

# Marielle Simon

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*Married with 2 children (born in 2018 and 2020). Publications list available on my webpage.*

## Current position

from 2016 **JUNIOR RESEARCHER (CHARGÉE DE RECHERCHES) AT INRIA, Lille, France**  
January 1st (MATERNITY LEAVE: nov. 2017 – march 2018 & dec. 2020 – april 2021)

## Past positions and Education

- 2019 **HABILITATION DIPLOMA, Université de Lille, France**  
• TITLE: Microscopic derivation of degenerated diffusion phenomena.
- 2014-2015 **POST-DOC “CAPES BOLSA DE EXCELÊNCIA”, P.U.C Rio de Janeiro, Brazil**
- 2011-2014 **PHD, École Normale Supérieure de Lyon, France**  
• DIRECTORS: Cédric Bernardin (Nice), Stefano Olla (Paris).  
• TITLE: Diffusion problems for perturbed harmonic chains.
- 2011 **“AGRÉGATION DE MATHÉMATIQUES”, passed with rank 3**

## Leadership and awards

- 2019 **PEDR (PRIME D'ENCADREMENT DOCTORAL ET DE RECHERCHE), during 4 years**
- 2018 **JUNIOR SCIENTIFIC LEADER OF THE SIMONS SEMESTER “PDES/SPDES AND FUNCTIONAL INEQUALITIES”, IMPAN, Warsaw, Pologne (1 MONTH)**
- 2013 **FOR WOMEN IN SCIENCE, L'Oréal France-UNESCO program for PhD students**

## Coordination of research projects and grants

- 2020-2022 **FEDER “TREMPIN ERC”, RÉGION HAUTS DE FRANCE, 94 000 €**  
• TITLE: Description microscopique des transitions de phase
- 2020-2024 **ANR JCJC (FRENCH NATIONAL GRANT FOR YOUNG RESEARCHERS), 132 000 €**  
• TITLE: Microscopic derivation of moving interfaces
- 2019 **RESULT AT ERC STARTING GRANT CALL**  
• Final score **A**  
• Final range **37%-39%** after oral examination (granted up to 32%)
- 2019-2020 **FAPESP-CNRS (FRANCE-BRAZIL), 20 000 €**  
• TITLE: Approximation of partial differential equations by stochastic particle systems with weak and moderate interaction  
• In partnership with C. OLIVEIRA (Unicamp, Campinas, Brazil)
- 2016 **PEPS CNRS JEUNES CHERCHEURS, 8000 €**  
• TITLE: Mathematical derivation of the porous medium equation

## Responsabilities (juries and committees)

- 2022- **MEMBER OF THE SCIENTIFIC COMMITTEE OF THE GDR (GROUPEMENT DE RECHERCHE) “MATHGEOPHY”, CNRS INSMI**  
• WEBSITE: <https://mathgeophy.math.cnrs.fr/>
- 2020- **APPOINTED MEMBER OF THE CNU (COMITÉ NATIONAL DES UNIVERSITÉS), Section 26**
- 2020- **MEMBER OF SEVERAL SELECTION COMMITTEES FOR MCF (“MAÎTRE DE CONFÉRENCES”) POSITIONS, IN FRANCE (Strasbourg, Nantes, Paris Dauphine)**
- 2021 **MEMBER OF THE JURY OF THE PHD THESIS OF A. HANNANI, Université PSL Paris**  
• TITLE: Random perturbation of certain interacting particle systems related to quantum mechanics
- 2021 **MEMBER OF THE JURY OF THE PHD THESIS OF A. ERTUL, Université Lyon 1**  
• TITLE: Diffusion et relaxation pour des systèmes de particules avec contraintes cinétiques
- 2021 **MEMBER OF THE JURY OF THE PHD THESIS OF B. DAGALLIER, École Polytechnique (Palaiseau, France)**  
• TITLE: Large deviations in interacting particle systems: out of equilibrium correlations and interface dynamics
- 2018 **MEMBER OF THE JURY OF THE PHD THESIS OF J. ROUSSEL, École des Ponts (Marne-la-Vallée, France)**  
• TITLE: Theoretical and numerical analysis of non-reversible dynamics in computational statistical physics
- 2015-2019 **MEMBER OF THE JURY OF THE FRENCH NATIONAL COMPETITION “AGRÉGATION DE MATHÉMATIQUES”**

## Supervision of research thesis and postdocs

- 2022- **POSTDOC**  
• STUDENT : Lu Xu, [lu.xu@inria.fr](mailto:lu.xu@inria.fr)
- 2020-2022 **POSTDOC, Program “FEDER Tremplin ERC”**  
• STUDENT : Linjie Zhao, [linjie.zhao@inria.fr](mailto:linjie.zhao@inria.fr)
- 2020-2023 **COSUPERVISION OF PHD THESIS, with P. Gonçalves (IST Lisbon)**  
• STUDENT : Gabriel Nahum, [gabriel.nahum@protonmail.com](mailto:gabriel.nahum@protonmail.com)
- 2020 **SUPERVISION OF MASTER THESIS, student from the ÉNS of Lyon**  
• TITLE : Equilibrium fluctuation of an IPS with degenerate rates.  
• STUDENT : Sonia Velasco, [sonia.velasco@ens-lyon.fr](mailto:sonia.velasco@ens-lyon.fr)
- 2013 **SUPERVISION OF MASTER THESIS (FIRST YEAR), student from the ÉNS of Rennes**  
• STUDENT : Laura Gay, [laura.gay@ac-lyon.fr](mailto:laura.gay@ac-lyon.fr)

## Organization of conferences

- 2022      **ASYMMETRY IN INTERACTING PARTICLE SYSTEMS: MICRO AND MACRO EFFECTS**  
• [WEBSITE](#)
- 2022      **PROBABILITY/PDE INTERACTIONS: INTERFACE MODELS AND PARTICLE SYSTEMS**  
• [WEBSITE](#)
- 2021      **ONLINE CONFERENCE ON RANDOM GRAPHS AND INTERACTING PARTICLE SYSTEMS**  
• [WEBSITE](#)

## Teaching

- 2021-2022      **PHD PROGRAM, LECTURE AT GSSI (GRAN SASSO SCIENCE INSTITUTE) L'Aquila, Italy**  
• TITLE: Harmonic chain of oscillators with random flips of velocities  
• DURATION: 12H
- 2020-2022      **LECTURE AT "ÉCOLE SUPÉRIEURE DES TRAVAUX PUBLICS" Dijon**  
• TITLE: Mathematics for engineers  
• DURATION: 33H+25HTD
- 2020      **TEACHING ASSISTANT FOR FIRST YEAR STUDENTS ESIREM, Dijon**  
• TITLE: Analysis  
• DURATION: 28HTD
- Jan 2020      **MASTER CLASS IN PROBABILITY, IRMA, Université de Strasbourg**  
• TITLE: Random walks on the integer line  
• DURATION: 9HTD
- 2019-2020      **LECTURE FOR FIRST YEAR STUDENTS OF THE MASTER "DATA SCIENCE", École Centrale and Université de Lille**  
• TITLE: Markov Chains and Applications  
• DURATION: 24HTD
- 2018-2019      **LECTURE FOR SECOND YEAR STUDENTS OF THE MASTER "RESEARCH IN APPLIED MATHS", Université de Lille**  
• TITLE: Introduction to Statistical Physics  
• DURATION: 56HTD
- 2015      **LECTURE AT THE SUMMER SCHOOL "SOVREMENNAYA MATEMATIKA", Dubna, Russia**  
• TITLE: Introduction to Statistical Mechanics  
• DURATION: 8HTD
- 2014-2015      **LECTURE FOR 1ST YEAR MASTER STUDENTS IN MATHEMATICS, P.U.C. Rio**  
• TITLE: Teoria da Probabilidade  
• DURATION : 32HTD
- 2011-2014      **TEACHING HOURS DURING THE PHD PROGRAM, É.N.S. de Lyon**  
• MATERIALS: Integration Theory, Probability Theory, Stochastic Processes, Statistics, Practice Sessions using MATLAB.  
• DURATION: 60HTD per year

2010-2014 **WEEKLY ORAL EXAMINATIONS IN MATHEMATICS IN POST SECONDARY PREPARATORY**  
2016-2017 **CLASSES**, *Lyon and Dijon*

## Popularization of mathematics

- 2022 **PLENARY TALK**, *Congrès “Maths en Jean”, Dijon*
- 2019 **POPULARIZATION SEMINAR FOR THE ANNUAL EVENT “FÊTE DE LA SCIENCE”**, *Lycée Carnot, Dijon*
- 2018-2019 **PARTICIPATION IN THE POPULARIZATION PROGRAM “CHERCHEURS ITINÉRANTS”**, *Highschools and middle schools in Lille and surroundings*
- 2016 - 2017 **COACHING OF A SMALL GROUP OF MIDDLE SCHOOLS STUDENTS FOR THE COMPETITION “C’GÉNIAL”**, *Villeneuve d’Ascq*
- 2016 **POPULARIZATION SEMINAR FOR THE ANNUAL EVENT “SEMAINE DES MATHÉMATIQUES”**, *E.S.P.E. Lille Nord de France*
- 2011-2014 **PARTICIPATION TO THE POPULARIZATION PROGRAM MATH@LYON**, *Highschools and middle schools in Lyon and surroundings*

## Selection of invited seminars

- 2021 **Forum Jeunes Mathématicien·ne·es** (plenary talk), *Besançon, France*
- 2019 **Interactions PDE/Probability: particle systems, hyperbolic conservation laws**, *CIRM, Marseille, France*
- 2019 **1st SFB International Workshop “Taming Complexity in Partial Differential Systems”**, *University of Vienna, Austria*
- 2018 **Particle Systems and PDEs, 7th edition**, *Palermo, Italy*
- 2018 **Workshop of the Simons Semester “PDE/SPDEs, Functional Inequalities”**, *Bedlewo Center, Poznan, Poland*
- 2016 **Oberwolfach Workshop: “Large scale stochastic dynamics”**, *Oberfolwach, Germany*
- 2016 **Workshop in Stochastic Analysis**, *CAMPINAS University, Sao Paolo, Brazil*
- 2016 **YEP XIII: Large Deviations for Interacting Particle Systems and Partial Differential Equations**, *EURANDOM, Eindhoven, Netherlands*
- 2015 **Non-equilibrium statistical physics**, *ICTS, Bangalore, India*