



JOBS

- 2021-... Research fellow in the team *Effective geometry and algebra* at [IRMAR](#)
University of Rennes 1
- 2019-2021 Post-doctorate researcher in the GRACE team at INRIA
INRIA Saclay (Palaiseau)
- 2015-2016 Questioner for oral interrogation in Mathematics ($2 \times 30h$)
Bellevue High School, Toulouse

ACADEMIC BACKGROUND

- 2016-2019 **Doctorate** in information and communication sciences and technologies,
Specialty Mathematics and applications : *Some repercussions of the geometry of
toric surfaces on arithmetic and information theory*
Funded by the [LabeX CIMI](#)
Defended on June 12, 2019 before the jury: Toulouse 3 Paul Sabatier University
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|----------------------------|---------------------------------|-----------------------|
| Mr. Jean-Marc COUVEIGNES | University of Bordeaux | President of the Jury |
| Mr. Peter Beelen | Technical University of Denmark | Reporter |
| Mr. Felipe VOLOCH | University of Canterbury | Reporter |
| Mrs Christine BACHOC | University of Bordeaux | Examiner |
| Mr Christophe Ritzenthaler | University of Rennes | Examiner |
| Mr. Marc Perret | University of Toulouse | Supervisor |
| Mr. Emmanuel Hallouin | University of Toulouse | Supervisor |
- 2015-2016 Master in Mathematics and Applications Toulouse 3 Paul Sabatier University
Internship *Rational point counting of varieties defined on finite fields*
Under the direction of Marc Perret and Emmanuel Hallouin
- 2015 **Agrégation in Mathematics**, option formal calculus (rank: 55th)
- 2013-2014 1st year Master of Mathematics Aix-Marseille University
End-of-year internship *Introduction to translation surfaces* under the supervision of Pierre Arnoux
- 2011-2013 Mathematics License Aix-Marseille University
Internship in L3 *Study of the 2-balance of Arnoux-Rauzy's words* under the supervision of Julien Cassaigne
- 2010-2011 PCSI preparatory class Thiers high school, Marseille

PREPRINTS*

- 11/2022 [Goppa-like AG codes from \$C_{a,b}\$ curves and their behaviour under squaring their dual](#) with S. El Khalfaoui and M. Lhotel
submitted to an international journal

PUBLICATIONS*

- 2022 [Curves on Frobenius classical surfaces in \$\mathbb{P}^3\$ over finite fields](#) avec E. Berardini
Acta Arithmetica 205 (2022), 323-340
- 2022 [Interactive Oracle Proofs of Proximity to Algebraic Geometry Codes](#) avec S. Bordage, M. Lhotel et H. Randriam
Leibniz International Proceedings in Informatics, August 2022
- 2022 [Efficient multivariate low-degree tests via interactive oracle proofs of proximity for polynomial codes](#) with D. Augot and S. Bordage
Accepted under revision in Design, Codes and Cryptography

* The authors are listed in alphabetical order.

- 2021 [Projective Toric Codes](#)
International Journal of Number Theory, 8 July 2021
- 2020 [Weighted Lifted Codes: Local Correctabilities and Application to Robust Private Information Retrieval](#) with J. Lavauzelle
IEEE Transactions on Information Theory, August 31, 2020
- 2020 [Anticanonical codes from del Pezzo surfaces with Picard rank one](#) with R. Blache, A. Couvreur, E. Hallouin, D. Madore, M. Rambaud and H. Randriam
Trans. Bitter. Math. Soc. 373 (2020), 5371-5393
- 2019 [Algebraic Geometric codes on minimal Hirzebruch surfaces](#)
Journal of Algebra Volume 535, 1 October 2019, Pages 556-597

TALKS AND CONFERENCES

International conferences

- 06/2023 *Goppa-like AG codes from $C_{a,b}$ curves and their behaviour under squaring their dual* at [AGC²T 2023](#)
- 02/2023 Plenary talk at [Conference On algebraic varieties over finite fields and Algebraic geometry Codes](#) : An overview of algebraic geometry codes from surfaces
- 03/2022 *Interactive proofs of proximity to Algebraic Geometry codes* at [WCC 2022](#)
- 08/2021 *Projective toric codes* at [SIAM Conference on Applied Algebraic Geometry](#) (online)
- 07/2019 *Algebraic Geometric Codes on Hirzebruch surfaces* at [SIAM Conference on Applied Algebraic Geometry](#) in Bern (Switzerland)
- 06/2019 *Error-correcting codes on weighted projective planes and applications to Private Information Retrieval* at [AGC²T](#) at the CIRM in Marseille

National conferences

- 04/2022 Plenary talk at [C2 days](#): Some interactions between algebraic geometry and coding theory
- 06/2020 *Explicit construction and parameters of projective toric codes* at the [C2 days](#)

Team seminars

- 04/2022 *Number of rational points of curves lying on a space surface over finite fields* for the Number Theory seminar in Toulouse
- 2020-2021 *Interactive proofs of Proximity to Algebraic Geometry codes* in seminars :
 - [Séminaire C2 \[video in french\]](#)
 - [Séminaire Arithmétique et Théorie de l'Information](#) at I2M
 - [CASC](#) of Jean Kuntzmann Laboratory
 - [Séminaire Géométrie et algèbre effectives](#) at IRMAR
- 11/2020 *Interactive proofs of Proximity to Algebraic Geometry codes* Presentation for the start-up [Starkware](#) with S. Bordage
- 07/2019 *Weighted Reed-Muller codes: local decoding properties, applications to Private Information Retrieval and lift* at [Discrete Maths, Codes and Cryptography Seminar](#) in Paris 8
- 04/2018 *Parameters of correction codes on Hirzebruch surfaces* at the seminar EGA at the University of Rennes
- 02/2018 *A bound for the number of \mathbb{F}_q -points on a curve embedded in the biprojective space* at the University of Canterbury (New Zealand)

Workgroups

- 02/2020 *Mini-course: Bridge between geometry and algebra* at [GT of \(post\)-doctoral fellows of the GRACE team](#)
- 01/2020 *Bril-Noether algorithm* to the WG Calculation of Riemann-Roch spaces
- 05/2016 *Quotient of an algebraic variety affine by a finite group* in the WG Theory of invariants of the Picard team at IMT (co-organizer)

ANR annual meetings [Manta](#)

- 2019 *Method for increasing the number of \mathbb{F}_q -points of a curve of a toric surface*
- 2018 *Code parameters on Hirzebruch surfaces*
- 2016 *Minimum distance of codes on surfaces and construction of good families*

IMT student seminar (co-organizer)

- 2019 *Correction codes: for the best and for the PIR*
- 2018 *How and why to compute the number of points of an embedded variety?*
- 2018 *Correction codes on Hirzebruch surfaces*
- 2017 *Introduction to correction codes and link with algebraic geometry*

LABORATORY LIFE

- 2022-... Co-organizer of the team seminar team *Effective geometry and algebra*
- 2021-... Member of the organization comity of the [Crypto seminar](#) of Rennes
- 2021-2024 Member of the ANR project [Barracuda](#)
- 2016-2019 Member of the ANR project [Manta](#)
- 2017-2019 Co-organizer of the IMT inter-team student seminar
- 2017-2018 Head of the “Theory of invariants” working group of the Picard team

INVITATIONS

- 02/2018 One month invitation by Felipe Voloch to the University of Canterbury (New Zealand)

EDUCATION

Teaching missions in the University of Rennes 1 and École Normale Supérieure de Rennes (ENS)

- 2022-2023 Reading groups about Algebra: Groebner basis (14h)
2021-2023 Code-based cryptography in M2 Crptography (8h)

Teaching missions in the computer science department of École Polytechnique

- 2020-2021 Refresher Course in Cybersecurity in M1 (6h)
2019-2020 TP Introduction to computer science in **Java** - 1A of the Engineer Cycle (2 × 20h)
Preparatory introduction to Computer Science in **Python**- Welcome semester (20h)

Teaching assistant at the University of Toulouse Paul Sabatier

- 2018-2019 TP **Python** Discrete Maths Tools in L1 Computer Science (4 × 6h)
TP **Python** Algebra and Analysis in L1 Numerical Sciences (2 × 9h)
TP **Python** of Mathematics in L1 CUPGE (24h)
Refresher L3 Statistics and Business Intelligence (6h)
2016-2018 Mathematics tutorials in L1 Science of Life (3 × 32h)
2016-2017 Lessons and TD Discrete Mathematics in L1 Computer Science (32h)

SCIENTIFIC MEDIATION

- 04/2019 Animation of a workshop to discover Hamming codes
INRIA Science Festival




Member of the Association Maths on stage in 2018/2019

- 04/2019 Creation of a mathematical rally for middle and high school students on the campus of Paul Sabatier University on the application [MathCityMap](#)
03/2019 Animation at the Decazeville Mathematical Games Fair
02/2019 Animation at the festival "Maths in all their states!" »In Castanet-Tolosan
10/2018 Animation for the days "On the track for mathematics"
Henri Desbals Socio-Cultural Center (Toulouse)
07/2018 Animation of a stand at the "Science in the city" Festival in Toulouse

Researcher for workshops Maths.en.Jeans

- 2018-2019 Twinning of Michelet and Stendhal colleges (Toulouse)
2017-2018 Collège l'Impernal (Luzech, Lot)

LANGUAGES

-  *French (mother language)*
 *English (C1)*
 *Spanish (A2)*

PROGRAMMING LANGUAGES

