

# Samuel Le Fourn

*PhD in Pure Mathematics*

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## Research interests

- Galois representations and torsion points of abelian varieties.
- Diophantine methods for integral or rational points on (modular) curves or varieties.
- Theta functions and Siegel modular varieties.
- Central values of L-functions of modular forms.

## Current position

Since September 2018 **Postdoctorate "Marie Skłodowska-Curie"**, *University of Warwick*.  
under the direction of Samir Siksek, project n<sup>o</sup> 793646 titled LowDegModCurve

## Poste précédent

Septembre 2014-  
Août 2018 **Agrégé préparateur (AGPR)**, *ENS de Lyon*.  
Teaching assistant also in charge of preparation to the competitive national exam of "agrégation".

## Articles

- A tubular variant of Runge's method in all dimensions, with applications to integral points on Siegel modular varieties, *Algebra & Number Theory*, 2019.
- (avec Filip Najman) Torsion of  $\mathbb{Q}$ -curves over quadratic fields, *Mathematical Research Letters*, accepté.
- Nonvanishing of central values of  $L$ -functions of newforms in  $S_2(\Gamma_0(dp^2))$  twisted by quadratic characters, *Canadian Mathematical Bulletin*, 2017.
- Sur la méthode de Runge et les points entiers de certaines variétés modulaires de Siegel, *Comptes Rendus de l'Académie des Sciences*, 2017.
- Surjectivity of Galois representations associated with quadratic  $\mathbb{Q}$ -curves, *Mathematische Annalen*, 2015.
- Tubular approaches to Baker's method for curves and varieties, arXiv :1812.06306, submitted.
- (avec Netan Dogra et Samir Siksek) Quadratic Chabauty for modular curves and non-vanishing of derivatives of L-functions of modular forms, in preparation.

## Education

- 2011–2015 **PhD student in Number Theory**, *Université de Bordeaux*.  
under the direction of Pierre Parent, obtained in November 2015, with title « Integral and rational points of modular curves and higher-dimensional varieties »
- 2011 **Masters Degree Internship - 3 months**, *University McGill*, Montreal.  
Under the direction of Henri Darmon : "On the surjectivity of Galois representations of  $\mathbb{Q}$ -curves".
- 2007–2011 **Student in Fundamental Mathematics**, *ENS de Lyon*, Lyon.  
Masters Degree in Number Theory obtained in 2011 with highest honours.
- july 2010 **Obtainment of "Agrégation de mathématiques" (ranked second)**.  
This is a French national competitive exam to recruit teachers.
- 2008 **Obtainment of License in Mathematics**, *Université Lyon 1*, Lyon.

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## Teaching Experience

I have 6 years of teaching experience, including 3 years to end of license or master level in mathematics at the ENS de Lyon. For most of the courses and tutorials mentioned below, I autonomously decided the exercises, syllabus and grading (for courses).

- 2014–2018 **« Préparation à l'agrégation »**, *ENS de Lyon*, Lyon.  
Algebra course, and mock written and oral exams for the « agrégation »
- 2014–2018 **First-year of Master of Mathematics**, *ENS de Lyon*, Lyon.  
Tutorials in number theory.
- 2014–2018 **Third-year Mathematics**, *ENS de Lyon*, Lyon.  
Tutorials in first-semester algebra.
- 2013–2014 **First-year Mathematics**, *Université Bordeaux 1*, Bordeaux.  
Fundamentals of logic, set theory and arithmetics.
- 2012–2014 **First-year Biology**, *Université Bordeaux 1*, Bordeaux.  
Matrices, linear systems and basics of analysis.
- 2012–2013 **First-year Mathematics**, *Université Bordeaux 1*, Bordeaux.  
Tutorials in fundamentals of linear algebra and polynomials.
- 2011–2012 **First-year Biology**, *Université Bordeaux 1*, Bordeaux.  
Reminders of high-school fundamentals of mathematics.

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## Other activities and responsibilities

- 2014–2017 **Math $\alpha$ Lyon**, *once a year*.  
Days of dissemination of mathematical knowledge and concepts in elementary or high school
  - 2015–2018 **Membre du conseil de laboratoire**, *UMPA*, ENS de Lyon.  
Representative of the non-permanent members of the laboratory
  - 2014–2018 **Jury for evaluation of internships**, *ENS de Lyon*.  
Huit fois jury de licence, une fois jury de master.
  - 2012–2013 **Secretary of Lambda**, *Université de Bordeaux*.  
Lambda is the association of PhD students in mathematics.
- Refereeing and reviewing.**  
*Algebra and Number Theory, Mathematica Scandinavica, Mathematical Reviews.*

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## Invited talks to seminars or conferences

- february 2019 **Seminar on Number Theory and Algebra**, *University of Zagreb*.
- january 2019 **Conference "Explicit Number Theory"**, *Valparaiso*.
- september 2018 **Conference "Diophantine Approximation and Transcendence"**, *CIRM*, Luminy.
- may 2018 **Conference "Diophantine Geometry"**, *CIRM*, Luminy.
- january 2018 **Conference "Arithmetic geometry in Clermont-Ferrand"**, *Université Blaise Pascal*.
- july 2017 **Conference "Diophantine Approximation and Algebraic Curves"**, *BIRS*, Banff.
- april 2017 **Conference "Barcelona Mathematical Days"**, *Institut d'Estudis Catalans*, Barcelona.
- march 2017 **Séminaire de théorie des nombres**, *Université de Caen Normandie*.
- février 2016 **Séminaire d'arithmétique**, *Institut Fourier*, Grenoble.

- novembre 2015 **Séminaire de théorie des nombres**, *Université de Franche-Comté*, Besançon.
- octobre 2015 **Journée de la fédération Auvergne-Rhône-Alpes**, *Université Blaise Pascal*, Clermont-Ferrand.
- février 2015 **Séminaire des doctorants**, *Université de Bourgogne*, Dijon.
- mai 2014 **Conference "Heights, modularity and transcendence"**, *CIRM*, Luminy.
- octobre 2013 **Conference "Diophantine methods"**, *Université de Franche-Comté*, Besançon.
- octobre 2013 **Conference "Mordell's Conjecture : Faltings and Vojta-Bombieri"**, *Université de Bordeaux*.
- mai 2013 **Conference CEDAR**, *University of Illinois at Chicago*.
- février 2013 **Séminaire de théorie des nombres**, *Université Paris VI*.

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## Skills

### Languages.

French (Mother tongue), English (fluent)

### Programming.

$\LaTeX$ , a bit of Magma, Maple, Scilab and Sage