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Education

2012	High school degree in Science First Class Honours.
2012 – 2014	Higher School Preparatory Classes Lycée Louis-le-Grand (Paris).
2014 – 2018	Student at the École Normale Supérieure (Paris) Ranked 7th in the nationwide entrance examination.
2014 – 2015	Bachelor of Mathematics First Class Honours.
2015 – 2017	Master of Mathematics First Class Honours.
2017 – 2018	Bachelor of Computer Science First Class Honours.

Theses and research internships

Early 2015	Undergraduate thesis in Mathematics Subject: Representations modulo p of $GL_n(\mathbb{F}_q)$.
Late 2015	Thesis required to complete the course in Formal Languages Subject: Applications of the Thue-Morse sequence.
Early 2017	Master's internship Adviser: Yuri Tschinkel (New York University). Subjects: Exceptional isogenies between reductions of pairs of elliptic curves; Generalised polynomials and rational fractions.
Mid-2018	Research internship in Computer Science Adviser: Yan Gerard (Université Clermont Auvergne). Subject: The lonely runner conjecture.
Late 2018	Final thesis required by the École Normale Supérieure Subject: Arakelov Geometry.
Late 2018	Research internship in Mathematics Adviser: Jean-Benoît Bost (Université Paris Sud). Subject: Theta invariants and arithmetic surfaces.

2019 – 2025 **Doctorate of Mathematics**
Adviser: Karim Belabas (Université de Bordeaux).

Computer programming

Late 2014 **Course in Programming Languages and Compilers**
I wrote a compiler in OCaml for a subset of the Haskell language, producing MIPS code.

Late 2017 **Course in Digital Systems**
I designed a microprocessor in terms of logic gates, as well as an assembly language for this microprocessor, and I programmed a digital clock in this assembly language.

Early 2018 **Course in Systems and Networks**
I wrote a Unix-type operating system in C for the Intel 8086 microprocessor.

Early 2018 **Course in Semantics and Software Verification**
I wrote a basic static analyser and partially certified it with Coq.

Publications

2023 **Convexity, plurisubharmonicity and the strong maximum modulus principle in Banach spaces**
Confluentes Mathematici 15 (2023) 83-106. [DOI]
Preprints in French and in English:
[hal-03826500](https://hal.archives-ouvertes.fr/hal-03826500), [hal-03826538](https://hal.archives-ouvertes.fr/hal-03826538), [arXiv:2210.14087](https://arxiv.org/abs/2210.14087).

2025 **Actions de groupes arithmétiques : théories de la réduction et algorithmes d'énumération**
Doctoral thesis in four parts, the first of which reproduces the article of 2023. The aim of the thesis is to construct explicit fundamental domains for actions of arithmetic groups, and to algorithmically enumerate the orbits satisfying given conditions.
Manuscript: <https://awilke.perso.math.cnrs.fr/these.pdf>.

Computations

2022 **Primitive quartic number fields of absolute discriminant at most 10^9**
Data: [zenodo.7254825](https://zenodo.org/record/7254825); C code: [hal-03879661](https://hal.archives-ouvertes.fr/hal-03879661).

2025 **Explicit formulas for normalised covariants of binary cubic forms and pairs of ternary quadratic forms with real coefficients**
Data and Magma code: [hal-05404880](https://hal.archives-ouvertes.fr/hal-05404880).

Conferences and talks

Late 2019 **Conference “Zeta functions”**
Centre International de Rencontres Mathématiques (Marseille).

Late 2020	Talk at the Seminar of Algorithmic Number Theory (Bordeaux) Title: Optimal coverings of truncated Siegel sets with Euclidean balls.
Mid-2021	Conference “Explicit Methods in Number Theory” Mathematisches Forschungsinstitut Oberwolfach.
Late 2022	Talk at the Seminar of Geometry (Bordeaux) Title: Kempf-Ness covariant and reduction theory.
Late 2022	Talk at the Seminar of Algorithmic Number Theory (Bordeaux) Title: Enumeration of quartic number fields.
Early 2023	Talk at the conference “Arithmetic Statistics” Centre International de Rencontres Mathématiques (Marseille). Title: Effective enumeration of quartic number fields.
Late 2024	Talk at the conference “Arithmetic groups, hyperbolic manifolds and computation” Institut de mathématiques de Bordeaux. Title: Kempf-Ness covariant and reduction theories for actions of arithmetic groups.

Working groups

2020 – 2021	Working group on class field theory I co-organised a working group whose purpose was to learn part of the material in the book “Algebraic Number Theory” edited by Cassels and Fröhlich. The working group met every week. Here are the titles of the talks that I gave: <ul style="list-style-type: none"> • Extensions of non-Archimedean local fields; • Global fields; • Profinite groups and Galois theory; • Abelian extensions of local fields.
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Teaching experience

2020 – 2021	Teaching assistant for the courses “Coloration mathématique” and “Outils mathématiques pour la biologie” First year undergraduate courses.
2022 – 2023	Teaching assistant for the courses “Algèbre linéaire”, “Mathématiques discrètes” and “Analyse” First year undergraduate courses.
2023 – 2024	Teaching assistant for the courses “Mathématiques générales” and “Outils mathématiques” First year undergraduate courses.

Computer skills

Programming languages:	C, OCaml, Unix shell.
Mathematical software:	PARI/GP, Magma, Octave.