Uncertainties 2023, Fortaleza, Brazil

2023 14th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP13), Trinity College, Dublin, Ireland.

2024 20th International Probabilistic Workshop (IPW'2024), University of Minho, Guimarães, Portugal.

2024 4th International Conference on Vulnerability, Risk Analysis and Management (ICVRAM2024); 8th International Symposium on Uncertainty Modelling and Analysis (ISUMA2024), Shanghai, China.

2024 9th International Symposium on Reliability Engineering and Risk Management (ISRERM), Hefei, China.

Organization of scientific events

2007 Coordinator of the mini-symposium on *"Probabilistic Approaches in Mechanics"* at the 18e Congrès Français de Mécanique, Grenoble.

2009 Co-organizer of the *JCSS Workshop on semi-probabilistic finite element calculations* with Prof. T. Vrouwenvelder, TNO/Delft University, December 1-2, 2009, Delft (The Netherlands).

2010 Co-organizer of the *6th National Conference on Reliability of Materials and Structures* (Fiabilité des matériaux et des structures (JNFiab'10)), Toulouse. Coordinator of the mini-symposium on *Uncertainty propagation methods and applications*.
`http://www-lmdc.insa-toulouse.fr/jfms10/comites.htm`

2011 Coordinator of the mini-symposium on *Meta-models/surrogate models for uncertainty propagation, sensitivity and reliability analysis* at the *11th International Conference on Applications of Statistics and Probability in Civil Engineering*, Zurich, Switzerland.
With: Dr. M. Berveiller, Dr. J.-M.Bourinet, Dr. N. Gayton.

2013 Coordinator of the mini-symposium on *Meta-models /surrogate models for uncertainty quantification, reliability analysis and robust design* at the *11th International Conference on Structural Safety and Reliability (ICOSSAR2013)*, University of Columbia, New York.
With: Dr. G. Blatman, Dr. J.-M. Bourinet, Prof. S. Mahadevan, Prof. S. Missoum.

2013 Coordinator of the organized session on *Incertitudes, fiabilité et maîtrise des risques* at the *Congrès Français de Mécanique (CFM2013)*, Bordeaux, France.

2015 Organizer of the Workshop on *Gaussian process and related models for uncertainty quantification and adaptive design*, ETH Zurich, Switzerland, June 25th.

2015 Co-organizer of the mini-symposium MS-9 on *Surrogate models for uncertainty quantification, reliability analysis and robust design* at the *12th International Conference on Applications of Statistics and Probability in Civil Engineering*, Vancouver, Canada, July 12-15.
With: Dr. J.-M.Bourinet, Prof. S. Mahadevan, Prof. S. Missoum.
`http://icasp12.ubc.ca/`

2016 Co-organizer of the mini-symposium MS-42 on *Sparse Techniques for High-dimensional UQ Problems and Applications* at the *SIAM Conference on Uncertainty Quantification*, Lausanne, Switzerland, April 5-8.
With: Prof. A. Doostan, Dr. K. Sargsyan.
`https://www.siam.org/meetings/uq16/`

2016 Co-organizer of the mini-symposium MS-112 on *Low-rank Tensor Approximations for Highdimensional UQ Problems* at the *SIAM Conference on Uncertainty Quantification*, Lausanne, Switzerland, April 5-8.
With: Prof. A. Doostan, Dr. K. Sargsyan.
`https://www.siam.org/meetings/uq16/`

2016 Co-organizer of the mini-symposium MS-143 on *Gaussian Processes: Feature Extraction vs. Sensitivity Analysis* at the *SIAM Conference on Uncertainty Quantification*, Lausanne, Switzerland, April 5-8.
With: Dr. D. Ginsbourger.
`https://www.siam.org/meetings/uq16/`

2016 Co-organizer of the mini-symposium MS-15 on *Surrogate Models for Uncertainty Quantification, Reliability/Risk Assessment and Robust Design* at the *Engineering Mechanics Institute / Probabilistic Mechanics and Reliability (EMI-PMC2016) Conference*, Vanderbilt University, USA, May 22-25.

With: Prof. A. Taflanidis.

http://www.vanderbilt.edu/emipmc2016/

2016 Co-organizer of the mini-symposium MS-1307 on *Non-intrusive surrogate models for uncertainty quantification in high dimensions* at the *European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2016)*, Crete Island, Greece, June 5-10.
With: Prof. J.-M. Bourinet, Prof. E. Chatzi, Prof. N. Gayton.

https://www.eccomas2016.org

2017 Co-organizer of the mini-symposium #2 on *Engineering Analyses with Vague and Imprecise Information* at the *2nd International Conference on Uncertainty Quantification in Computational Sciences and Engineering*, Rhodes Island, Greece, June 15-17.
With: Prof. M. Beer, Dr. M. Broggi, Dr. E. Patelli.

https://2017.uncecomp.org/

2017 Co-organizer of the mini-symposium #5 on *Surrogate models for uncertainty quantification, reliability analysis and robust design* at the *2nd International Conference on Uncertainty Quantification in Computational Sciences and Engineering*, Rhodes Island, Greece, June 15-17.
With: Prof. S. Mahadevan, Dr. S. Marelli, Prof. A. Taflanidis.

https://2017.uncecomp.org/

2017 Co-organizer of the mini-symposium #6 on *Software for Uncertainty Quantification* at the *2nd International Conference on Uncertainty Quantification in Computational Sciences and Engineering*, Rhodes Island, Greece, June 15-17.
With: Dr. B. Adams, Dr. S. Marelli, Dr. E. Patelli.

https://2017.uncecomp.org/

2017 Co-organizer of the organized session #1 on *Surrogate models for uncertainty quantification, reliability and sensitivity analysis* at the *12th International Conference on Structural Safety & Reliability (ICOSSAR 2017)*, Vienna, Austria, August 6-10.
With: Prof. J.-M. Bourinet, Prof. S. Mahadevan, Prof. A. Taflanidis.

http://www.icossar2017.org/

2018 Co-organizer of the mini-simposium on *Software for uncertainty quantification* at the 3rd International Conference on vulnerability and risk analysis and management (ICVRAM/ISUMA), Florianopolis, Brasil, April 8-11.
With: Dr. E. Patelli, Dr. S. Marelli.

http://icvramisuma2018.org/program/special-sessions/

2018 Co-organizer of the mini-simposium on *Surrogate models for uncertainty quantification, reliability analysis and robust design* at the 3rd International Conference on vulnerability and risk analysis and management (ICVRAM/ISUMA), Florianopolis, Brasil, April 8-11.
With: With: Prof. S. Mahadevan, Prof. A. Taflanidis, Dr. S. Marelli.

http://icvramisuma2018.org/program/special-sessions/

2018 Co-organizer of the organized session T1410 on *Structural Design and maintenance optimization under uncertainty* at the *13th World Conference on Computational Mechanics*, New York, USA, July 22-27.

With: Prof. Y. Aoues, Prof. C. Gogu, Dr. S. Marelli.

http://www.wccm2018.org/MS_1410

2019 Co-organizer of the mini-symposium MS31 on *Surrogate Models for Uncertainty Quantification, Reliability and Sensitivity Analysis* at the *13th International Conference on Applications of Statistics and Probability in Civil Engineering*, Seoul, South Korea, May 26-30.
With: Prof. J.-M. Bourinet, Prof. S. Mahadevan, Prof. A. Taflanidis.

https://www.icasp13.snu.ac.kr/minisymposia

2019 Co-organizer of the mini-symposium MS5 on *Surrogate and reduced-order modelling for stochastic simulation of physical systems* at the *3rd International Conference on Uncertainty Quantification in Computational Sciences and Engineering*, Crete Island, Greece, June 24-26.
With: Prof. D. Giovanis, Prof. M.D. Shields, Prof. A. Taflanidis.

https://2019.uncecomp.org/content/accepted-minisymposia

2019 Co-organizer of the mini-symposium MS7 on *Surrogate models: benchmark problems and solutions* at the *3rd International Conference on Uncertainty Quantification in Computational Sciences and Engineering*, Crete Island, Greece, June 24-26.
With: Prof. J.-M. Bourinet, Prof. S. Mahadevan, Prof. N. Pedroni.

https://2019.uncecomp.org/content/accepted-minisymposia

2020 Co-organizer of the mini-symposium MS201 on *Machine learning and surrogate modelling approaches for uncertainty quantification, reliability analysis and design optimization* at the *14th World Conference on Computational Mechanics (WCCM XIV) and 8th European Congress on Computational Mechanics in Applied Sciences and Engineering (ECCOMAS 2020)*, online, January 11-14, 2021.
With: Dr. M. Faes, Dr. S. Marelli, Prof. J.-M. Bourinet, Prof. E. Zio.

http://wccm-eccomas2020.org/frontal/MSList.asp

2020 Co-organizer of the mini-symposium MS203 on *Efficient methods for uncertainty quantification with high-dimensional models* at the *14th World Conference on Computational Mechanics (WCCM XIV) and 8th European Congress on Computational Mechanics in Applied Sciences and Engineering (ECCOMAS 2020)*, online, January 11-14, 2021.
With: Prof. M. Beer, Dr. M. Broggi, Dr. M. Faes, Dr. S. Marelli, Prof. D. Moens, Prof. G. Stefanou, Prof. E. Zio.

https://www.wccm-eccomas2020.org/frontal/MSList.aspa

2021 Co-organizer of the mini-symposium MS10 on *Surrogate models for uncertainty quantification, reliability and sensitivity analysis* at the *4th International Conference on Uncertainty Quantification in Computational Sciences and Engineering*, broadcast from Athens, Greece, June 24-26.
With: Prof. J.-M. Bourinet, Prof. S. Mahadevan, Prof. A. Taflanidis.

https://2021.uncecomp.org/content/accepted-minisymposia

2022 Co-organizer of the mini-symposium MS39 on *Surrogate models for uncertainty quantification* at the *13th International Conference on Structural Safety & Reliability (ICOSSAR 2021-2022)*, Tongji University, Shanghai, China, September 13-17.

With: Prof. J.-M. Bourinet, Prof. S. Mahadevan, Prof. A. Taflanidis.
http://www.icossar2021.org//

2022 Co-organizer of the mini-symposium MS37 on *Scientific software tools for safety, reliability and risk assessments of structures and systems* at the *13th International Conference on Structural Safety & Reliability (ICOSSAR 2021-2022)*, Tongji University, Shanghai, China, September 13-17.
With: Prof. J. Hackl, Prof. J. Van de Lindt.
http://www.icossar2021.org//

2022 Co-organizer of the mini-symposium MS47 on *Software for Uncertainty Quantification* at the *SIAM Conference on Uncertainty Quantification*, Atlanta, GA, USA, April 12-15.
https://www.siam.org/meetings/uq22/

2022 Co-organizer of the mini-symposium MS47 on *Reliability analysis and rare event simulation* at the *8th European Congress on Computational Mechanics in Applied Sciences and Engineering (ECCOMAS 2022)*, Oslo, Norway, June 5-9, 2022.
With: Dr. M. Ehre, Dr. I. Papaioannou, Prof. E. Patelli, Prof. D. Straub.
https://www.eccomas2022.org/frontal/MSList2.asp

2023 Co-organizer of the mini-symposium MS6 on *Surrogate modelling and data-driven approaches for uncertainty quantification* at the *5th International Conference on Uncertainty Quantification in Computational Sciences and Engineering*, Athens, Greece, June 12-14.
With: Prof. J.-M. Bourinet, Prof. M. shields, Prof. A. Taflanidis.
https://2023.uncecomp.org/content/accepted-minisymposia

2023 Co-organizer of the mini-symposium MS19 on *Surrogate modelling and data-driven approaches for uncertainty quantification and reliability analysis* at the *14th International Conference on Applications of Statistics and Probability in Civil Engineering*, Trinity College, Dublin, Ireland, July 9-13.
With: Prof. J.-M. Bourinet, Prof. M. Shields, Prof. A. Taflanidis.
https://icasp14.com/submissions/

2023 Co-organizer of the mini-symposium MS20 on *Probabilistic modelling of natural hazards and associated risks* at the *14th International Conference on Applications of Statistics and Probability in Civil Engineering*, Trinity College, Dublin, Ireland, July 9-13.
With: Dr. J. Kleinn, Dr. M. Moustapha, Dr. M. Bründl.
https://icasp14.com/submissions/

2024 Co-organizer of the mini-symposia MS99, MS120 & MS140 on *Surrogate Modelling and Data-Driven Approaches for Uncertainty Quantification* at the *SIAM Conference on Uncertainty Quantification*, Trieste, Italy,February 27 – March 1st.
With: Prof. J.-M. Bourinet,Prof. A. Taflanidis.
https://www.siam.org/conferences/cm/conference/uq24/

2024 Co-organizer of the mini-symposium MS20 on *AI for uncertainty quantification* at the *4th International Conference on Vulnerability and Risk Analysis and Management (ICVRAM2024) & 8th International Symposium on Uncertainty Modelling and Analysis (ISUMA2024)*, Shanghai, China, April 25-28.

With: Prof. M. Beer, Dr. C. Dang, Prof. Y. Peng, Prof. E. Zio.

2024 Co-organizer of the mini-symposium MS110 on *'Reliability analysis and rare event simulation* at the *9th European Congress on Computational Mechanics in Applied Sciences and Engineering (ECCOMAS 2024)*, Lisbon, Portugal, June 3-7, 2024.
With: Dr. M. Ehre, Dr. D. Giovanis, Dr. I. Papaioannou, Prof. E. Patelli, Prof. D. Straub. `https://eccomas2024.org/event/areas?tipo=MS`

Participation to Ph.D evaluation committees

As reviewer

1. Luca MARTINI, *Développement et évaluation de l'hypothèse de stabilité modale pour la variabilité du comportement vibratoire des structures minces modélisées par éléments finis*, Université Technologique de Compiègne, April 2008.

2. Mohamed MEJRI, *Etude mécano-fiabiliste des structures collées pour applications marines*, Université de Bretagne, December 9th, 2008.

3. Nicolas ROUSSOULY, *Approche probabiliste pour la justification par analyse des structures spatiales*, Université de Toulouse, December 16th, 2011.

4. Ling LI, *Sequential design of experiments to estimate a probability of failure*, Ecole Supérieure d'Electricité (Supelec, Gif-sur-Yvette), May 16th, 2012.

5. Benjamin ECHARD, *Évaluation par krigeage de la fiabilité des structures sollicitées en fatigue*, Université Blaise Pascal, Clermont-Ferrand, September 25th, 2012.

6. Tamara AL-BITTAR, *Probabilistic analysis of shallow foundations resting on spatially varying soils*, Université de Nantes, November 19th, 2012.

7. Nicolas GAYTON, *Méthodes probabilistes pour la conception mécanique*, Habilitation à diriger des recherches, Université Blaise Pascal, Clermont-Ferrand, November 23rd, 2012.

8. Shuai FU, *Inversion probabiliste bayésienne en analyse d'incertitude*, Université Paris Sud Orsay, December 14th, 2012.

9. Giovanni MIGLIORATI, *Polynomial approximation by means of the random discrete L2 projection and application to inverse problems for PDE with stochastic data*, Politecnico di Milano, April 1st, 2013.

10. Olivier PASQUALINI, *Eléments finis stochastiques étendus pour le calcul en fatigue de joints soudés avec géométries aléatoires*, Université de Nantes, November 28th, 2013.

11. Noura FAJRAOUI, *Analyse de sensibilité globale et polynômes de chaos pour l'estimation des paramètres : application aux transferts en milieu poreux*, Uiversité de Strasbourg, January 21st, 2014.

12. Gerhad FINK, *Influence of varying material properties on the load-bearing capacity of glued laminated timber*, ETH Zürich, January 28st, 2014.

13. Philomène FAVIER, *Une approche intégrée du risque avalanche : quantification de la vulnérabilité physique et humaine et optimisation des structures de protection*, Université de Grenoble, October 13th, 2014.

14. Prashant RAI, *Sparse low-rank approximations of multivariate functions: applications to uncertainty quantification*, Université de Nantes, November 13th, 2014.

15. Joe WIART, *Evaluation de l'exposition humaine aux radiofréquences. Des approches déterministes aux méthodes stochastiques*, Habilitation à diriger des recherches, Université Pierre et Marie Curie, September 14th, 2015.

16. Grégory DEMAN, *Uncertainty propagation and global sensitivity analysis in multi-layered hydrogeological models of flow and lifetime expectancy*, Université de Neuchâtel, October 1st, 2015.

17. David MACHAC, *Mechanistic emulators as surrogates to slow hydrological models*, ETH Zurich, November 2nd, 2015.

18. Luca D'ANGELO, *Novel probabilistic approach for fatigue verification of road steel bridges*, Ecole Polytechnique Fédérale de Lausanne, November 23rd, 2015.

19. Tatiana OKHULKOVA, *Integration of uncertainty and definition of critical thresholds in CO_2 storage risk assessment*, Université Paris-Saclay, December 15th, 2015.

20. Nicola PEDRONI, *Advanced methods for the risk, vulnerability and resilience assessment of safety-critical*, Université Paris-Saclay, February 4th, 2016.

21. Giulia ANTINORI, *Uncertainty analysis and robust optimization for low pressure turbine rotors*, Technical University of Munich, August 4th, 2016.

22. Samuel PETER, *Dam break analysis under uncertainty*, ETH Zurich, June 26th, 2017.

23. Fabian FRANZELIN, *Data-driven uncertainty quantification for large-scale simulations*, University of Stuttgart, September 12th, 2017.

24. Amandine MARREL, *Contributions to the uncertainty management in numerical simulations: statistical methods for metamodelling and sensitivity analysis*, Habilitation à diriger des recherches, Université de Toulouse III Paul Sabatier, November 9th, 2017.

25. Damar WICAKSONO, *Bayesian uncertainty quantification of physical models in thermal-hydraulics system codes*, Ecole Polytechnique Fédérale de Lausanne, January 19th, 2018.

26. Jean-Marc BOURINET, *Reliability analysis and optimal design under uncertainty – Focus on adaptive surrogate-based approaches*, Habilitation à diriger des recherches, Université Clermont Auvergne, January 28th, 2018.

27. Giovanni CAPELLARI, *Optimal design of sensor networks for structural health monitoring*, Politecnico di Milano, March 27th, 2018.

28. Jürgen HACKL, *Risk assessments of complex infrastructure systems considering spatial and temporal aspect*, ETH Zurich, April 12th, 2019.

29. Yaowen OU, *Vibration-based SHM for detection and localization of damage: application to wind turbine blades*, ETH Zurich, October 21st, 2019

30. Guillaume PERRIN, *Predicting the behavior of complex systems using costly simulators: meta-modelling and Bayesian inference*, Habilitation à diriger des recherches, Université Paris-Saclay, December 4th, 2019.

31. Friederike BOSTELMANN, *Systematic uncertainty and sensitivity analysis of sodium-cooled fast reactor systems*, Ecole Polytechnique Fédérale de Lausanne, December 12th, 2019.

32. Astrid JOURDAN, *Planification d'expériences numériques*, Université de Cergy-Pontoise, June 23rd, 2020.

33. Alexander DAVID, *Strengthening the security of electric power systems during the energy transition: predicting cascading failures and reinforcing the network topology*, ETH Zurich, August 31st, 2020.

34. Reto FAHRNI, *Reliability-based code calibration for timber in fire*, ETH Zurich, December 2nd, 2020.

35. Maria-Belén HEREIDA-GUZMAN,*Contribution to the calibration and global sensitivity analysis of snow avalanche*, Université Grenoble-Alpes, December 10th, 2020.

36. Pierre SOCHALA, *Méthodes de propagation des incertitudes en géosciences numériques*, Habilitation à diriger des recherches, Université Paris-Saclay, January 12th, 2021.

37. Stephan SCHILLING, *Structural behaviour and reliability of timber trusses with dowel-type connections and slotted-in steel plates*, ETH Zurich, December 10th, 2021.

38. Max EHRE, *Uncertainty quantification and separation with high-dimensional engineering models*, Technical University of Munich, March 21, 2022.

39. Farid MOHAMMADI, *A Surrogate-assisted bayesian framework for uncertainty-aware validation benchmarks*, University of Stuttgart, February 14, 2023.

40. Chao DANG, *Forward uncertainty quantification with special emphasis on a Bayesian active learning perspective*, Leibniz University Hannover, September 11, 2023.

41. Lukas BODENMANN, *Data-efficient learning techniques to improve regional earthquake risk models*, ETH Zurich, October 11, 2023.

As examiner

42. Franck ALEXANDRE, *Aspects probabilistes et microstructuraux de l'amorçage des fissures de fatigue dans l'alliage Inco 718*, Ecole Nationale Supérieure des Mines de Paris, March 12th, 2004.

43. Cyrille SCHWOB, *Approche non locale probabiliste pour l'analyse en fatigue des zones à gradient de contraintes*, Université Paul Sabatier, Toulouse, May 21th, 2007.

44. Xuan Son NGUYEN, *Algorithmes probabilistes pour la durabilité et la mécanique des ouvrages de génie civil*, Université Paul Sabatier, Toulouse, October 15th, 2007.

45. Roman GAIGNAIRE, *Contribution à la modélisation numérique en électromagnétisme statique stochastique*, Ecole Nationale Supérieure des Arts et Métiers, Lille, March 11th, 2008.

46. Jérémie BELLEC, *Prise en compte de la variabilité dans le calcul de structures avec contact*, LMT Cachan, June 11th, 2008.

47. Tianmeng HU, *Modélisation géomécanique des réservoirs : méthodologies de mise en œuvre et d'analyse des incertitudes*, Institut National Polytechnique de Lorraine (soutenance à l'Institut Français du Pétrole, Rueil-Malmaison), November 6th, 2008.

48. Alexandre CLÉMENT, *Éléments finis stochastiques étendus pour le calcul de structures à géométrie aléatoire : application à la prise en compte de la corrosion de structures en région littorale*, Université de Nantes, December 5th, 2008.

49. Jordan KO, *Applications des polynômes de chaos généralisés à la simulation d'écoulements stochastiques convectifs*, Université Pierre et Marie Curie, March 13th, 2009.

50. Jean-Yves TISSOT, *Sur la décomposition ANOVA et l'estimation des indices de Sobol'. Application à un modèle d'écosystème marin*, Université de Grenoble, November 16th, 2012.

51. Antoine DUMAS, *Développement de méthodes probabilistes pour l'analyse des tolérances des systèmes mécaniques sur-contraints*, Ecole Nationale Supérieure des Arts et Métiers ParisTech, December 10th, 2014. **President of the Committee**.

52. Simon NANTY, *Quantification des incertitudes et analyse de sensibilité pour codes de calcul à entrées fonctionnelles et dépendantes*, Université de Grenoble, October 15th, 2015. **President of the Committee**.

53. Pierric KERSAUDY, *Modélisation statistique de l'exposition humaine aux ondes radiofréquences*, Université Paris-Est Marne-la-Vallée, November 12th, 2015. **President of the Committee**.

54. Nicolas COURRIER, *Couplage optimisation à convergence partielle et stratégie multiparamétrique en calcul de structures*, Université Paris-Saclay, December 8th, 2015. **President of the Committee**.

55. Antoine LLAU, *Méthodes de simulation du comportement mécanique non linéaire des grandes structures en béton armé et précontraint*, Université Grenoble Alpes, September 26th, 2016. **President of the Committee**.

56. Vincent CHABRIDON, *Analyse de sensibilité fiabiliste avec prise en compte d'incertitudes sur le modèle probabiliste – Application aux systèmes aérospatiaux*, Université Clermont-Auvergne, November 26th, 2018. **President of the Committee**.

57. Nicolas LELIÈVRE, *Développement des méthodes AK pour l'analyse de fiabilité – Focus sur les évènements rares et la grande dimension*, Université Clermont-Auvergne, December 13th, 2018. **President of the Committee**.

58. Matthieu BALESDENT, *Contributions à l'optimisation et au traitement des incertitudes pour la conception des systèmes aérospatiaux*, Université Jean Monnet, Saint-Etienne, March 27th, 2021. **President of the Committee**.

59. Adrien HIRVOAS, *Développement d'une méthode d'assimilation de données pour la calibration et la mise à jour en continu de modèles fidèles d'éoliennes*, Université Clermont-Auvergne, March 30th, 2021.

60. Alexis COUSIN, *Optimisation sous contraintes probabilistes d'un système complexe – Application au dimensionnement d'une éolienne offshore flottante*, Institut Polytechnique de Paris, October 1st, 2021. **President of the Committee**.

61. Clément GAUCHY, *Uncertainty quantification methodology for seismic fragility curves of mechanical structures – Application to a piping system of a nuclear power plant*, Ecole Polytechnique (Palaiseau, France), November 9, 2022. **President of the Committee**.

62. Etienne JULES, *Machine learning-based multivariate time series analysis for health monitoring and prognostics of complex systems*, Université Clermont-Auvergne, February 13, 2024.

63. Elias FEKHARI, *Uncertainty quantification in multi-physics model for wind turbine asset management*, Université Nice Côte d'Azur, March 12, 2024.

As (co-)supervisor

64. Céline ANDRIEU-RENAUD, *Fiabilité mécanique des structures soumises à des phénomènes physiques dépendant du temps*, Université Blaise Pascal, Clermont-Ferrand, December 13th, 2002.

65. Zakoua GUÉDÉ, *Approche probabiliste de la durée de vie des structures soumises à la fatigue thermique*, Université Blaise Pascal, Clermont-Ferrand, June 5th, 2005.

66. Marc BERVEILLER, *Eléments finis stochastiques : approches intrusive et non intrusive pour des analyses de fiabilité*, Université Blaise Pascal, Clermont-Ferrand, October 18th, 2005.

67. Frédéric PERRIN, *Prise en compte des données expérimentales dans les modèles probabilistes pour la prévision de la durée de vie des structures*, Université Blaise Pascal, Clermont-Ferrand, January 28th, 2008.

68. Géraud BLATMAN, *Adaptive sparse polynomial chaos expansions for uncertainty propagation and sensitivity analysis*, Université Blaise Pascal, Clermont-Ferrand, October 8th, 2009.

69. Vincent DUBOURG, *Adaptive surrogate models for reliability analysis and reliability-based design optimization*, Université Blaise Pascal, Clermont-Ferrand, December 5th, 2011.

70. Hung Xuan DANG, *Identification de la variabilité spatiale des champs de contraintes dans les agrégats polycristallins – Application à l'approche locale de la rupture*, Université Blaise Pascal, Clermont-Ferrand, October 11th, 2012.

71. Yann CANIOU, *Analyse de sensibilité globale pour les modèles imbriqués et multi-échelles*, Université Blaise Pascal, Clermont-Ferrand, November 29th, 2012.

72. Maliki MOUSTAPHA, *Métamodèles adaptatifs pour l'optimisation fiable multi-prestations de la masse de véhicules*, Université Blaise Pascal, Clermont-Ferrand, January 27th, 2016.

73. Chu Van MAI, *Polynomial chaos expansions for uncertain dynamical systems – Applications in earthquake engineering*, ETH Zurich, September 26th, 2016.

74. Joseph NAGEL, *Bayesian techniques for inverse uncertainty quantification*, ETH Zurich, January 26th, 2017.

75. Roland SCHÖBI, *Surrogate models for uncertainty quantification in the context of imprecise probability modelling*, ETH Zurich, February 9th, 2017.

76. Christos LATANIOTIS, *Data-driven uncertainty quantification for high-dimensional engineering problems*, ETH Zurich, November 8th, 2019.

77. Soumaya AZZI, *Surrogate modeling for stochastic simulators*, Université Paris-Saclay, June 4th, 2020.

78. Paul-Remo WAGNER, *Stochastic spectral embedding in forward and inverse uncertainty quantification*, ETH Zurich, September 3rd, 2021.

79. Nora LÜTHEN, *Sparse spectral surrogate models for deterministic and stochastic computer simulations*, ETH Zurich, September 15, 2022.

80. Xujia ZHU, *Sparse spectral surrogate models for deterministic and stochastic computer simulations*, ETH Zurich, December 16, 2022.

Peer-reviewing of scientific articles and projects

Project evaluation

2013	*Agence Nationale de la Recherche (ANR)*, France. Reviewer of one project in the BLANC program.
2014	*Grantová Agentura Ceské Republiky* (Czech Science Foundation), Czech Republic Reviewer of a Young Researcher project.
2014	*Institut National de Recherche en Informatique et Automatique* (INRIA), France Reviewer of the projects attached to the *"Stochastic approaches"* research theme.
2016	*Engineering and Physical Sciences Research Council* (EPSRC), United Kingdom Reviewer of a research proposal.
2017	*Comisión Nacional de Investigación Cientifíca y Technológica (CONICYT)*, Chile.
2019	*SIGMA-2 Project*, WP "Efficient calculation of PSHA with epistemic uncertainty in the ground-motion model", France.
2019	*National Research Foundation*, South Africa.
2022	*Alexander von Humboldt Foundation*, Germany.
2023	*Alexander von Humboldt Foundation*, Germany.
2023	*National Research Foundation*, South Africa.
2023	*Bureau de Recherches Géologiques et Minières (BRGM)*, France.
2023	*European Research Council* (Consolidator Grant), EU.

Journals

I have reviewed numerous papers for the following journals:

- Reliability Engineering & System Safety
- Structural Safety
- Probabilistic Engineering Mechanics

and at least one paper in:

- ASCE/ASME Journal of Risk and Uncertainty in Engineering Systems
- Canadian Geotechnical Journal
- Civil Engineering and Environmental Systems
- Computer Methods in Applied Mechanics and Engineering
- Computers & Geotechnics
- Environmental Modelling & Software
- European Journal of Computational Mechanics (previously Revue Européenne des Eléments Finis)

- International Journal of Fatigue
- International Journal for Uncertainty Quantification
- International Journal of Structural Engineering
- Journal of Computational Physics
- Journal of Geotechnical and Geoenvironmental Engineering (ASCE)
- Journal of Mechanical Design (ASME)
- Journal of Risk and Insurance
- Mathematics and Computers in Simulation
- Mechanics & Industry
- SIAM Journal on Scientific Computing
- SIAM/ASA Journal on Uncertainty Quantification
- Structural Engineering International
- Structure and Infrastructure Engineering

5 Plenary, Keynote and invited lectures

2024

- *Surrogate models for uncertainty quantification: polynomial chaos expansions and Gaussian processes*, Institute for Advanced Studies in Computational Engineering Sciences (AICES), RWTH Aachen University (Germany), January 16, 2024.

2023

- *Introduction to Structural Reliability* and *Reliability-based Design Optimization*, Institute for Advanced Studies in Computational Engineering Sciences (AICES), RWTH Aachen University (Germany), January 24, 2023.
- *Uncertainty quantification using surrogate modelling*, 9th International Conference on Modeling, Simulation and Applied Optimization (ICMSAO'23), Marrakech (Morocco), April 26, 2023 (**Plenary lecture**).
- *Apports des métamodèles pour la simulation numérique*, 24th Seminar of the CEA-EDF-FRAMATOME Institute, CEA Saclay (France), Institut National des Sciences et Techniques Nucléaires (INSTN), June 2nd, 2023 (**Invited lecture**).
- *Surrogate modelling for stochastic simulators*, 5th International Conference on Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP'2023), Athens (Greece), June 13, 2023 (**Semi-plenary lecture**).
- *Active learning methods in structural reliability and design optimization*, 14th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP14), Dublin (Ireland), July 11, 2023 (**Keynote lecture**).
- *An introduction to surrogate modelling for uncertainty quantification in computational sciences*, First International Conference on Data-Integrated Simulation Science (SimTech2023), Stuttgart (Germany), October 5, 2023 (**Invited lecture**).
- *Uncertainty Quantification, Reliability and Sensitivity Analysis in Geotechnical Engineering – Framework and Monte Carlo simulation, and Bayesian calibration*, Haute École d'Ingéniérie et d'Architecture, Fribourg (Switzerland), November 16, 2023.

2022

- *Surrogate models and active learning for reliability analysis*, Institut pour la Maîtrise des Risques, Groupe "Sécurité et sûreté des structures", Paris (France), January 26, 2022.
- *Uncertainty Quantification, Reliability and Sensitivity Analysis in Geotechnical Engineering – Framework and Monte Carlo simulation, and Bayesian calibration*, Haute École d'Ingéniérie et d'Architecture, Fribourg (Switzerland), November 17, 2022.

- *Surrogate models for uncertainty quantification in computational sciences*, XLIII Ibero-Latin American Congress on Computational Methods in Engineering (CILAMCE 2022), Foz do Iguaçu (Brazil), November 22, 2022 (**Plenary lecture**).

2021

- *Surrogate models for forward and inverse uncertainty quantification*, IRTG "Modern Inverse Problems", RWTH Aachen University (Germany), January 11, 2021.
- *Polynomial chaos expansions*, SPP 1886 Winter School on "Polymorphic uncertainty modelling for the numerical design of structures", Dresden (Germany), March 10, 2021.
- *Sparse polynomial chaos expansions and global sensitivity analysis*, SPP 1886 Winter School on "Polymorphic uncertainty modelling for the numerical design of structures", Dresden (Germany), March 10, 2021.
- *Surrogate models for stochastic simulators: an overview and a focus on generalized lambda models*, MascotNum Workshop on Stochastic Simulators, Institut Henri Poincaré, Paris (France), March 11, 2021.
- *Introducing surrogate models for stochastic simulators*, Graduate Seminar of the Civil Engineering Department, Johns Hopkins University, Baltimore (USA), April 15, 2021.
- *Surrogate models for reliability analysis and reliability-based design optimization*, 18th International Probabilistic Workshop (IPW2020), University of Minho, Guimarães (Portugal), May 12-14, 2021 (**Keynote lecture**).
- *Surrogate models and active learning for reliability analysis*, 13th International Workshop on Rare-Event Simulation (RESIM 2021), Paris (France), May 18-21, 2021.
- *Surrogate modelling approaches for stochastic simulators*, Centrum Wiskunde & Informatica, Amsterdam (The Netherlands), June 17, 2021.
- *Recent developments on surrogate models for stochastic simulators*, 4th International Conference on Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP2021), Athens (Greece), June 30, 2021 (**Plenary lecture**).
- *Polynomial chaos expansions in 90 minutes*, 4th National Conference on Multidisciplanary design, analysis and optimization (NCMDAO 2021), Madras (India), October 7, 2021.
- *Benchmarking active learning methods for structural reliability analysis*, 8ème Journée de la conception robuste et fiable – Approches universitaires et industrielles, Clermont-Ferrand (France), October 21, 2021.
- *Uncertainty Quantification, Reliability and Sensitivity Analysis in Geotechnical Engineering – Framework and Monte Carlo simulation*, Haute École d'Ingéniérie et d'Architecture, Fribourg (Switzerland), November 18, 2021.
- *Surrogate models for efficient uncertainty quantification*, Euromech Colloquium 618 "Uncertainty Quantification in Computational Mechanics", Luxemburg, December 13-14, 2021 (**Keynote lecture**).

2020

- *Uncertainty Quantification, Reliability and Sensitivity Analysis in Geotechnical Engineering – Framework and Monte Carlo simulation*, Haute École d'Ingéniérie et d'Architecture, Fribourg (Switzerland), November 19, 2020.
- *Surrogate Modelling and Uncertainty Quantification in Computational Sciences*, 3rd Ph.D. Retreat of the Computational Science Zurich Graduate School, Luzern (Switzerland), August 27, 2020.

2019

- *Sparse polynomial chaos expansions for uncertainty quantification and global sensitivity analysis*, Ateliers de Modélisation de l'Atmosphère, Centre International de Conférences de Météo France, Toulouse (France), March 11, 2019.
- *Data-based sparse polynomial chaos expansions: applications in dynamics and machine learning*, Uncertainty Quantification & Optimization Conference, Sorbonne University, Paris (France), March 19, 2019 (**Keynote lecture**).
- *Surrogate models for uncertainty quantification and design optimization*, 14ème Colloque National en Calcul des Structures, Giens (France), May 13, 2019 (**Plenary lecture**).
- *Surrogate modelling meets machine learning*, 3rd Int. Conf. Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP), Crete Island (Greece), June 25, 2019 (**Semi-plenary lecture**).
- *Polynomial chaos expansions (Part I) / Sparse polynomial chaos expansions and more (part II)*, Summer School "Modeling and Numerical Methods for Uncertainty Quantification (MNMUQ 2019)" - Île de Porquerolles (France) September 3rd, 2019.

2018

- *Surrogate models for uncertain dynamical systems: applications to earthquake engineering*, Symposium on Uncertainty Quantification in Computational Geosciences, BRGM (Orléans, France), January 16th, 2018.
- *Active learning methods for reliability analysis of engineering systems*, Computational challenges in the reliability assessment of engineering structures, TNO (Delft, The Netherlands), January 24th, 2018
- *Uncertainty quantification techniques for optimal engineering solutions*, Bosch R&D Campus (Renningen, Germany), February 6th, 2018.
- *Uncertainty quantification in the simulation of complex systems*, 1st International Conference on Infrastructure Resilience, ETH Zurich, February 15th, 2018.

- *Dimensionality reduction and surrogate modelling for high-dimensional UQ problems*, Thematic Semester on "Uncertainty quantification for complex systems: theory and methodologies", Isaac Newton Institute (Cambridge, UK), March 6th, 2018.
- *Recent developments in surrogate modelling for uncertainty quantification*, 3rd Int. Conf. on Vulnerability, Risk Analysis and Management (ICVRAM2018), Florianopolis (Brazil), April 9th, 2018 (**Keynote lecture**).
- *Surrogate modelling for uncertainty quantification in engineering applications*, Seminar of Numerical Analysis, MATHICSE, Ecole Polytechnique Fédérale de Lausanne (Lausanne, Switzerland), May 22nd, 2018.
- *Surrogate models for uncertainty quantification and reliability analysis*, Office National d'Etudes et de Recherches Aérospatiales (Paris, France), June 12th, 2018.
- *Non-intrusive sparse polynomial chaos expansions and global sensitivity analysis*, Summer School "Uncertainty Quantification for PDEs: Numerical Analysis and Scientific Computing, High-dimensional Numerical Approximations", ETH Zurich, August 27-30.
- *Rare events simulation (a.k.a reliability analysis)*, Summer School "Uncertainty Quantification for PDEs: Numerical Analysis and Scientific Computing, High-dimensional Numerical Approximations", ETH Zurich, August 27-30.

2016

- *Uncertainty quantification in engineering – Framework and applications*, 4th Risk Center Dialog Event, ETH Zurich, January 15th, 2016.
- *Uncertainty Quantification in Engineering – Framework and Applications*, Bundesamt für Energie (BFE), Bern (Switzerland), March 17th, 2016.
- *Surrogate models for uncertainty quantification and reliability analysis*, Engineering Mechanics Institute Conference EMI'2016, Vanderbilt University, Nashville (USA), May 23rd, 2016 (**Plenary lecture**).
- *Surrogate models for uncertainty propagation and sensitivity analysis*, Séminaire de la Fédération Francilienne de Mécanique, Ecole Nationale Supérieure des Arts et Métiers, Paris (France), June 16th, 2016.
- *Uncertainty quantification in engineering sciences – Focus on surrogate models*, Uncertainty Modelling for Electromagnetic Applications (UMEMA 2016), Paris (France), July 4th, 2016.
- *Uncertainty propagation using polynomial chaos expansions*, Summer School "Uncertainty in Modelling", Bauhaus Universität Weimar (Germany), September 5-8, 2016.
- *UQLab: the uncertainty quantification software framework*, Summer School "Uncertainty in Modelling", Bauhaus Universität Weimar (Germany), September 5-8, 2016.

- *Uncertainty quantification for engineering risk analysis*, GAMM-UQ Uncertainty Quantification Summer School, Weierstrass Institute for Applied Analysis and Stochastics, Berlin (Germany), September 12-16, 2016.
- *Structural reliability methods*, GAMM-UQ Uncertainty Quantification Summer School, Weierstrass Institute for Applied Analysis and Stochastics, Berlin (Germany), September 12-16, 2016.
- *Surrogate models for uncertain dynamical systems: polynomial chaos expansion for time-dependent responses*, 4ème Forum sur les Méthodes de Quantification des Incertitudes, CEA DAM, Bruyères-le-Châtel (France), October 4th, 2016.
- *Surrogate models for global sensitivity analysis – Old and New*, 8th International Conference on Sensitivity Analysis of Model Output, La Réunion Island, December 1st, 2016 (**Keynote lecture**).

2015

- *Polynomial chaos expansions for structural reliability analysis*, Journée de la conception robuste et fiable, Association Française de Mécanique, Paris (France), April 10th, 2015.
- *Sparse polynomial chaos expansions as a machine learning regression technique*, International Symposium Big Data and Predictive Computational Modelling, Institute of Advanced Studies, Technical University of Munich (Germany), May 18th, 2015.
- *Sparse polynomial chaos expansions for solving high-dimensional UQ problems*, 1st International Conference on Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP'2015), Creta (Greece), May 26th, 2015 (**Semi-plenary lecture**).
- *A few things I learned from Prof. Armen Der Kiureghian*, Risk and Reliability Symposium in Honor of Prof. Armen Der Kiureghian, University of Illinois at Urbana-Champaign, October 5th, 2015.
- *Sparse polynomial chaos expansions for uncertainty propagation and sensitivity analysis*, Workshop on "Propagation of Uncertainty" of the Institut Louis Bachelier, IHP (Paris), December 11th, 2015.

2014

- *Sparse polynomial chaos expansions – Theory and applications*, Workshop on Polynomial Chaos Expansions and Applications of Stochastic Methods in Engineering, Technical University of Munich (Germany), February 3rd, 2014.
- *Uncertainty quantification in engineering – A computational viewpoint*, 11th German Probability and Statistics Days, University of Ulm (Germany), March 5th, 2014.
- *Uncertainty quantification in engineering*, Risk Center, ETH Zurich, March 25th, 2014.

- *Polynomial chaos expansions for sensitivity analysis*, École Chercheurs "Analyse de sensibilité, propagation d'incertitudes et exploration numérique de modèles en sciences de l'environnement", Les Houches (France), May 9th, 2014.
- *Polynomial chaos expansions Theory, Numerical Methods & Applications Part I / Part II*, MNMUQ Summer School - Île de Porquerolles (France) September 3rd, 2014.
- *Advanced computational methods for structural reliability analysis – Applications in civil engineering*, 12th International Probabilistic Workshop, Weimar (Germany), November 4th, 2014 (Talk given by Dr. S. Marelli).
- *Polynomial chaos-based surrogate models for sensitivity analysis*, Centre d'hydrogéologie et géothermie (CHYN), Université de Neuchâtel, November 10th, 2014.
- *Gaussian processes using sparse polynomial chaos trends – Application to rare event simulation*, GRF-Sim workshop: Simulation of Gaussian and related Random Fields, Bern, November 25th, 2014.

2013

- *Computational methods for uncertainty quantification and sensitivity analysis of complex systems*, Université Technologique de Compiègne (Labex MS2T, France), February 14th, 2013.
- *Uncertainty quantification in engineering*, Inaugural lecture, ETH Zürich, April 9th, 2013.
- *Sparse polynomial chaos expansions in engineering applications*, Hausdorff Center for Mathematics (Bonn, Germany) – Workshop on Numerical Methods for Uncertainty Quantification, May 16th, 2013.
- *A short review of computational methods for uncertainty quantification in engineering*, D-BAUG Workshop on common challenges in computationally-based engineering research, ETH Zürich, June 5th, 2013.
- *Fiabilité des structures et analyse de risque*, Journées de la Chambre des Avocats spécialistes FSA - Droit de la Construction, Université de Fribourg, September 13th, 2013.
- *Basics of structural reliability and links with structural design codes*, Fachgruppe für Brückenbau und Hochbau – Herbsttagung "Schäden, Unfälle – Entstehung", November 22nd, 2013.
- *Sparse polynomial chaos expansions and application to sensitivity analysis*, International Workshop on Uncertainty Quantification in Fluids Simulation, INRIA Bordeaux (France), December 18th, 2013.

2012

- *Statistical approaches and uncertainty propagation in electromagnetism*, Journée AREMIF "Simulation électromagnétique et complexité – avancées et défis", Paris, March 21st, 2012.

- *Variance-based sensitivity indices for models with correlated inputs using polynomial chaos expansions*, SIAM Conf. on Uncertainty Quantification, Raleigh (NC), April 1st, 2012.
- *Sensitivity analysis in case of dependent input variables using polynomial chaos expansions*, Workshop on sensitivity analysis with dependent input variables, ANR project COSTA BRAVA, Toulouse, May 3rd, 2012.
- *Meta-models for structural reliability and uncertainty quantification*, 5th Asian-Pacific Symp. Struct. Reliab. (APSSRA'2012), Singapore, May 25th, 2012. **Keynote lecture**.
- *Rare events simulation: classical engineering methods and current trends using meta-models*, 9èmes Journées de Statistique de Rennes (JSTAR'2012), October 26th, 2012.

2011

- *Estimation de courbes de fragilité numériques*, Workshop "Méthodes déterministes et probabilistes d'estimation du risque sismique" organisé par l'Institut pour la Maîtrise des Risques, Ecole Supérieure des Travaux Publics, Cachan, April 5th, 2011.
- *Quantification et propagation des incertitudes dans les systèmes complexes*, **Keynote lecture**, 6e Conf. "Ingénierie grands projets et systèmes complexes", Arcachon, June 20th, 2011.
- *Polynomial chaos expansions – Non intrusive computational methods and applications*, course taught at the Summer School on Uncertainty Quantification in Mechanics and Material Science (Karlsruhe Institute of Technology / French Institute of Advanced Mechanics), Hohenwart/Pforzeim, August 23rd, 2011.
- *Uncertainty Quantification – Industrial applications*, course taught at the Summer School on Uncertainty Quantification in Mechanics and Material Science (Karlsruhe Institute of Technology / French Institute of Advanced Mechanics), Hohenwart/Pforzeim, August 26th, 2011.
- *Gestion des risques pour les structures et systèmes industriels*, séminaire de la Semaine d'Ouverture "Le risque dans tous ses états", Ecole des Ponts ParisTech, Dept. "Ingénierie Mathématique et Informatique", September 15th, 2011.
- *Modélisation et propagation des incertitudes en ingénierie mécanique – Théorie et applications industrielles*, Séminaire interne, Laboratoire Navier, September 27th, 2011.
- *Non intrusive methods for uncertainty quantification in large dimensions*, invited lecture, ANR project TYCHE, Ecole Centrale Paris, October 11th, 2011.
- *Analyse de sensibilité pour modèles à paramètres dépendants*, invited lecture, ANR project COSTA BRAVA, IFP Energies Nouvelles, Rueil-Malmaison, November 3rd, 2011.
- *Fatigue probabiliste*, course taught at the "Material Ageing Institute" training session on *Probabilistic Engineering Mechanics*, EDF R&D Les Renardières, November 9th, 2011.

2010

- *Approches probabilistes pour le traitement des incertitudes en simulation numérique*, **Keynote lecture**, Séminaire NAFEMS sur les "méthodes avancées de simulation numérique : des idées aux outils", Paris, June 2nd, 2010.
- *Méta-modèles pour le calcul de probabilités d'événements rares*, Workshop du projet ANR Opus "Propagation d'incertitudes, estimation de quantiles rares et de très faibles probabilités de défaillance", Institut Henri Poincaré, Paris, June 29th, 2010.
- *Approches bayésiennes pour les problèmes inverses probabilistes*, Séminaire de l'Institut pour la Maîtrise des Risques "Incertitudes et problèmes inverses : défis méthodologiques et applications", Laboratoire National d'Essais, Paris, September 23rd, 2010.
- *Uncertainty engineering in computational physics – a review with application to dosimetry*, IEEE Workshop on "Present challenges in computational electromagnetics: complexity, management, multi-scales, multi-physics, uncertainty management, statistics", Saint-Malo, December 3rd, 2010.

2009

- *Traitement des incertitudes en mécanique - Applications en fatigue*, Journée de l'Association Aéronautique et Astronautique de France (3AF), ONERA Châtillon, April 1st, 2009.
- *Adaptive sparse polynomial chaos expansions - Theory and applications to structural reliability*, Séminaire Méc@Proba (Commission de l'Association Française de Mécanique), Institut Français de Mécanique Avancée, Clermont-Ferrand, June 4th, 2009.
- *Adaptive sparse polynomial chaos expansions - Theory and applications to sensitivity analysis*, Séminaire du Laboratoire Jean Kuntzmann (Mathématiques appliquées et informatique), Université Joseph Fourier, Grenoble, June 10th, 2009.
- *Chaos polynomial creux adaptatif : applications en analyse de sensibilité*, Séminaire de l'unité Mathématiques et Informatique Appliquées, INRA, Jouy-en-Josas, October 5th, 2009.
- *Uncertainty quantification and sensitivity analysis in engineering*, Workshop on "Uncertainty propagation through models used in engineering science", Ecole Nationale Supérieure des Arts et Métiers, Lille, November 12th, 2009.
- *Advanced methods for FE-reliability analysis Adaptive polynomial chaos expansions*, Worshop on Semiprobabilistic Finite Element Method calculations, Joint Committee on Structural Safety, Delft, December 2nd, 2009.

2008

- *Surfaces de réponse stochastiques par chaos polynomial - Application à la fiabilité des structures*, séminaire invité par le projet national APPLET, Ecole Normale Supérieure de Cachan (February 8th, 2008).

- *Méthodes spectrales non intrusives pour la propagation d'incertitudes - Applications en fiabilité des structures*, séminaire invité par le GdR Mascot NUM (`http://www.gdr-mascotnum.fr/`), CEA Cadarache, March 14th, 2008.
- *Fiabilité des structures pour les problèmes dépendant du temps*, Cours invité à l'occasion des Journées Nationales de Fiabilité, Nantes, March 27th, 2008.
- *Méthodes spectrales non intrusives pour la propagation d'incertitudes*, présentation invitée à l'occasion de la conférence CEM'08 (Compatibilité électromagnétique), Paris, May 22nd, 2008.
- *Méthodes probabilistes pour le traitement des incertitudes dans les modèles de simulation*, INRA, Avignon, June 9th, 2008.

2003-2007

- *Surfaces de réponse et éléments finis stochastiques pour la fiabilité des structures*, Institut de Maîtrise des Risques et de Sûreté de Fonctionnement, October 16th, 2007.
- *Propagation d'incertitudes par éléments finis stochastiques – Méthodes intrusives et non intrusives*, Institut de Recherche en Génie Civil et Mécanique, Université de Nantes, March 8th, 2007.
- *Mécanique probabiliste et fiabilité des structures*, Centre des Matériaux P.M. Fourt, Ecole des Mines de Paris, November 21st, 2005.
- *Approches non intrusives des éléments finis stochastiques*, The Computational Structural Mechanics Association (CSMA), Ecole Centrale de Paris, January 19th, 2005.
- *Eléments finis stochastiques : approches Galerkin et non intrusives*, Séminaire EDF R&D/ SINETICS, Clamart, November 24th, 2004.
- *Fiabilité des structures et mécanique probabiliste*, Ecole Supérieure d'ingénieurs Léonard de Vinci, Paris La Défense, January 9th and 16th, 2004.
- *Fiabilité des structures et mécanique probabiliste – Théorie et applications*, Académie des Technologies, dans le cadre du groupe de travail sur *les frontières de la simulation numérique*, Paris, December 4th, 2003.
- *Eléments finis stochastiques : historique et nouvelles perspectives*, Université Technologique de Compiègne, September 26th, 2003.
- *Eléments finis stochastiques : historique et nouvelles perspectives*, **Keynote lecture**, 16e Congrès Français de Mécanique, Nice, September 4th, 2003.

List of publications

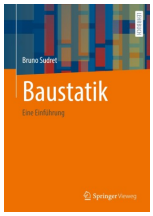
Prof. Dr. Bruno Sudret

Chair of Risk, Safety and Uncertainty Quantification
Institute of Structural Engineering

ETH Zurich

February 1st, 2024

Books



Sudret, B. (2022)
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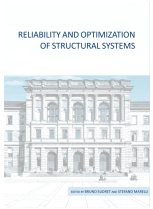

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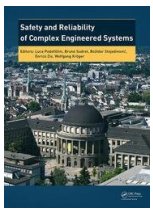

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Monographs and Textbooks

[1] Sudret, B. (2017). Introduction à la mécanique des structures. ETH Zurich (270 pages).

[2] Sudret, B. (2007). Uncertainty propagation and sensitivity analysis in mechanical models – Contributions to structural reliability and stochastic spectral methods. Habilitation à diriger des recherches, Université Blaise Pascal, Clermont-Ferrand, France (229 pages). [PDF]

[3] Sudret, B. and Der Kiureghian, A. (2000). *Stochastic finite elements and reliability: a state-of-the-art report*. Technical Report UCB/SEMM-2000/08, University of California, Berkeley (173 pages). [PDF]

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Book chapters

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[2] Sudret, B. (2014). *Polynomial chaos expansions and stochastic finite element methods*. Risk and Reliability in Geotechnical Engineering, chapter 6 (K.K. Phoon, J. Ching (Eds.)), pp. 265–300. Taylor and Francis.

[3] Duprat, F., Schoefs, F. and Sudret, B. (2011). *Physical and polynomial response surfaces*. Construction reliability – *safety, variability and sustainability*, chapter 7 (J. Baroth, F. Schoefs, and D. Breysse (Eds)), pp. 123–146. ISTE/Wiley.

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[5] Sudret, B. (2011) *Time-variant reliability problems*. Construction reliability *Safety, variability and sustainability*, chapter 10 (J. Baroth, F. Schoefs, and D. Breysse (Eds)), pp. 187–206. ISTE/Wiley.

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[2] Giannoukou, K., Marelli, S. and Sudret, B. (2024). A comprehensive framework for multi-fidelity surrogate modeling with noisy data: a gray-box perspective. https://arxiv.org/abs/2401.06447. (Submitted).

[3] Moustapha, M., Parisi, P., Marelli, S. and Sudret, B. (2024). Reliability analysis of arbitrary systems based on active learning and global sensitivity analysis. https://arxiv.org/abs/2305.19885. (submitted).

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[7] Lüthen, N., Marelli, S. and Sudret, B. (2023). A spectral surrogate model for stochastic simulators computed from trajectory samples. *Computer Methods in Applied Mechanics and Engineering*, **406**(115875), pp. 1–29. https://doi.org/10.1016/j.cma.2022.115875.

[8] Lüthen, N., Roustant, O., Gamboa, F., Iooss, B., Marelli, S. and Sudret, B. (2023). Global sensitivity analysis using derivative-based sparse Poincaré chaos expansions. *International Journal for Uncertainty Quantification*, **13**(6), pp. 57–82. https://doi.org/10.1615/Int.J.UncertaintyQuantification.2023043593.

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[11] Wilson, P., Saintier, N., Palin-Luc, T., Sudret, B. and Bergamo, S. (2023). Statistical study of the size and spatial distribution of defects in a cast aluminium alloy for the low fatigue life assessment. *International Journal of Fatigue*, **166**(107206), pp. 1–24. https://doi.org/10.1016/j.ijfatigue.2022.107206.

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International Conference Papers and Talks

[1] Brunel, L., Balesdent, M., Brevault, L., Le Riche, R. and Sudret, B. (2023). A review of multi-fidelity surrogate models for high-dimensional field outputs. In *Proc. 6th International Workshop on Model Reduction Techniques, Université Paris-Saclay, November 22-24*. (Poster).

[2] Giannoukou, K., Marelli, S. and Sudret, B. (2023). Constructing confidence and prediction intervals for multifidelity surrogate models involving noisy data. In *Proc. 5th Int. Conf. Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP'2023), Athens (Greece), June 12-14*. (Talk given by K. Giannoukou).

[3] Giannoukou, K., Marelli, S. and Sudret, B. (2023). Grey-box multifidelity surrogate modelling to combine noisy measurements and computer simulations. In *MascotNum Annual Meeting, Le Croisic, France, April 3-6*. (Poster).

[4] Groslambert, M., Jacot-Descombes, G., Commend, S. and Sudret, B. (2023). Sensitivity and reliability analyses applied to day-to-day geotechnical engineering using meta-models coupled with 3D finite elements. In A. O'Connor and V. Pakrashi (Eds.), *Proc. 14th Int. Conf. Applications of Statistics and Probability in Civil Engineering (ICASP14), Dublin (Ireland)*, Paper #172. http://hdl.handle.net/2262/103302.

[5] Hlobilová, A., Lataniotis, C., Marelli, S. and Sudret, B. (2023). UQLab & UQ[py]Lab – Project updates and outlook. In *Proc. 5th Int. Conf. Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP'2023), Athens (Greece), June 12-14*. (Talk given by A. Hlobilová).

[6] Parisi, P., Moustapha, M., Marelli, S. and Sudret, B. (2023). Active-learning-based system reliability analysis with budget constraints. In A. O'Connor and V. Pakrashi (Eds.), *Proc. 14th Int. Conf. Applications of Statistics and Probability in Civil Engineering (ICASP14), Dublin (Ireland)*, Paper #263. http://hdl.handle.net/2262/103372.

[7] Pires, A., Moustapha, M., Marelli, S. and Sudret, B. (2023). Defining what is a probability of failure for systems modelled by stochastic simulators. In *Proc. 5th Int. Conf. Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP'2023), Athens (Greece), June 12-14*. (Talk given by A. Pires).

[8] Pires, A., Moustapha, M., Marelli, S. and Sudret, B. (2023). Surrogate-based reliability analysis for noisy models. In A. O'Connor and V. Pakrashi (Eds.), *Proc. 14th Int. Conf. Applications of Statistics and Probability in Civil Engineering (ICASP14), Dublin (Ireland)*, Paper #420. http://hdl.handle.net/2262/103570.

[9] Schär, S., Marelli, S. and Sudret, B. (2023). A data-driven surrogate model for uncertainty quantification of dynamical systems. In *Proc. 5th Int. Conf. Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP'2023), Athens (Greece), June 12-14*. (Talk given by S. Schär).

[10] Schär, S., Marelli, S. and Sudret, B. (2023). mNARX – A novel surrogate model for the uncertainty quantification of dynamical systems. In *Proc. 9th Int. Conf. Structural Dynamics (EURODYN 2023), Delft, The Netherland, July 2-5*. https://www.research-collection.ethz.ch/handle/20.500.11850/621798. (Talk given by S. Schär).

[11] Schär, S., Marelli, S. and Sudret, B. (2023). Reliability analysis of wind turbines using manifold-NARX surrogate models. In *Proc. Engineering Mechanics Institute Conference (EMI'2023), University of Palermo (Italy), August 27-30*. (Talk given by B. Sudret).

[12] Ehre, M., Papaioannou, I., Straub, D. and Sudret, B. (2022). Sequential active learning of low-dimensional model representations for rare event estimation. In *SIAM Conf. on Uncertainty Quantification, Atlanta, GA (USA), April 12-15*. (Talk given by M. Ehre).

[13] Galimshina, A., Moustapha, M., Hollberg, A., Wagner, G., Padey, P., Lasvaux, S., Sudret, B. and Habert, G. (2022). Earth plastered wall heating as a low-emitting, cost-effective and robust energy system for building renovation. In *Construction Technologies and Architecture*, volume 1, pp. 466–471.

[14] Lataniotis, C., Marelli, S. and Sudret, B. (2022). UQLab 2.0 and UQCloud: open-source vs. cloud–based uncertainty quantification tools. In *SIAM Conf. on Uncertainty Quantification, Atlanta, GA (USA), April 12-15*. (Talk given by B. Sudret).

[15] Lauvernet, C., Helbert, C., Zhu, X. and Sudret, B. (2022). Metamodeling approaches to help designing vegetative filter strips and improve the water quality. In *Proc. EGU General Assembly, Vienna (Austria), May 23-27*. (Talk given by C. Lauvernet).

[16] Lauvernet, C., Helbert, C., Zhu, X. and Sudret, B. (2022). Metamodeling methods that incorporate qualitative variables for improved design of vegetative filter strips. In *10th Int. Conf. Sensitivity Analysis of Model Output (SAMO'2022), Florida State University, Tallahassee, FL (USA), March 14-16*. (Poster).

[17] Lüthen, N., Roustant, O., Gamboa, F., Iooss, B., Marelli, S. and Sudret, B. (2022). Poincaré chaos expansions for global sensitivity analysis and surrogate modelling. In *10th Int. Conf. Sensitivity Analysis of Model Output (SAMO'2022), Florida State University, Tallahassee, FL (USA), March 14-16*.

[18] Lüthen, N., Marelli, S. and Sudret, B. (2022). Surrogating stochastic simulators from sample trajectories using a non-Gaussian random field approach. In *SIAM Conf. on Uncertainty Quantification, Atlanta, GA (USA), April 12-15*. (Talk given by N. Lüthen).

[19] Moustapha, M. and Sudret, B. (2022). Multi-objective robust optimization using adaptive Kriging for problems with mixed continuous-categorical variables. In *SIAM Conf. on Uncertainty Quantification, Atlanta, GA (USA), April 12-15*. (Talk given by M. Moustapha).

[20] Moustapha, M., Marelli, S. and Sudret, B. (2022). Benchmark of active learning methods for structural reliability analysis. In *Proc. 15th Int. Conf. Monte Carlo and Quasi-Monte Carlo Methods in Scientific Computing (MCQMC), Linz (Austria), July 17–22*. (Talk given by M. Moustapha).

[21] Moustapha, M. and Sudret, B. (2022). A global framework for active learning reliability in UQLab. In J. Li, P. Spanos, J. Chen and Y. Peng (Eds.), *Proc. 13th Int. Conf. Struct. Safety and Reliability (ICOSSAR 2021-2022), Tongji University, Shanghai (China), September 13-17*.

[22] Parisi, P., Moustapha, M., Marelli, S. and Sudret, B. (2022). A cost-aware and sensitivity-based active learning algorithm for system reliability. In *Proc. Engineering Mechanics Institute Conference (EMI'2022), Johns Hopkins University, Baltimore, MA (USA), May 31 - June 3*. (Talk given by M. Moustapha).

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[236] Garnier, D., Sudret, B., Bourgeois, E. and Semblat, J.-F. (2001). Analyse d'ouvrages renforcés par une approche de modèle multiphasique. In *Proc. 15th Int. Congress Soil Mech. Geotech. Eng. (ICSMGE), Istanbul, Turkey*.

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[240] Sudret, B. and de Buhan, P. (1999). Reinforced geomaterials: computational model and applications. In R. Picu and E. Krempl (Eds.), *Proc. 4th Int. Conf. on Constitutive Laws for Engineering Materials (CLEM'99), Troy, USA*, pp. 339–342.

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Invited Talks, Keynote and Plenary Lectures (from 2012)

[1] Sudret, B. (2024). Surrogate models for uncertainty quantification: Sparse polynomial chaos expansions and Kriging. In *Ph.D. course, RWTH Aachen, Institute for Advanced Studies in Computational engineering Sciences, January 16*. https://www.research-collection.ethz.ch/handle/20.500.11850/656832.

[2] Sudret, B. (2023). Reliability-based design optimization. In *Ph.D. course, RWTH Aachen, Institute for Advanced Studies in Computational engineering Sciences, January 24*.

[3] Sudret, B. (2023). Recent developments on surrogate models for stochastic simulators. In *U.S. Association for Computational Mechanics, Technical Thrust Area on Uncertainty Quantification and Probabilistic Modeling (Zoom), March 8*. https://vimeo.com/806123793/cbcd33010e. **Invited Lecture**.

[4] Sudret, B. (2023). Uncertainty quantification using surrogate modelling. In *9th International Conference on Modeling, Simulation and Applied Optimization (ICMSAO'23), Marrakech (Morocco), April 28*. http://hdl.handle.net/20.500.11850/654442. **Keynote lecture**.

[5] Sudret, B. (2023). Apports des métamodèles pour la simulation numérique. In *24th Seminar of the CEA-EDF-FRAMATOME Institute, CEA Saclay (France), Institut National des Sciences et Techniques Nucléaires (INSTN), June 2nd*. **Keynote lecture**.

[6] Sudret, B. (2023). Surrogate modelling for stochastic simulators. In *Proc. 5th Int. Conf. Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP'2023), Athens (Greece), June 12-14*. **Semi-plenary lecture**.

[7] Sudret, B. (2023). Active learning methods in structural reliability and design optimization. In A. O'Connor and V. Pakrashi (Eds.), *14th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP14), Dublin (Ireland), July 11*. **Keynote Lecture**.

[8] Sudret, B. (2023). An introduction to surrogate modelling for uncertainty quantification in computational sciences. In *International Conference on Data-Integrated Simulation Science (SimTech2023), Stuttgart (Germany), October 5*. **Invited lecture**.

[9] Sudret, B. (2022). Surrogate models and active learning for reliability analysis. In *Institut pour la Maitrise des Risques, Groupe "Sécurité et sûreté des structures", Paris (France), January 26*.

[10] Sudret, B. (2022). Uncertainty quantification, reliability and sensitivity analysis in geotechnical engineering – Framework and Monte Carlo simulation, and Bayesian calibration. In *Haute École d'Ingéniérie et d'Architecture, Fribourg (Switzerland), November 17*.

[11] Sudret, B. (2022). Surrogate models for uncertainty quantification in computational sciences. In *XLIII Ibero-Latin American Congress on Computational Methods in Engineering (CILAMCE 2022), Foz do Iguaçu (Brazil), November 22nd*. **Plenary Lecture**.

[12] Sudret, B. (2021). Surrogate models for forward and inverse uncertainty quantification. In *International Research Training Group "Modern Inverse Problems" - RWTH Aachen, January 11th*.

[13] Sudret, B. (2021). Polynomial chaos expansions. In *SPP 1886 Winter School – Polymorphic uncertainty modelling for the numerical design of structures, Dresden (Germany), March 10*.

[14] Sudret, B. (2021). Sparse polynomial chaos expansions. In *SPP 1886 Winter School – Polymorphic uncertainty modelling for the numerical design of structures, Dresden (Germany), March 10*.

[15] Sudret, B. (2021). Surrogate models for stochastic simulators: an overview and a focus on generalized lambda models. In *MascotNum Workshop on Stochastic Simulators, March 11th*.

[16] Sudret, B. (2021). Introducing surrogate models for stochastic simulators. In *Graduate Seminar of the Department of Civil and Systems Engineering, Johns Hopkins University, Baltimore (USA), April 15*.

[17] Sudret, B. (2021). Surrogate models for reliability analysis and reliability-based design optimization. In *18th International Probabilistic Workshop (IPW2020), University of Minho, Guimaraes, May 12-14*. **Keynote lecture**.

[18] Sudret, B. (2021). Surrogate models and active learning for reliability analysis. In *13th International Workshop on Rare-Event Simulation (RESIM 2021), Paris (France), May 18-21*.

[19] Sudret, B. (2021). Surrogate modelling approaches for stochastic simulators. In *Centrum Wiskunde & Informatica (CWI), Amsterdam (The Netherlands), June 17*.

[20] Sudret, B. (2021). Recent developments on surrogate models for stochastic simulators. In *4th Int. Conf. Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP), Athens (Greece), June 27-30*. **Plenary lecture**.

[21] Sudret, B. (2021). Polynomial chaos expansions in 90 minutes. In *4th National Conference on Multidisciplanary design, analysis and optimization (NCMDAO 2021), Madras (India), October 7*.

[22] Sudret, B. (2021). Benchmarking active learning methods for structural reliability analysis. In *8ème Journée de la conception robuste et fiable – Approches universitaires et industrielles, Clermont-Ferrand (France), October 21*.

[23] Sudret, B. (2021). Surrogate models for efficient uncertainty quantification. In *Euromech Colloquium 618 "Uncertainty Quantification in Computational Mechanics", Luxemburg, December 13-14*. **Keynote lecture**.

[24] Sudret, B. (2020). Surrogate modelling and uncertainty quantification in computational sciences. In *3rd Ph.D. Retreat of the Computational Science Zurich Graduate School, Luzern (Switzerland), August 27*.

[25] Sudret, B. (2020). Uncertainty quantification, reliability and sensitivity analysis in geotechnical engineering. In *Haute École d'Ingéniérie et d'Architecture, Fribourg (Switzerland), November 19*.

[26] Sudret, B. (2019). Sparse polynomial chaos expansions for uncertainty quantification and global sensitivity analysis. In *Ateliers de Modélisation de l'Atmosphère, Centre International de Conférences de Météo France, Toulouse (France), March 11th*.

[27] Sudret, B. (2019). Data-based sparse polynomial chaos expansions: applications in dynamics and machine learning. In *Uncertainty Quantification & Optimization Conference, Sorbonne University, Paris (France), March 19)*. **Keynote lecture**.

[28] Sudret, B. (2019). Surrogate models for uncertainty quantification and design optimization. In *Proc. 14ème Colloque National en Calcul des Structures, Giens (France), May 13th*. **Plenary lecture**.

[29] Sudret, B. (2019). Surrogate modelling meets machine learning. In *Proc. 3rd Int. Conf. Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP), Crete Island (Greece), June 25*. **Semi-plenary lecture**.

[30] Sudret, B. (2019). Polynomial chaos expansions. In *Summer School "Modeling and Numerical Methods for Uncertainty Quantification" (MNMUQ), Porquerolles Island (France), August 27-30*.

[31] Sudret, B. (2019). Sparse polynomial chaos expansions and more. In *Summer School "Modeling and Numerical Methods for Uncertainty Quantification" (MNMUQ), Porquerolles Island (France), August 27-30*.

[32] Sudret, B. (2018). Surrogate models for uncertain dynamical systems: applications to earthquake engineering. In *Symposium on Uncertainty Quantification in Computational Geosciences, BRGM (France), January 16*.

[33] Sudret, B. (2018). Active learning methods for reliability analysis of engineering systems. In *Workshop on Computational Challenges in the Reliability Assessment of Engineering Structures, TNO Delft (The Netherlands), January 24*.

[34] Sudret, B. (2018). Uncertainty quantification techniques for optimal engineering solutions. In *Bosch Campus (Renningen, Germany), February 6*.

[35] Sudret, B. (2018). Uncertainty quantification in the simulation of complex systems. In *First Int. Conf. on Infrastructure Resilience, ETH Zurich (Switzerland), February 15*.

[36] Sudret, B. (2018). Dimensionality reduction and surrogate modelling for high-dimensional UQ problems. In *Thematic Semester on Uncertainty quantification for complex systems: theory and methodologies, Workshop on "Reducing dimensions and cost for UQ in complex systems", Isaac Newton Institute for Mathematical Sciences, Cambridge (UK), March 6*.

[37] Sudret, B. (2018). Recent developments in surrogate modelling for uncertainty quantification. In *Vulnerability, Uncertainty, and Risk (Proc. 3rd Int. Conf. on Vulnerability, Risk Analysis and Management (ICVRAM2018), Florianopolis (Brazil), April 9*. **Keynote lecture**.

[38] Sudret, B. (2018). Surrogate modelling for uncertainty quantification in engineering applications. In *Seminar of Numerical Analysis, MATHICSE, Ecole Polytechnique Fédérale de Lausanne (Lausanne), May 22nd*.

[39] Sudret, B. (2018). Surrogate models for uncertainty quantification and reliability analysis. In *Office National d'Etudes et de Recherches Aérospatiales (Paris, France), June 12th*.

[40] Sudret, B. (2018). Non-intrusive sparse polynomial chaos expansions and global sensitivity analysis. In *Summer School "Uncertainty Quantification for PDEs: Numerical Analysis and Scientific Computing, High-dimensional Numerical Approximations", ETH Zurich, August 27-30*.

[41] Sudret, B. (2018). Rare events simulation (a.k.a reliability analysis). In *Summer School "Uncertainty Quantification for PDEs: Numerical Analysis and Scientific Computing, High-dimensional Numerical Approximations", ETH Zurich, August 27-30*.

[42] Sudret, B. (2016). Uncertainty quantification in engineering – Framework and applications. In *4th Risk Center Dialog Event, ETH Zurich (Switzerland), January 15*.

[43] Sudret, B. (2016). Uncertainty quantification in engineering – Framework and applications. In *Bundesamt für Energie, Bern (Switzerland), March 17*.

[44] Sudret, B. (2016). Surrogate models for uncertainty quantification and reliability analysis. In *Engineering Mechanics Institute Conference (EMI'2016), Vanderbilt University, Nashville (USA), May 23rd*. **Plenary lecture**.

[45] Sudret, B. (2016). Surrogate models for uncertainty quantification and sensitivity analysis. In *Séminaire de la Fédération Francilienne de Mécanique, Ecole Nationale Supérieure des Arts et Métiers, Paris (France), June 16*.

[46] Sudret, B. (2016). Uncertainty quantification in engineering sciences – Focus on surrogate models. In *Uncertainty Modeling for Electromagnetic Applications (UMEMA 2016), Paris (France), July 4*.

[47] Sudret, B. (2016). Uncertainty propagation using polynomial chaos expansions. In *Summer School "Uncertainty in Modelling", Bauhaus Universität Weimar (Germany), September 5-8*.

[48] Sudret, B. (2016). UQLab: the uncertainty quantification software framework. In *Summer School "Uncertainty in Modelling", Bauhaus Universität Weimar (Germany), September 5-8*.

[49] Sudret, B. (2016). Uncertainty quantification for engineering risk analysis. In *GAMM-UQ Uncertainty Quantification Summer School, Weierstrass Institute for Applied Analysis and Stochastics, Berlin (Germany), September 12-16*.

[50] Sudret, B. (2016). Structural reliability methods. In *GAMM-UQ Uncertainty Quantification Summer School, Weierstrass Institute for Applied Analysis and Stochastics, Berlin (Germany), September 12-16*.

[51] Sudret, B. (2016). Surrogate models for uncertain dynamical systems: polynomial chaos expansion for time-dependent responses. In *4ème Forum sur les Méthodes de Quantification des Incertitudes, CEA DAM, Bruyères-le-Châtel (France), October 4*.

[52] Sudret, B. (2016). Surrogate models for global sensitivity analysis – Old and new. In *8th Int. Conf. Sensitivity Analysis of Model Output (SAMO'2016), La Réunion Island, December 1st*. **Keynote lecture**.

[53] Sudret, B. and Marelli, S. (2015). Polynomial chaos expansions for structural reliability. In *2èmes Journées de la conception robuste et fiable, Association Française de Mécanique, Paris (France), April 10th*.

[54] Sudret, B., Marelli, S. and Lataniotis, C. (2015). Sparse polynomial chaos expansions as a machine learning regression technique. In *International Symposium on Big Data and Predictive Computational Modeling, Munich (Germany), May 18-21*.

[55] Sudret, B. (2015). Sparse polynomial chaos expansions for solving high-dimensional UQ problems. In *1st Int. Conf. Uncertainty Quantification in Computational Sciences and Engineering (UNCECOMP), Creta Island (Greece), May 26*. **Semi-plenary lecture**.

[56] Sudret, B. (2015). A few things I learned from Prof. Armen Der Kiureghian. In *Risk and Reliability Symposium in Honor of Prof. Armen Der Kiureghian, University of Illinois at Urbana-Champaign (USA), October 4*.

[57] Sudret, B. (2015). Sparse polynomial chaos expansions for uncertainty propagation and sensitivity analysis. In *Workshop on "Propagation of Uncertainty", Institut Louis Bachelier, Paris (France), December 11th*.

[58] Sudret, B. (2014). Uncertainty quantification in engineering – a computational viewpoint. In *Proc. 11th German Probability and Statistics Days (GPSD 2014)*.

[59] Sudret, B. (2014). Uncertainty quantification in engineering. In *Risk Center Seminar, ETH Zurich (Switzerland), March 25*.

[60] Sudret, B. (2014). Polynomial chaos expansions for sensitivity analysis. In *École Chercheurs "Analyse de sensibilité, propagation d'incertitudes et exploration numérique de modèles en sciences de l'environnement", Les Houches (France), May 9*.

[61] Sudret, B. (2014). Polynomial chaos expansions – Theory, Numerical Methods & Applications (part i). In *Summer School "Modeling and Numerical Methods for Uncertainty Quantification" (MNMUQ), Porquerolles Island (France), September 1-4*.

[62] Sudret, B. (2014). Polynomial chaos expansions – Theory, Numerical Methods & Applications (part ii). In *Summer School "Modeling and Numerical Methods for Uncertainty Quantification" (MNMUQ), Porquerolles Island (France), September 1-4*.

[63] Sudret, B. (2014). Polynomial chaos-based surrogate models for sensitivity analysis. In *Centre d'hydrogéologie et géothermie (CHYN), Université de Neuchâtel (Switzerland), November 10th*.

[64] Sudret, B. (2013). Computational methods for uncertainty quantification and sensitivity analysis of complex systems. In *LabeX MS2T, Université Technologique de Compiègne (France), February 14*.

[65] Sudret, B. (2013). Sparse polynomial chaos expansions in engineering applications. In *Workshop on "Numerical Methods for Uncertainty Quantification", University of Bonn (Germany), May 14*.

[66] Sudret, B. (2013). Uncertainty quantification in engineering. In *ETH Zurich (Switzerland), April 9*. **Inaugural lecture**.

[67] Sudret, B. (2013). A short review of computational methods for uncertainty quantification in engineering. In *DBAUG Workshop on common challenges in computationally-based engineering research, ETH Zurich (Switzerland), June 5*. (Talk only).

[68] Sudret, B. (2013). Fiabilité des structures et analyse de risque. In *Journée FSA - Droit de la Construction, Fribourg (Switzerland), September 13*.

[69] Sudret, B. (2013). Basics of structural reliability and links with structural design codes. In *Fachgruppe für Brückenbau und Hochbau – Herbsttagung "Schäden, Unfälle - Entstehung", ETH Zurich (Switzerland), November 22nd*.

[70] Sudret, B. (2013). Sparse polynomial chaos expansions and application to sensitivity analysis. In *Int. Workshop Uncertainty Quantification in fluids Simulation, INRIA Bordeaux (France), December 18*.

[71] Sudret, B. (2012). Statistical approaches and uncertainty propagation in electromagnetism. In *Journée AREMIF "Simulation électromagnétique et complexité – avancées et défis", Paris (France),March 21st*.

[72] Sudret, B. (2012). Variance-based sensitivity indices for models with correlated inputs using polynomial chaos expansions. In *First SIAM Conf. on Uncertainty Quantification, Raleigh (NC), April 1st*.

[73] Sudret, B. (2012). Meta-models for structural reliability and uncertainty quantification. In K. Phoon, M. Beer, S. Quek and S. Pang (Eds.), *Proc. 5th Asian-Pacific Symp. Struct. Reliab. (APSSRA'2012), Singapore*, pp. 53–76. **Keynote lecture**.

[74] Sudret, B. (2012). Sensitivity analysis in case of dependent input variables using polynomial chaos expansions. In *MascotNum Workshop , University of Toulouse (France), May 3rd*.

[75] Sudret, B. (2012). Rare events simulation: classical engineering methods and current trends using meta-models. In *9èmes Journées de Statistique de Rennes (JSTAR'2012), October 26*.

National Conferences and Workshops

[1] Moustapha, M. and Sudret, B. (2019). Quantification d'incertitudes en simulation, métamodèles et optimisation fiable. In *Journée NAFEMS sur la conception robuste et fiable, Paris (France), June 6*.

[2] Broccardo, M., Marelli, S., Sudret, B. and Stojadinovic, B. (2017). Uncertainties in seismic hazard and risk analysis: the good, the bad and the way ahead of the current state-of-the-art. In *DBAUG Workshop on Natural Hazards, ETH Zurich (Switzerland), June 8th*. (Talk given by M. Broccardo).

[3] Torre, E., Marelli, S., Embrechts, P. and Sudret, B. (2017). Vine copula modeling of high-dimensional inputs in uncertainty quantification problems. In *1st Italian Meeting on Probability and Mathematical Statistics, Torino (Italy), June 19-22 (Poster)*.

[4] Moustapha, M., Sudret, B., Bourinet, J.-M. and Guillaume, B. (2016). Quantile-based optimization using adaptive Kriging models: Application to car body design. In *3èmes Journées de la conception robuste et fiable, Association Française de Mécanique, Paris (France), May 10th*. (Talk given by M. Moustapha).

[5] Moustapha, M., Sudret, B., Bourinet, J.-M. and Guillaume, B. (2016). Quantile-based optimization using adaptive Kriging models: Application to car body design. In *MascotNum Workshop on "Dealing with stochastics in optimization problems", Paris (France), May 13th, 2016*. (Talk given by M. Moustapha).

[6] Schöbi, R., Marelli, S. and Sudret, B. (2016). Méthodes numériques pour la fiabilité des systèmes complexes : la plate-forme UQLab. In *Proc. 9e Journées Fiabilité des Matériaux et des Structures, Nancy, France*.

[7] Torre, E., Marelli, S., Embrechts, P. and Sudret, B. (2016). Modeling high-dimensional system inputs with copulas for uncertainty quantification problems. In *Welcome Home Workshop 2016, University of Torino (Italy), December 22nd*. (Talk given by E. Torre).

[8] Sudret, B. and Marelli, S. (2014). UQLab: Une plate-forme pour la quantification des incertitudes sous Matlab. In *Proc. 8e Journées Fiabilité des Matériaux et des Structures, Aix-en-Provence, France*.

[9] Sudret, B. (2013). A short review of computational methods for uncertainty quantification in engineering. In *DBAUG Workshop on common challenges in computationally-based engineering research, ETH Zurich (Switzerland), June 5th*. (Talk only).

[10] Marelli, S. and Sudret, B. (2013). UQLab: a framework for uncertainty quantification in MATLAB. In *Swiss Numerics Colloquium 2013, Lausanne (Switzerland), April 5th*. (Talk given by S. Marelli).

[11] Sudret, B. and Mai, C.-V. (2013). Calcul des courbes de fragilité sismique par approches non-paramf́riques. In *Proc. 21e Congrès Franï¿½ais de Mécanique (CFM21), Bordeaux*.

[12] Caniou, Y., Sudret, B. and Micol, A. (2012). Analyse de sensibilité globale pour des variables corrélées – application aux modèles imbriqués et multiéchelles. In *Proc. 18e Congrès de Maï¿½trise des Risques et Sûreté de Fonctionnement, Tours, France*.

[13] Dubourg, V., Bourinet, J.-M., Sudret, B., Cazuguel, M. and Yalamas, T. (2012). Optimisation du dimensionnement au flambement d'une coque résistante de sous-marin sous contrainte de fiabilité. In *Proc. 18e Congrès de Maï¿½trise des Risques et Sûreté de Fonctionnement, Tours, France*.

[14] Caniou, Y., Sudret, B. and Micol, A. (2012). Analyse de sensibilité globale pour des variables corrélées – application aux modèles imbriqués et multiéchelles. In *Proc. 7e Journées Fiabilité des Matériaux et des Structures, Chambéry, France*.

[15] Dubourg, V., Defaux, G., Willaume, P. and Meister, B., E.and Sudret (2012). échantillonnage préférentiel quasi-optimal par krigeage pour l'évaluation de la fiabilité des cuves de réacteurs à eau pressurisée. In *Proc. 7e Journées Fiabilité des Matériaux et des Structures, Chambéry, France*.

[16] Dubourg, V., Sudret, B. and Cazuguel, M. (2011). Modélisation probabiliste de champs d'imperfections géométriques de coques résistantes de sous-marins. In *Proc. 10e Colloque National en Calcul des Structures, Giens*.

[17] Dubourg, V., Sudret, B., Bourinet, J.-M. and Cazuguel, M. (2011). Optimisation sous contrainte de fiabilité d'une structure en treillis. In *Proc. 10e Colloque National en Calcul des Structures, Giens*.

[18] Caniou, Y., Defaux, G., Dubourg, V., Sudret, B. and Petitet, G. (2011). Caractérisation indirecte de défauts géométriques de forme liés au process de fabrication d'un élément d'essuie-glace. In *Proc. 20e Congrès Franï¿½ais de Mécanique (CFM20), Besançon*.

[19] Caniou, Y. and Sudret, B. (2011). Analyse de sensibilité globale pour des modèles à paramètres dépendants. In *Proc. 20e Congrès Franï¿½ais de Mécanique (CFM20), Besançon*.

[20] Yalamas, T., Moine, S., Lussou, P. and Sudret, B. (2010). Evaluation fiabiliste et approche réglementaire. In *Proc. 6e Journées Fiabilité des Matériaux et des Structures, Toulouse*.

[21] Blatman, G. and Sudret, B. (2010). Chaos polynomial creux et adaptatif basé sur la procédure Least Angle Regression – application à l'analyse d'intégrité d'une cuve de réacteur de centrale nucléaire. In *Proc. 6e Journées Fiabilité des Matériaux et des Structures, Toulouse*.

[22] Blatman, G. and Sudret, B. (2009). Chaos polynomial creux basé sur la technique de *least angle regression*. In *Proc. 19e Congrès Franï¿½ais de Mécanique (CFM19), Marseille*.

[23] Blatman, G. and Sudret, B. (2009). Eléments finis stochastiques non intrusifs à partir de développements par chaos polynomiaux creux et adaptatifs. In *Proc. 9e Colloque National en Calcul des Structures, Giens*.

[24] Dubourg, V., Bourinet, J.-M. and Sudret, B. (2009). Analyse fiabiliste du flambage des coques avec prise en compte du caractère aléatoire et de la variabilité spatiale des défauts de forme et d'épaisseur, et des propriétés matériaux. In *Proc. 19e Congrès Français de Mécanique (CFM19), Marseille*.

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