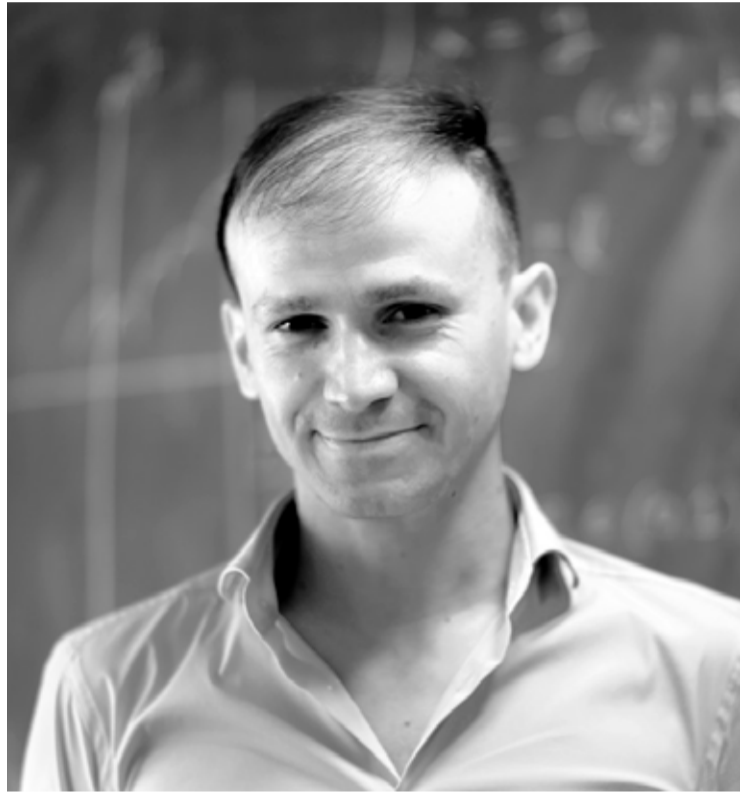


# Mean-field games

March 7-8, 2022, École polytechnique

François DELARUE (*Université de Nice*)



## PGMO and M2 Optimisation

<https://www.fondation-hadamard.fr/PGMO>

<https://www.universite-paris-saclay.fr/formation/master/mathematiques-et-applications/m2-optimisation>



- Lecture 1** - Monday, March 7, 10h00-12h45, Amphi Becquerel
- Lecture 2** - Monday, March 7, 14h15-17h00, Amphi Becquerel
- Lecture 3** - Tuesday, March 8, 10h00-12h45, Amphi Becquerel
- Lecture 4** - Tuesday, March 8, 14h15-17h00, Amphi Becquerel

*The objective of this course is to give an overview of the theory of mean field games, initiated by J.M. Lasry et P.L. Lions, which is dedicated to the analysis of differential games with a large number of players interacting with one another through aggregated quantities. We will first introduce an asymptotic version of the problem, i.e., with an infinite number of agents, using tools from partial differential equations and stochastic control. In this respect, we will provide reminders about mean field models. Next, we will give main results about existence and uniqueness of equilibria. Part of the lectures will also address the connection between finite and infinite games. We will also consider extensions, including games with a common noise, where the global state of the population is random. We will end up with a short review of actual problems, including some questions related with learning.*

*This lecture series is jointly organized by Ecole Polytechnique, INRIA, Master d'Optimisation of Paris Saclay and IPP, and Fondation Mathématique Jacques Hadamard, in the framework of the Gaspard Monge Optimization Programme, with the support by EDF.*

Registration (free of charge) on <https://www.fondation-hadamard.fr/fr/pgmo-seminars/courses>



### Organizers:

- S. Gaubert (*INRIA and Ecole polytechnique*)
- Q. Mérigot (*Université Paris Sud*)
- W. van Ackooij (*EDF*)
- S. Elloumi (*ENSTA*)
- V. Perchet (*ENSAE*)

