

Call for Contributions

Summer School on “Big Data and Finance” 12-16 juin 2023 - Centre Paul Langevin, Aussois

Keynote lecturers :

Cristina Butucea (Professor at ENSAE, CREST)

A course on Differential Privacy (4h30)

Christophe Gaillac (Professor at Oxford U.) & **Jérémy L'hour** (Research associate at CFM & CREST)

A course on High Dimensional Econometrics (4h30)

Matthieu Rosenbaum (professor at Ecole Polytechnique, CMAP)

A course on Market Microstructure (4h30)

The aim of the summer school is to review some aspects of quantitative methods applied to economics and finance. Particular emphasis will be placed on:

- methods that make use of massive or high-dimensional data.
- applications to energy issues, in line with the research themes of the [FiME laboratory](#).

Three themes will be highlighted, all of which are particularly relevant to today's world and pose crucial challenges : (1) Differential Privacy, (2) High Dimensional Econometrics, (3) Market Microstructure (*see below for a more detailed presentation*).

The summer school is primarily aimed at PhD students in economics and finance. It is also open to academic and industrial researchers interested in these subjects who can propose contributions (presentations of research work, which may be work in progress or already published) in line with the theme of the school and / or the research areas of the FiME Laboratory.

Submission details: contributions on the topics mentioned will be considered. Contributions will be selected based on an abstract, which must be submitted on the [Summer school website](https://fimeschool.sciencesconf.org/): <https://fimeschool.sciencesconf.org/>

The deadline for the submission of the abstract is March 31.

The notification of the program committee decisions will be sent to authors by April 30.

Below are presented an overview of the event and the committees.

Overview of the event

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- methods that make use of massive or high-dimensional data.
- applications to energy issues, in line with the research themes of the FiME laboratory.

Three themes will be highlighted, all of which are particularly relevant to today's world and pose crucial challenges :

- High Dimensional Econometrics: Applications of high-dimensional statistics and machine learning methods in econometrics are increasingly popular. This course will cover the theoretical foundations and present practical applications. The main topics to be reviewed include variable selection, inference with high-dimensional nuisance parameters in different settings, heterogeneity, treatment allocation, policy evaluation, networks and text data.
- Differential Privacy: Data privacy protection is a major issue for our society nowadays due to the massive amounts of data collected and stored by many electronic devices at all times, on social networks, in medicine, in finance and so on. Privacy preserving mechanisms have to be applied to the data before their public release which implies to quantify the amount of privacy, but also to make inference on the underlying population from the publicly available information. We shall discuss nonparametric estimation of the probability density, of some functionals of the density and variable selection.
- Market Microstructure: The goal of this course is to give an introduction to the key statistical modelling questions at stake at the level of the microstructure of financial markets. We will show that using advanced tools from stochastic processes theory, statistics of random processes and machine learning we are able to solve important issues related to statistical estimation for high frequency data, order book modelling, algorithmic trading and financial regulation. We will also make the connection between market microstructure and the low frequency behavior of the volatility of financial assets.

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Three courses will be held (speakers confirmed) :

A course on High Dimensional Econometrics (4h30) - by Pr. Christophe Gaillac (Oxford U.) & Pr. Jérémy L'hour (INSEE, CREST)

A course on Differential Privacy (4h30), by Pr. Cristina Butucea (ENSAE)

A course on Market Microstructure (4h30), by Pr. Matthieu Rosenbaum (CMAP, Polytechnique)

The [FiME Laboratory](#) is a joint structure of EDF, the University of Paris-Dauphine, CREST and the Ecole Polytechnique where academic and industrial researchers from these institutions meet. Administratively, it is hosted by the Europlace Institute of Finance Foundation, which is part of the Louis Bachelier Group.

Scientific committee

- Pierre Gruet (EDF R&D)
- Delphine Lautier (Université Paris Dauphine - PSL)
- Peter Tankov (ENSAE)

Organizing committee:

- David Benatia (HEC Montreal & CREST)
- Olivier Féron (EDF R&D, Director of the FiME Lab)
- Damien Fessler (Institut Louis Bachelier)
- Marc Hoffmann (CEREMADE, Université Paris-Dauphine)