



## 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
 

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

## PUBLICATIONS\*

### International journals

- 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
- 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

\* The authors are listed in alphabetical order.

## PREPRINTS\*

- 11/2021 [Curves on Frobenius classical surfaces in  \$\mathbb{P}^3\$  over finite fields](#) with E. Berardini  
submitted to an international journal
- 08/2021 [Efficient multivariate low-degree tests via interactive oracle proofs of proximity for polynomial codes](#) with D. Augot and S. Bordage  
submitted to an international conference
- 04/2020 [Interactive Oracle Proofs of Proximity to Algebraic Geometry Codes](#) with S. Bordage, M. Lhotel and Hugues Randriam  
submitted to an international conference

## TALKS AND CONFERENCES

### International conferences

- 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)

- 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

2021-2022 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

