

Marc Abboud

Doctor in Mathematics

Positions

March 2024- Postdoc at Université de Neuchâtel working with Jérémy Blanc
September Visiting Professor Junyi Xie at BICMR
2023-February 2024

Education

2020-2023 **PhD in Mathematics under the supervision of Serge Cantat and Junyi Xie**, *Rennes University, Sur la dynamique des endomorphismes des surfaces affines*.
Jury : Jérémy Blanc, Serge Cantat, Charles Favre, Thomas Gauthier (referee), Mattias Jonsson (referee), Juan Souto, Junyi Xie, Susanna Zimmerman.

2019-2020 **Data scientist intern at Tinyclues**, *Paris*
[link of the company](#).

2018-2019 **Master Degree in Cryptography**, *Diderot university*, Master thesis in post-quantum cryptography in Oxford at PQShield

2017-2018 **Second year of Master degree in Mathematics**, *Orsay university and Ecole Normale Supérieure*, Paris
Master thesis under the supervision of Serge Cantat on *nilpotent groups acting on complex algebraic varieties*.

2016-2017 **First year of Master Degree in Mathematics**, *École Normale Supérieure*, Paris
First semester at École Normale Supérieure.
Second semester at *Courant Institute of Mathematical Science*, New York. Internship in algebraic geometry under the supervision of Yuri Tschinkel.

2015-2016 **Last year of undergraduate in Mathematics**, *École Normale Supérieure*, Paris

2013-2015 **Classes préparatoires MPSI-MP***, *Lycée Saint Louis*, Paris

Publications

2021 Actions of nilpotent groups on complex algebraic varieties - IMRN.

2019 Cryptographic Divergences : New Techniques and New Applications - SCN 2020 - with Thomas Prest.

Prepublications

2024 Intersection of orbits of loxodromic automorphisms of affine surfaces - [\[arxiv\]](#)

2024 Rigidity of periodic points for loxodromic automorphisms of affine surfaces - [\[arxiv\]](#)

2024 Unlikely intersections problem for automorphisms of Markov surfaces - [\[arxiv\]](#)

2023 On the dynamics of endomorphisms of affine surfaces - [\[arxiv\]](#)

2023 My PhD thesis : Sur la dynamique des endomorphismes des surfaces affines - [\[link\]](#).

Teaching

- 2024 Master course at University of Neuchâtel on Polynomial automorphisms of the affine plane.
- 2023 Mini course on Valuative Techniques for Dynamics over Affine Surfaces at BICMR.
- 2020-2022 Cryptography Master at University of Rennes 1, *Fast algorithm on polynomials and graph theory*. Lectures and exercise sessions.
- 2020-2022 Preparation for the french exam *Agrégation* (master level). Lectures on finitely generated abelian groups, field theory and topology on sets of matrices.
- 2016-2018 Oral examinations in mathematics in *classes préparatoires* at Lycée Saint Louis (undergraduate level).

Conferences I attended or will attend

- January 2025 États de la recherche : Arithmetic, Algebraic and Analytic dynamics - CIRM, Marseille
- July 2024 Birational geometry and dynamics - Les Diablerets
- May 2024 Workshop on algebraic transformation groups - Monte Verita
- July 2023 Current themes in complex dynamics workshop - Toulouse.
- April 2023 Dynamics of Hénon Maps : Real, Complex and Beyond - Banff International Research Station.
- January 2023 12th swiss-french workshop in Algebraic Geometry in Charmey.
- January 2023 2023 Joint Mathematics Meetings - special session on arithmetic dynamics.
- September 2022 Complex analysis and dynamical systems - Oberwolfach.
- January 2022 11th swiss-french workshop in Algebraic Geometry in Charmey.
- June 2022 Conference in Saint-Jacut, mini-courses by Serge Cantat, Bertrand Deroin, Sébastien Gouezel.
- October 2020 Conference in Saint-Jacut, mini-courses by Jérôme Buzzi, Sebastian Hurtado, Ludovic Marquis, Chloé Perrin.
- September 2020 SCN 2020 : 12th Conference on Security and Cryptography for Networks. Online conference.
- March 2019 Oxford Post-Quantum Cryptography Workshop.

Talks

- June 2024 Basel-Dijon-Neuchâtel-EPFL joint seminar - Dijon
- April 2024 Monthly Complex Dynamics Seminar - Institut Henri Poincaré
- November 2023 Algebra seminar - Jena university
- July 2023 Current themes in complex dynamics workshop - Toulouse
- May 2023 EPFL Lausanne, Algebraic geometry seminar
- May 2023 Université d'Angers, Séminaire de géométrie algébrique et topologie algébrique
- March 2023 Cambridge University, Algebraic Geometry seminar
- January 2023 12th swiss-french workshop in Algebraic Geometry, Charmey, Switzerland.

- January 2023 Special year topic seminar - Institute of Advanced Studies, Princeton.
- January 2023 University of Michigan, Ann Arbor
- January 2023 IUPUI, Indianapolis
- January 2023 2023 Joint Mathematics Meetings - special session on arithmetic dynamics, Boston.
- September 2022 Seminar Algebra and Geometry - University of Basel.
- March 2022 Iskovskikh seminar - HSE Moscow (online talk).

Workshop I attended at the University of Rennes

- 2023 Workshop on complex projective surfaces.
- 2022 Reading group on Markov surfaces, holomorphic dynamics of the automorphism group, relation to representation theory. I gave three talks in this reading group.
- 2021-2022 Workshop on entropy, dimension and Lyapunov exponents after the work of Ledrappier-Young.
- 2021 Workshop on negative curvature spaces and horocyclic flows (conformal measures, boundary, entropy).

Math related activities

- 2021-2022 Co-organisator of the algebra and geometry PhD student seminar at IRMAR, **link of the seminar**. I gave 3 talks in this seminar throughout my PhD.
- 2021-2023 Creator and head of a math club for high school students at the University of Rennes - **link of the club**. Every other Saturday, a 2-hour lecture is given by a member of the math department at the university for high school students wanting to learn more about what kind of math we do in research.
- 2022 Math talk in high school about pavement and constructible numbers.
- 2020 I coached the french team at the *International tournament for young mathematicians* (**link**).
- 2020 I coached with Arthur Touati an all-female team that was created after the RJM 2019 (see below) at the TFJM (**link**), a national math tournament for high school students. We won the tournament!
- 2018-2019 Co-organisator of the *Rendez-vous des jeunes mathématiciennes* (RJM) with Arthur Touati and Élodie Maignant at École Normale Supérieure 2 years in a row. This is an event where around 20 female high school students spend a weekend at the École Normale Supérieure to do math, talk about math careers, talk with women researchers in mathematics and talk about stereotypes. **link**.
- 2016-2019 Participation at *Parimaths*, the math club for high school students of École Normale Supérieure. I gave lectures about Permutations, Algorithmic, Equivalence relations, Metric spaces.