Marco Biroli

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STUDIES

2020 – 2021 **ICFP Master 1 program**, *Ecole Normale Supérieure, Average : 17.96/20.*

2019 – 2020 **Licence 3 in Physics,** *Ecole Normale Supérieure and Ecole Polytechnique.*
Average in Physics : 15.5/20 Average in Mathematics/CS : 19.5/20

2017 – 2019 **Bachelor of Science,** *Ecole Polytechnique,* Majoring in Physics and Mathematics.
Sem. 1 GPA: 4.12/4.0 Sem. 2 GPA: 4.17/4.0 Sem. 3 GPA: 4.2/40 Sem. 4 GPA: 4.2/4.0

2014 – 2017 **French Baccalaureate with specialty Mathematics,** *Ecole Active Bilingue Jeannine Manuel*.

AWARDS

July 2020 Bachelor Diploma of Ecole Polytechnique Summa Cum Laude.

2018 – 2020 Excellence Scholarship from the Ecole Polytechnique Foundation

INTERNSHIPS

03.2021 – 07.2020 "*Study of the number of sites visited by a stochastically resetting random walk on a hypercubic lattice.*" under the supervision of **Satya Majumdar (CNRS Research Director)**.

Random walks are ubiquitous both in mathematics and physics. Recently the introduction of resetting random walks opened the way for many new applications ranging from the modelling of foraging animals to optimizing searching algorithms. However, many well know properties of standard random walks are broken in this new framework due to the lack of translation and time invariance. We are currently working on the study of one of those properties: the number of sites visited by a random walker.

06.2020 – 08.2020 "*Generalization of Event Chain Monte-Carlo algorithms to elliptic particles*" under the supervision of **Werner Krauth (CNRS Research Director)**.

ECMC algorithms are state of the art methods for solving complex many-bodies interacting systems. During my internship I developed a generalization of such algorithms to non-spherical particles with solid boundary conditions. We are currently working on generalizing the algorithm to periodic boundary conditions.

06.2019 – 08.2019 "*Quantum localization transitions in quasi-periodic lattice systems*" under the supervision of **Laurent Sanchez-Palencia (CNRS Research Director, Head of the Quantum Matter group at CPHT).**

Critical and fractal properties of quantum particles in quasi-periodic potentials. Realization of numerical calculations, analysis of the data, critical discussion of the numerical results, and interpretation.

06.2018 – 08.2018 "*Development of path and motion planning algorithms*" under the supervision of **Adina Panchea (Post-Doc Researcher at LIX).**

I developed an algorithm for Path/Motion Planning that I had come up with during the year. I also started building a graphical interface that would regroup all well-known path/motion planning algorithms.

COMPUTER SKILLS

Python, C++, Mathematica, MATLAB & Simulink, Git, LaTeX

LANGUAGES French *(Native)*, Italian *(Native)*, English *(Native)*, Spanish *(B2)*

EXTRA-CURRICULAR ACTIVITIES & COMPETITIONS

2020	Participated in the ENS team for the *French Physicist's Tournament*.
2017	Participated in the *National High School Competition in Physics and Chemistry*.
2015	Ranked 6th in the world with congratulations from the jury for my young age in the *Rover On Mars Challenge* from MATLAB & Simulink
2014	Ranked 100th in the world in 2014 in the competition *Coders Strike Back from CodinGame.*