

Curriculum Vitae

Gautier PONSINET

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1 Contact

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2 Education & Employment

2.1 Employment

- Dec. 2024 – Present **Postdoctoral Fellow**, University of Duisburg-Essen, in the research group of Prof. Massimo Bertolini.
- Mar. 2024 – June 2024 **Invited Researcher**, Institut des Hautes Études Scientifiques, France.
- Mar. 2023 – Feb. 2024 **Postdoctoral Fellow**, University of Heidelberg, Germany, in the research group of Prof. Otmar Venjakob. As part of the DFG Project GAUS (CRC 326) ‘Geometry and Arithmetic of Uniformized Structures’.
- Mar. 2022 – Feb. 2023 **Postdoctoral Fellow**, University of Bordeaux, France, in the research group of Prof. Denis Benois. As part of the GALF Project (ANR-18-CE40-0029 & FNR) ‘Galois representations, automorphic forms and their L -functions’.
- Mar. 2021 – Feb. 2022 **Postdoctoral Fellow**, University of Genoa, Italy, in the research group of Prof. Stefano Vigni. Grant ‘Ing. Giorgio Schirillo’ from the Istituto Nazionale di Alta Matematica Francesco Severi.
- Sept. 2020 – Dec. 2020 **Postdoctoral Fellow**, Centre de Recherches Mathématiques, Montréal, Canada, Special semester ‘Number theory - Cohomology in arithmetic’.
Due to the corona-virus epidemic, I was not able to go to Montréal but I followed and participated to the semester online.
- Sept. 2018 – Dec. 2020 **Postdoctoral Fellow**, Max Planck Institute, Bonn, Germany.

2.2 Education

- 2014–2018 **Ph.D. in Mathematics**, Laval University, Québec, Canada, under the supervision of Prof. Antonio Lei.
‘On the algebraic side of the Iwasawa theory of some non-ordinary Galois representations’
- 2011–2014 **Master of Mathematics**, Université Pierre et Marie Curie, Paris, France.
Master thesis under the supervision of Prof. Olivier Fouquet on the subject of the article ‘Finding large Selmer rank via an arithmetic theory of local constants’ by B. Mazur and K. Rubin, *Annals of Mathematics*, Volume 166 (2007), Issue 2.
- 2011 **Double Bachelor (Licence)** at the Université de Versailles Saint-Quentin-en-Yvelines, Versailles, France:

- Bachelor of Mathematics
- Bachelor of Computer science

3 Research

3.1 Fields of research

Number theory, arithmetic geometry, Iwasawa theory, p -adic Hodge theory, Galois representations, Abelian varieties, modular forms, perfectoid spaces, Fargues–Fontaine curves.

3.2 Articles

3.2.1 In preparation

9. Exponential maps and Iwasawa theory, with Joaquín Rodrigues Jacinto.

3.2.2 Submitted

8. On a characterisation of perfectoid fields by Iwasawa theory, [arXiv:2507.21801](#).
7. Bloch–Kato groups over perfectoid fields and Galois theory of p -adic periods, [arXiv:2412.00227](#).
6. On the Iwasawa invariants of Kato’s zeta elements for modular forms, with Chan-Ho Kim and Jaehoon Lee, [arXiv:1909.01764](#).

3.2.3 Published

5. Universal norms and the Fargues–Fontaine curve, *Mathematische Annalen*, Vol. 392, pp. 2853–2912 (2025) DOI: [10.1007/s00208-025-03131-8](#).
This article has been the subject of the ‘Hauptseminar, p -adic arithmetic geometry’ of the winter semester 2021–2022 of the research group of Prof. Otmar Venjakob in Heidelberg: <https://www.mathi.uni-heidelberg.de/~otmar/lehre/seminare/oberseminarWS21.pdf>.
Videos of talks about it:
<https://youtu.be/eRp8nMLLscA> (1h),
<https://youtu.be/-fAIVQe5jqo> (20min).
4. On Shafarevich–Tate groups and analytic ranks in families of modular forms, II. Coleman families, with Maria Rosaria Pati and Stefano Vigni, *Mathematical Research Letters*, , Vol. 31, No. 3, pp. 861–913 (2024) DOI: [10.4310/MRL.241113043906](#).
3. On the Mordell–Weil ranks of supersingular abelian varieties in cyclotomic extensions, with Antonio Lei, *Proceedings of the American Mathematical Society*, Ser. B, Vol. 7, pp. 1–16 (2020). DOI: [10.1090/bproc/43](#).
2. On the structure of signed Selmer groups, *Mathematische Zeitschrift*, Vol. 294, Issue 3–4, pp. 1635–1658 (2020). DOI: [10.1007/s00209-019-02328-3](#).

1. Functional equations for multi-signed Selmer groups, with Antonio Lei, *Annales mathématiques du Québec*, Vol. 41, Issue 1, pp. 155–167(2017). DOI: 10.1007/s40316-016-0063-9.

4 Invited talks, lectures, and visits

4.1 Conferences and Workshops

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| May 2026 | Workshop, Perfection in Iwasawa theory, CIRM, Marseille, France.
https://conferences.cirm-math.fr/3419.html . |
| Dec. 2025 | 3rd Greek Number Theory Meeting, University of Patras, Greece. |
| Jan. 2025 | Young researchers in Galois Representations and related topics, University of Genoa, Italy. |
| Sep. 2024 | Algebraic Number Theory, A workshop for young researchers, Universität der Bundeswehr München, Allemagne. |
| Dec. 2023 | 1st Greek Number Theory Meeting, National and Kapodistrian University of Athens, Greece. |
| Nov. 2023 | ITCAG Workshop: Iwasawa theory and cohomology of arithmetic groups, Bielefeld University, Germany. |
| Mar. 2021 | Number theory online, Italy, organised by A. Bandini, A. Gambini and A. Zaccagnini, online. |
| Sept. 2020 | Maine-Québec number theory conference, Laval University, Québec, Canada, online.
Video available on YouTube: https://youtu.be/-fAIVQe5jqo |
| July 2018 | Canadian Number Theory Association Conference, Laval University, Québec, Canada. |
| Oct. 2017 | Maine-Québec number theory conference, University of Maine, Orono, USA. |
| Dec. 2015 | Canadian Mathematical Society Winter meeting, Montréal, Canada. |
| Oct. 2015 | Maine-Québec number theory conference, University of Maine, Orono, USA. |

4.2 Seminars

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| Mar. 2026 | Séminaire de Théorie des nombres, XLIM, Université de Limoges, France. |
| Apr. 2025 | RTG Seminar, Universität Duisburg–Essen, Germany. |

- Apr. 2025 Séminaire Algèbre et Théorie des Nombres, LMB, Besançon, France.
- Mar. 2025 Séminaire d'arithmétique à Lyon, UMPA, France.
- Feb. 2025 Séminaire de l'équipe Arithmétique et Géométrie Algébrique, Université Sorbonne Paris Nord, France.
- July 2024 Geometry and Arithmetic of Uniformized Structures Seminar, Universität Heidelberg, Germany.
- Apr. 2024 Séminaire algèbre et géométrie, Université de Versailles Saint-Quentin-en-Yvelines, Versailles, France.
- Apr. 2024 Séminaire de géométrie arithmétique, IRMAR, Rennes, France.
- Mar. 2024 Number theory Seminar, Université Caen Normandie, France.
- Jan. 2024 Representations of Reductive Groups Seminar, Aix-Marseille Université, France.
- Dec. 2022 Number theory seminar, Université de Clermont-Ferrand, France.
- Dec. 2022 Geometry and Arithmetic of Uniformized Structures Seminar, Universität Heidelberg, Germany.
- Oct. 2022 Number theory seminar, Université de Bordeaux, France.
- Feb. 2022 Webinar in Number Theory France-South Korea, organised by Profs. YoungJu Choie (POSTECH), Bo-Hae Im (KAIST), Laurent Berger (ENS Lyon), online.
- Feb. 2021 Number theory seminar, Université de Bordeaux, France, online.
- Jan. 2021 Number theory seminar, Arizona State University, USA, online.
- Dec. 2020 Oberseminar Arithmetische und Algebraische Geometrie, Ludwig-Maximilians-Universität München, Munich, Germany, organised by Profs. W. Bley, C. Greither, C. Liedtke and A. Rosenschon, online.
- Dec. 2020 Seminar on Algebra, Geometry and Physics, Max Planck Institute, Bonn, Germany, organised by Profs. Yuri Manin and Gaetan Borot, online.
- Oct. 2020 Luxembourg Number Theory Seminar, Université du Luxembourg, online.
- June 2020 CRM-CICMA Québec-Vermont Number Theory Seminar, Montréal, Canada, online.
Video available on YouTube: <https://youtu.be/eRp8nMLLsCA>

- Jan. 2020 Symmetry, Geometry, and Arithmetic Seminar, Universität Heidelberg, Germany.
- Dec. 2019 Number Theory Seminar, University of Copenhagen, Denmark.
- Oct. 2019 Algebra and Number Theory Seminar, University College Dublin, Ireland.
- Nov. 2018 Seminar on Algebra, Geometry and Physics, Max Planck Institute, Bonn, Germany, organised by Prof. Yuri Manin.

4.3 Lectures

- Dec. 2024–Jan. 2025 Mini Lecture Series (4x1h30) ‘Bloch–Kato groups and perfectoid fields’, University of Duisburg–Essen, Essen, Germany.
- Sept. 2019 Mini Lecture Series (4h) ‘Universal norms and control theorems in Iwasawa theory’, Korea Institute for Advanced Studies, Seoul, South Korea.

4.4 Invited academic visits

- Mar. 2026 Research in Residence, CIRM, Marseille, France, invited by Prof. Joaquín Rodrigues Jacinto (16–27 March).
<https://conferences.cirm-math.fr/3533.html>
- Oct. 2019 University College Dublin, Ireland, invited by Prof. Kâzım Büyükboduk (1 week).
- Sept. 2019 Korea Institute for Advanced Studies, Seoul, South Korea, invited by Chan-Ho Kim (12 days).

5 Teaching

- Sum. Sem. 2026 Modular forms II, in charge of the lectures and the exercises sessions, Universität Duisburg–Essen, Germany. An introduction to automorphic forms and automorphic representations.
- Sum. Sem. 2026 In charge of the seminar of number theory for students, subject: Iwasawa theory of cyclotomic fields, Universität Duisburg–Essen, Germany.
- Win. Sem. 2025/2026 Modular forms I, in charge of the lectures and the exercises sessions, Universität Duisburg–Essen, Germany. An introduction to modular forms.
- Win. Sem. 2025/2026 In charge of the seminar of number theory for students, subject: elliptic curves, Universität Duisburg–Essen, Germany.

Sum. Sem. 2025	Modular forms II, in charge of the lectures and the exercises sessions, Universität Duisburg–Essen, Germany. An introduction to automorphic forms and automorphic representations.
Sum. Sem. 2025	In charge of the seminar of number theory for students, subject: modular forms, Universität Duisburg–Essen, Germany.
2016–2017	Advanced linear algebra, teaching assistant in charge of the exercises sessions, Laval University, Québec, Canada.
2016–2017	Introduction to linear algebra, teaching assistant in charge of the exercises sessions, Laval University, Québec, Canada.
2015–2016	Introduction to linear algebra, teaching assistant in charge of the exercises sessions, Laval University, Québec, Canada.
2014–2015	Algebra II, teaching assistant in charge of the exercises sessions, Laval University, Québec, Canada.
2014–2018	Centre de dépannage et d'apprentissage en mathématiques et en statistiques, Université Laval, Québec, Canada. Help Center where Bachelor students come to find help to solve their problems from any of their mathematics courses.

6 Other information

6.1 Languages

- French (mother tongue).
- English (fluent).
- German (beginner).
- Greek (beginner).

6.2 Computer skills

- Linux Operating System.
- Git, SSH.
- HTML, CSS, PHP, SQL.
- Programming language C.
- LaTeX.