

# GSI'17 in PARIS

The 3<sup>rd</sup> Conference on **GEOMETRIC SCIENCE OF INFORMATION**  
7<sup>th</sup> to 9<sup>th</sup> November 2017, Mines ParisTech, PARIS, FRANCE



The  
Alan Turing  
Institute



Société  
Mathématique  
de France



## Conference Co-chairs:

[Frank Nielsen](#)

LIX - Laboratoire d'Informatique de l'Ecole Polytechnique  
UMR 7161, Campus Paris-Saclay, France

[Frédéric Barbaresco](#)

President of SEE ISIC Club *Ingénierie des Systèmes d'Information et de Communications*  
Thales Air Systems, Limours, France

[Silvère Bonnabel](#)

Mines ParisTech  
PSL Research University  
Centre for Robotics, Paris, France

## Local organizing committee:

Mines ParisTech

<http://www.mines-paristech.eu/>

Mathematics & Systems Department

<http://www.mines-paristech.eu/Research-valorization/Fields-of-Research/Mathematics-and-systems/>

PSL Research University

<https://www.univ-psl.fr/en>

## Secretariat:



Mrs. Valérie ALIDOR

SEE, FranceTel.: + 33 (0) 1 56 90 37 02

## Internet web page:

[www.gsi2017.org](http://www.gsi2017.org)

## Sessions chairs

[Bijan Afshari](#) – Johns Hopkins University  
[Pierre-Antoine Absil](#) – Université Catholique de Louvain  
[Stephanie Allasonnière](#) – Ecole Polytechnique  
[Jesus Angulo](#) – Mines ParisTech  
[Jean-Pierre Antoine](#) – Université Catholique de Louvain  
[Marc Arnaudon](#) – Bordeaux University  
[John Armstrong](#) – King's College London  
[Anne Auger](#) – Ecole Polytechnique  
[Nihat Ay](#) – Max Planck Institute  
[Roger Balian](#) – CEA  
[Frédéric Barbaresco](#) – Thales Air Systems  
[Pierre Baudot](#) – INSERM  
[Daniel Bennequin](#) – Paris-Diderot University  
[Joel Bessoum](#) – IRCAM  
[Yannick Berthoumiou](#) – Bordeaux University  
[Jeremie Bigot](#) – Bordeaux University  
[Silvère Bonnabel](#) – Mines ParisTech  
[Michel Boyom](#) – Montpellier University  
[Michel Broniatowski](#) – Paris UPMC University  
[Alain Chenciner](#) – Observatoire de Paris  
[Laurent Cohen](#) – Paris Dauphine University  
[Ana Bela Cruzeiro](#) – Universidade de Lisboa  
[Stanley Durrleman](#) – INRIA  
[Alfred Galichon](#) – New York University  
[Jean-Pierre Gazeau](#) – Paris Diderot University  
[François Gays-Balmaz](#) – ENS Ulm  
[Jérémie J. Jakubowicz](#) – Telecom SudParis  
[Jean Lerbet](#) – Evry University  
[Nicolas Le Bihan](#) – Grenoble University  
[Luigi Malago](#) – Romanian Institute of Science and Technology  
[Jonathan Mantou](#) – The University of Melbourne  
[Gaetan Marceau-Caron](#) – Thales Research & Technology  
[Jean-François Marcotorchino](#) – Paris UPMC University  
[Charles-Michel Marle](#) – Paris UPMC University  
[Hiroshi Matsuzoe](#) – Nagoya Institute of Technology  
[Bertrand Maury](#) – Paris-Saclay University  
[Jean-Marie Mirebeau](#) – Paris Orsay University  
[Quentin Merigot](#) – Paris Dauphine University  
[Ali Mohammad-Djafari](#) – Centrale Supélec  
[Frank Nielsen](#) – Ecole Polytechnique, Paris-Saclay University  
[Richard Nock](#) – Université Antilles-Guyane  
[Maks Ovsjanikov](#) – Ecole Polytechnique  
[Steve Oudot](#) – INRIA  
[Pierre Pansu](#) – Paris-Saclay University  
[Xavier Pennec](#) – INRIA  
[Michel Petitjean](#) – Paris Diderot University  
[Giovanni Pistone](#) – CarloAlberto University  
[Olivier Rioul](#) – Telecom ParisTech  
[Gery de Saxcé](#) – Lille University  
[Salem Said](#) – Bordeaux University  
[Rodolphe Sepulchre](#) – Liège University  
[Olivier Schwander](#) – Paris UPMC University  
[Stefan Sommer](#) – Copenhagen University  
[Dominique Spehner](#) – Grenoble University  
[Alain Trounev](#) – Ecole Normale Supérieure Cachan  
[Geert Verdoolaage](#) – Ghent University  
[Rene Vidal](#) – Johns Hopkins University  
[Antonio M. M. Rocha](#) – IRISA, University of Rennes 1

## First announcement and call for papers

As for GSI'13 and GSI'15, the objective of this SEE GSI'17 conference, hosted in Paris, is to bring together pure/applied mathematicians and engineers, with common interest for Geometric tools and their applications for Information analysis.

It emphasizes an active participation of young researchers to discuss emerging areas of collaborative research on “Geometric Science of Information and their Applications”.

Current and ongoing uses of Information Geometry Manifolds in applied mathematics are the following: Advanced Signal/Image/Video Processing, Complex Data Modeling and Analysis, Information Ranking and Retrieval, Coding, Cognitive Systems, Optimal Control, Statistics on Manifolds, Topology/Machine/Deep Learning, Artificial Intelligence, Speech/sound recognition, natural language treatment, Big Data Analytics, etc., which are substantially relevant for industry.

The Conference will be therefore held in areas of priority/focused themes and topics of mutual interest with the aim to:

- Provide an overview on the most recent state-of-the-art
- Exchange mathematical information/knowledge/expertise in the area
- Identify research areas/applications for future collaboration
- Identify academic & industry labs expertise for further collaboration

This conference will be an interdisciplinary event and will unify skills from Geometry, Probability and Information Theory.

*The conference proceedings are published in Springer's Lecture Note in Computer Science (LNCS) series.*

## Important Dates:

Main deadlines are the following:

- Deadline for 8 pages SPRINGER LNCS format: 3<sup>rd</sup> of April 2017
- Notification of acceptance: 12<sup>th</sup> of June 2017
- Final paper submission: 31<sup>st</sup> of July 2017

Paper templates (Latex, Word) and Guideline on GSI'17 website at “Author Instructions”:

[www.gsi2017.org](http://www.gsi2017.org)

## Provisional topics of Special Sessions:

- Statistics on Non-Linear Data
- Shape Space
- Optimal Transport & Applications I (Data Science and Economics)
- Optimal Transport & Applications II (Signal and Image Processing)
- Topology and Statistical Learning
- Statistical Manifold & Hessian Information Geometry
- Information Structure in Neuroscience
- Geometric Robotics & Tracking
- Geometric Mechanics & Robotics
- Stochastic Geometric Mechanics & Lie Group Thermodynamics
- Probability on Riemannian Manifolds
- Divergence Geometry
- Geometric Deep Learning
- First and Second-Order Optimization on Statistical Manifolds
- Non-Parametric Information Geometry
- Geometry of Quantum States
- Optimization on Manifold
- Computational Information Geometry
- Probability Density Estimation
- Geometry of Tensor-Valued Data
- Geometry and Inverse Problems
- Geometry in Vision, Learning and Dynamical Systems
- Lie Groups and Wavelets
- Geometry of Metric Measure Spaces
- Geometry and Telecom
- Geodesic Methods with Constraints
- Applications of Distance Geometry

## Provisional program of Invited Speakers:

Prof. **Jean-Michel Bismut** (Invited Honorary speaker), Prof. **Daniel Bennequin** (Guest Honorary speaker) and 3 keynotes Speakers: Prof. **A. Trounev**, **B. Tumpach** & **M. Girolami**