Charles Bertucci

Resumé

Born	18th of March 1993 in Marseille, France
Address	CMAP, École Polytechnique,
	Route de Saclay, 91128, Palaiseau France
e-mail	charles.bertucci@polytechnique.edu

Education

2022 — **Habilitation à diriger les recherches**, *Institut Polytechnique de Paris*, Palaiseau.
Title : Monotonicity in mean field games and dynamics of the spectrum of large random matrices

2016–2018 — **Ph. D. in Applied Mathematics**, *Université Paris-Dauphine*, Paris.
Title : Contributions à la théorie des jeux à champ moyen ; Advisor : Pierre-Louis Lions ; Defended on the 11th of December 2018

2015–2016 — **Master 2**, *Université Pierre et Marie Curie*, Paris, *Mention Très bien*.

2012–2016 — **Diplôme d'ingénieur**, *École Polytechnique*, Palaiseau.

2010–2012 — **Classes préparatoires**, *Lycée Thiers*, Marseille.

Working experience

2022–present — **Professeur chargé de cours à temps partiel (Part time professor)**, *École Polytechnique*, Palaiseau.

2020–2022 — **Chargé d'enseignement à temps partiel (Part time assistant professor)**, *École Polytechnique*, Palaiseau.

2019–present — **CNRS researcher**, *École Polytechnique*, Palaiseau.

2016–2019 — **Doctoral position**, *Université Paris-Dauphine*, Paris.
With teaching duty of 64h per year

2016–present — **Scientific adviser**, Paris.
Missions with Kayrros and Huaweï

Research interests

- Partial Differential Equations
- Optimization
- Game theory
- Probabilities
- Numerical methods
- Mean Field Games
- Systems of conservation laws

o Obstacle problems

Students' supervising

o Co-supervision (with Pierre-Louis Lions) of the thesis of Diego Alejandro Murillo Taborda which started September 2021.
o Supervision of three internships of 2nd year ENSTA students.

Scientific papers

o C. Bertucci: Optimal stopping in mean field games, an obstacle problem approach ; *Journal de Mathématiques Pures et Appliquées*; 2018 ; Volume 120 ; p 165-194.
o C. Bertucci: Fokker-Planck equations of jumping particles and mean field games of impulse control; Annales de l'Institut Henri Poincaré C, Analyse non linéaire (Vol. 37, No. 5, pp. 1211-1244).
o C. Bertucci, J.-M. Lasry and P.-L. Lions: Some remarks on mean field games; Communications in Partial Differential Equations, 2019, vol. 44, no 3, p. 205-227.
o C. Bertucci: A remark on Uzawa's algorithm and an application to mean field games systems; ESAIM: Mathematical Modelling and Numerical Analysis, 2020, vol. 54, no 3, p. 1053-1071.
o C. Bertucci, J.-M. Lasry and P.-L. Lions: Strategic advantages in mean field games with a major player, 2020, Comptes Rendus. Mathématique, 2020, vol. 358, no 2, p. 113-118.
o C. Bertucci, J.-M. Lasry and P.-L. Lions: Master equation for the finite state space planning problem. Archive for Rational Mechanics and Analysis, 2021, p. 1-16.
o Y. Achdou, C. Bertucci, J.-M. Lasry, P.-L. Lions, A. Rostand and J. Scheinkman: A class of short-term models for the oil industry addressing speculative storage. arXiv preprint arXiv:2003.11790, 2020.
o C. Bertucci, L. Bertucci, J.-M. Lasry and P.-L. Lions: Mean Field Game Approach to Bitcoin Mining. arXiv preprint arXiv:2004.08167, 2020.
o C. Bertucci: Monotone solutions for mean field games master equations: finite state space and optimal stopping. Journal de l'École polytechnique–Mathématiques, 2021, vol. 8, p. 1099-1132.
o C. Bertucci : Monotone solutions for mean field games master equations: continuous state space and common noise. arXiv preprint arXiv:2107.09531, 2021.
o C. Bertucci, M Debbah, J.-M. Lasry and P.-L. Lions: A Spectral Dominance Approach to Large Random Matrices. arXiv preprint arXiv:2105.08983, 2021.
o C. Bertucci, L. Bertucci, J.-M. Lasry and P.-L. Lions: Economic Modelling of the Bitcoin Mining Industry. Available at SSRN 3907822, 2021.
o C. Bertucci : Mean field games with incomplete information: HAL: 03666652, 2022.
o C. Bertucci and Alekos Cecchin : Mean field games master equations: from discrete to continuous state space, available at charles-bertucci.github.io, 2022.
o C. Bertucci, J.-M. Lasry and P.-L. Lions: A singular infinite dimensional Hamilton-Jacobi-Bellman equation arising from a storage problem, HAL: arXiv:2210.02780, 2022.

Conference papers

o C. Bertucci, S. Vassilaras, J.-M. Lasry, G. Paschos, M. Debbah and P.-L. Lions : Transmit strategies for massive machine-type communications based on mean field games ; Proceedings of the International Symposium on Wireless Communication System (ISWCS) ; 2018

Visits

Fall 2021 **University of Chicago**, *Invited by P. Souganidis (If possible due to covid...)*.

June 2019	**Università di Roma la Sapienza**, *Invited by Fabio Camilli.*
October 2017	**Università di Roma la Sapienza**, *Invited by Italo Capuzzo-Dolcetta.*
March-July 2015	**Columbia Univeristy**, *Internship supervised by Guillaume Bal*, Title : Polynomial chaos expansions and optimal transport.

Selected Talks

Avril 2022	**Workshop on Mean Field Games**, *CRM, Montreal.*
Mars 2022	**Séminaire Laurent Schwartz**, *IHES, Bures-sur-Yvette.*
Fev. 2022	**Séminaire Parisien d'Optimisation**, *IHP, Paris.*
Jan. 2022	**Séminaire Parisien de théorie des jeux**, *IHP, Paris.*
Dec. 2021	**Mathematical advances in Mean Field Games**, *University of Chicago, Chicago.*
Nov. 2021	**Schrödinger Problem and MF PDE Systems...**, *CIRM, Marseille.*
March 2021	**Séminaire du Laboratoire Jacques-Louis Lions**, *Sorbonne Université.*
Feb. 2020	**Mean Field Games : Recent Progress**, *University of Chicago, Chicago.*
Sept. 2019	**MFG and related topics 5**, *Levico Terme, Trento (Italy).*
April 2019	**Workshop Mean field games and applications**, *ICMS, Edimburgh.*
March 2019	**MAD-Stat Seminar**, *TSE, Toulouse.*
March 2019	**Séminaire du CMAP**, *École Polytechnique, Palaiseau.*
Jan. 2019	**Séminaire parisien de théorie des jeux**, *IHP, Paris.*
Dec. 2018	**Seminar of the statistical department**, *LSE, London.*
Oct. 2018	**Séminaire Probabilités statistiques et contrôle**, *CMAP-ENSAE-ENSTA, Palaiseau.*
March 2018	**Workshop of the Mean field games ANR project**, *Tours.*
Nov. 2017	**PGMO days**, *EDF labs, Saclay.*
Oct. 2017	**Meeting of the "Groupe de recherche en théorie des jeux"**, *Fréjus.*
Oct. 2017	**Seminario di Analisi Matematica**, *Università di Roma la Sapienza, Roma.*
Sept. 2017	**Groupe de travail CalVa**, *Uniservité Paris-sud, Orsay.*
June 2017	**8ème Biennale de la SMAI**, *Ronce-les-Bains.*
Jan. 2017	**Séminaire de Mathématiques appliquées**, *Collège de France, Paris.*
Nov. 2016	**PDE models for multi-agent phenomena**, *Indam, Roma.*
Nov. 2016	**PGMO days**, *EDF labs, Saclay.*

Others

Cours Peccot 2022-2023; PGMO thesis prize in 2019; 1st prize for a thesis in mathematics from Chancellerie des Universités de Paris in 2019; Thesis prize from Fondation Dauphine in 2019.