Benoît Bonnet

Curriculum Vitae *(September 10, 2020)*

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Research Positions

November 2019 – now **Postdoctoral fellow at the IMJ-PRG under the supervision of H. Frankowska**, *Institut de Mathématiques de Jussieu – Paris Rive Gauche*, Paris.

2016 – 2019 **PhD student in Applied Mathematics under the supervision of F. Rossi and M. Hauray**, *Aix-Marseille Université, LIS - Università degli Studi di Padova*, Marseille, Padova.

Publications and Conference Proceedings

2020 **Necessary Optimality Conditions for Optimal Control Problems in Wasserstein Spaces** (with H. Frankowska), *Journal submission*.

2020 **Mean-Field Optimal Control of Continuity Equations and Differential Inclusions** (with H. Frankowska), *to appear in the proceedings of the 59$^{\text{th}}$ Conference on Decision and Control*.

2020 **Differential Inclusions in Wasserstein Spaces: The Cauchy Lipschitz Framework** (with H. Frankowska), *to appear in Journal of Differential Equations*.

2020 **Intrinsic Lipschitz Regularity of Mean-Field Optimal Controls** (with F. Rossi), *Currently under revision in SIAM Journal on Control and Optimization*.

2020 **Consensus and Flocking Under Communication Failures for a Class of Cucker-Smale System** (with É. Flayac), *Journal submission*.

2019 **Generic Singularities of the 3D-contact Sub-Riemannien Conjugate Locus** (with J.P. Gauthier & F. Rossi), *Comptes Rendus de l'Académie des Sciences, 357 (6)*.

2019 **A Pontryagin Maximum Principle in the Wasserstein Space for Constrained Optimal Control Problems**, *ESAIM COCV 25 (52)*.

2019 **The Pontryagin Maximum Principle in the Wasserstein Space** (with F. Rossi), *Calculus of Variations and Partial Differential Equations, 58:11*.

2017 **Sparse Control of Kinetic Cooperative Systems to Approximate Alignment** (with F. Rossi), *20th IFAC World Congress Proceedings*.

Presentations at Internationals Conferences, Seminars and Workshops

May 2020 **Flocking for the Cucker-Smale System under Communication Failures**, *Seminar of the CAGE INRIA team, Université Pierre et Marie Curie*, Paris.

October 2019 **Intrinsic Lipschitz Regularity in Mean-Field Optimal Control**, *Seminar of Probability, Statistics and Control Theory, ENSTA Paris*, Palaiseau.

June 2019 **Some Problems in Modelling and Optimal Control of Multi-Agent Systems**, *Poster session of the conference "Crowds : models and control"*, Marseille.

March 2019 **Topics in Analysis and Optimal Control of Multi-Agent Systems**, *Seminar of Analysis, Dipartimento di Matematica "Tullio Levi-Civita"*, Padova.

February 2019 **Optimal Control of Multi-Agent Systems : A Pontryagin Approach**, *Winter School in Calculus of Variations and Probability Theory*, Toulouse.

July 2018 **Optimal Control Problems in Wasserstein Spaces**, *"Variational Analysis and Optimal Control" Invited Session, 14th Viennese Conference on Optimal Control and Dynamic Games*, Vienna.

January 2018 _____ , *12th International Young Researcher Workshop on Geometry, Mechanics and Control*, Padova.

July 2017 **Sparse Alignment of Kinetic Cooperative Systems**, *IFAC World Conference*, Toulouse.

Teaching Activities

2019 – 2021 **Exercise sessions for the Master course *Continuous Optimisation – Theory and Algorithms***, *ENSTA Paris & Université Paris-Sud*.

2019 – 2020 **Exercise sessions for the Bachelor course *Quadratic Optimisation***, *ENSTA Paris*.

2017 – 2019 **Lectures of the Bachelor course *Introduction to Lebesgue Integration***, *École Centrale Marseille*.

2017 – 2019 **Lectures of the Bachelor course *Introduction to Continuous Optimization***, *École Centrale Marseille*.

2017 – 2018 **Exercise sessions for the Master course *Introduction to Optimisation Theory***, *École Centrale Marseille*.

2014 **Examiner for mathematics oral examination practice (khôlleur)**, *EPF*.

Grants

2020 – 2021 **1-year-and-a-half postdoctoral fellowship from *INRIA***, *Laboratoire Jacques-Louis Lions*.

2016 – 2019 **3-year PhD grant from the *Archimède* French Excellence Laboratory**, *Aix-Marseille Université*.

Degrees

2019 **PhD degree in Applied Mathematics from Aix-Marseille Université on the topic "*Optimal Control in Wasserstein Spaces*"**, *Specialisation in Automation and Control Theory*.

2016 **Master degree in Applied Mathematics from Université Paris-Saclay**, *Specialisation in Optimisation*.

2016 **Master degree in Mathematical Engineering from ENSTA Paris**, *Specialisation in Control Theory and Optimisation*.

2011 **A-level validations**, *Specialisation in Mathematics*.

Education

2015 – 2016 **Student of the *Optimisation* MSc program of the Université Paris-Saclay**, *Université Paris-Sud*, Orsay.

2013 – 2016 **Student at the ENSTA Paris Engineering School**, *ENSTA Paris*, Palaiseau.

2011 – 2013 **Student in French "*Classe préparatoire aux Grandes Écoles*"**, *Lycée Blaise-Pascal*, Orsay.

2008 – 2011 **Highschool student**, *Lycée Descartes*, Antony.

Past Internships and Student Activities

Internships

April – August 2016 **Research internship on the topic "*Stabilization and analysis of stick-slip phenomena in oil-drilling facilities*" under the supervision of Assistant Pr. Florent Di Meglio**, *École des Mines de Paris*, Paris.

May – August 2015 **Research internship on the topic "*Passive tracer transport in time-dependent corner flows*" under the supervision of Assistant Pr. Michal Branicki**, *University of Edinburgh*, Edinburgh.

Jully 2014 **One-month operator placement in the context of the first year curriculum at ENSTA Paris**, *Horiba Jobin Yvon SAS*, Longjumeau.

Student activities

2013 – 2015 **Member of the organisation teams of several scientific seminars addressed to visiting European students**, *ENSTA Paris*, Palaiseau.

Languages

French **Mother tongue**

English **Fluent (TOEIC score 980/990, C2-level CEFR)**

Italian **Basics**

Chinese, German **Small remnants**

Miscellaneous interests and hobbies

- Playing the drums (10-year regular practice)
- Bouldering (indoor climbing)
- Medieval & Mesopotamian history
- Pool and Snooker billiard (5-year regular practice)
- Video games, modelling, science-fiction & fantasy
- Bodhran (celtic traditional drum) & Guitar
- Bike travels
- Philosophy of theoretical physics and mathematics
- Theatre
- Strategy-based boardgames