

Riccardo Brasca

Contact Information

- Institut de Mathématiques de Jussieu-Paris Rive Gauche
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Work Experience

Maître de conférences (associate professor)

September 2013 - present

Université Paris Cité

Institut de Mathématiques de Jussieu-Paris Rive Gauche

Post-Doc

October 2012 - August 2013

École Normale Supérieure de Lyon

Post-Doc

April 2012 - September 2012

Max Planck Institute for Mathematics, Bonn

Publications and preprints

- *Fermat's Last Theorem for regular primes in Lean*, 2022. Work in progress. Joint with the mathlib community.
- The *Liquid Tensor Experiment*, 2022. Joint with the mathlib community.
- p -adic powers of the Gauss–Manin connection for Siegel modular forms. Joint work with [Giovanni Rosso](#). In preparation.
- p -adic families of modular forms for Hodge type Shimura varieties. Submitted for publication.
- Overconvergent Eichler–Shimura isomorphisms for certain unitary groups. Joint work with [Daniel Barrera Salazar](#). In preparation.
- Hida theory over some unitary Shimura varieties without ordinary locus. Joint work with [Giovanni Rosso](#). [arXiv:1711.05546](https://arxiv.org/abs/1711.05546). *Amer. J. Math.* 143 (2021), no. 3, 715–751.
- Eigenvarieties for non-cuspidal modular forms over certain PEL Shimura varieties. Joint work with [Giovanni Rosso](#). [arXiv:1605.05065](https://arxiv.org/abs/1605.05065). Submitted for publication.
- An Introduction to Perfectoid Spaces. Joint work with [Fabrizio Andreatta](#), [Olivier Brinon](#), [Bruno Chiarellotto](#), [Nicola Mazzari](#), Simone Panozzo, and [Marco Seveso](#). *Panorama et Synthèses*, no. 54, 2019.
- Eigenvarieties for cuspforms over PEL type Shimura varieties with dense ordinary locus. *Canadian Journal of Mathematics* 68 (2016), no.6, 1227–1256. doi.org/10.4153/CJM-2015-

052-2.

- Quaternionic modular forms of any weight. *Int. J. Number Theory* 10 (2014), no. 31, 31-53. doi:10.1142/S1793042113500796.
 - p -adic modular forms of non-integral weight over Shimura curves. *Compos. Math.* 149 (2012), no. 1, 32–62. doi:10.1112/S0010437X12000449.
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Scientific activities

- Maintainer of *Mathlib*
 - Organizer of the *Lean for the Curious Mathematician 2024* conference, CIRM March 2024
 - Organizer of the *Atelier Lean* of the *seventh mini symposium of the Roman Number Theory Association*, Università Roma Tre March 2023
 - Member of the ANR project COLOSS 2020 - 2024
 - Member of the ANR project PerCoLaTor 2015 - 2019
 - Organizer of the seminar *Groupes Réductifs et Formes Automorphes*, Institute de Mathématiques de Jussieu-Paris Rive Gauche September 2014 - June 2016
 - Organizer of the conference *Solstice 2014*, Université Paris 7 June 2014
 - Referee for the *Canadian Journal of Mathematics*, *International Journal of Number Theory*, and *Algebra & Number Theory*
 - Reviewer for MathSciNet
 - Organizer of the workshop *Almost Xmas seminar*, Università degli Studi di Milano, Milan December 2011
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Seminars and Talks

- An introduction to proof assistants: a mini course about mathematical formalization
Universidad de Santiago de Chile November 2022
- Maintenance of Lean's mathlib and the Liquid tensor experiment September 2022
EuroProofNet Workshop on the development, maintenance, refactoring and search of large libraries of proofs
Tbilisi State University - Tbilisi
- Fermat's Last Theorem for regular primes in Lean May 2022
Conference *Lean in Lyon*
Institut Camille Jordan - Lyon
- How to explain advanced mathematics to a computer December 2021
Workshop *Luxembourg Number Theory Day 2021*
University of Luxembourg
- p -adic families of modular forms over Shimura varieties of Hodge type January 2020
Workshop *Jornada de Teoría de Números y Representaciones*
Universidad de Santiago de Chile
- p -adic families of modular forms over Shimura varieties of Hodge type May 2019
Conference *p-adic modular forms and p-adic L-functions*
Fondazione Alessandro Volta, Como - Italy
- Hida theory over some Shimura varieties without ordinary locus April 2019
Fourth one-day workshop in Cardedeu: p-adic arithmetic geometry
Universitat de Barcelona - Spain
- Mini-course Katz p -adic modular forms September 2017
Summer School on Modular Forms
Università di Padova - Italy

- Eigenvarieties for non-cuspidal Siegel modular forms September 2017
Summer School on Modular Forms
 Università di Padova - Italy
- Eigenvarieties for non-cuspidal Siegel modular forms February 2017
Conference p -adic methods for Galois representations and modular forms
 Universitat de Barcelona - Spain
- Hida theory over some Shimura varieties without ordinary locus May 2016
Number Theory Seminar
 Cambridge University - UK
- Hida theory over some Shimura varieties without ordinary locus April 2016
Arithmetic and Algebraic Geometry Seminar
 University of Amsterdam - The Netherlands
- Eigenvarieties for non-cuspidal Siegel modular forms March 2016
Québec-Vermont Number Theory Seminar
 McGill University - Montreal, Canada
- Variété de Hecke pour formes de Siegel non cuspidales October 2015
Séminaire d'Arithmétique
 Université de Lille - France
- Famiglia p -adica di forme modulari non cuspidali September 2015
Conference of the UMI, the Italian Mathematical Society
 University of Siena - Italy
- Almost mathematics September 2015
Summer school Perfectoid spaces
 Organized by the University of Padova - Brixen, Italy
- Eigenvarieties for non-cuspidal Siegel modular forms June 2015
Conference Journées arithmétiques à Lyon
 ENS-Lyon - France
- About the notion of p -adic family of modular forms April 2015
Seminar Number Theory and Algebraic Geometry
 KU Leuven - Belgium
- Hida theory over some Shimura varieties without ordinary locus March 2015
Number Theory Seminar at Johns Hopkins University
 Johns Hopkins University - Baltimore, USA
- Hida theory over some Shimura varieties without ordinary locus December 2014
Seminar Automorphic Forms and Arithmetic
 Columbia University - New York City, USA
- Théorie de Hida pour certaines variétés de Shimura sans lieu ordinaire November 2014
Séminaire de théorie des nombres de l'IMJ-PRG
 Institut de Mathématiques de Jussieu-Paris Rive Gauche - France
- Hida theory over Shimura varieties without ordinary locus October 2014
Conference p -adic methods in number theory
 Università degli Studi di Milano - Italy
- Families of overconvergent modular forms over Shimura varieties without ordinary locus June 2014
Conference p -adic aspects of modular forms
 IISER - Pune, India
- Familles des formes modulaires p -adiques et variétés de Hecke January 2014
Séminaire MathJeunes

- ENS Ulm - Paris, France
- Autour d'une construction géométrique des variétés de Hecke October 2013
Séminaire groupes réductifs et formes automorphes
- Institut de Mathématiques de Jussieu-Paris Rive Gauche - France
- About a geometric construction of eigenvarieties for Shimura variety of PEL type June 2013
Summer number theory in Milan
- Università degli Studi di Milano - Italy
- Variétés de Hecke pour certaines formes modulaires de type PEL January 2013
Séminaire de théorie des nombres de Caen
- Université de Caen Basse-Normandie - France
- Hecke varieties for Shimura varieties with ordinary locus January 2013
Conference *Variétés de Shimura et formes modulaires p -adiques*
- Université Paris 13 - France
- Strict \mathcal{O} -modules and p -adic modular forms December 2012
Oberseminar
- University of Zürich - Switzerland
- Strict \mathcal{O} -modules and p -adic modular forms November 2012
Séminaire de théorie des nombres
- Institut de Mathématiques de Bordeaux - France
- p -adic modular forms of non-integral weight over Shimura curves May 2012
London number theory seminar
- Kings College - London, UK
- p -adic modular forms of non-integral weight over Shimura curves May 2012
Oberseminar
- Max Planck Institute for Mathematics - Bonn, Germany
- p -adic modular forms of non-integral weight May 2012
Workshop *Algebraic Geometry and related topics*
- Centro di Ricerca Matematica Ennio De Giorgi - Pisa, Italy
- Perfectoid fields and algebras December 2011
Almost Xmas Seminar
- Università degli Studi di Milano - Italy
- p -adic modular forms of non-integral weight December 2011
Christmas Seminar
- Università degli Studi di Milano - Italy
- p -adic modular forms of non-integral weight over Shimura curves June 2010
Seminario di teoria dei numeri
- Università degli Studi di Milano - Italy

Education

Ph.D. in Mathematics March 2012
 Università degli Studi di Milano
 Thesis: p -adic families of modular forms over Shimura curves
 Advisor: [Fabrizio Andreatta](#)

M.Sc. in Mathematics July 2008
 Università degli Studi di Milano

Thesis: Galois cohomology via almost-étale extensions

Advisor: [Fabrizio Andreatta](#)

B.Sc. in Mathematics

Università degli Studi di Milano

Spazi di Banach e proprietà di Radon-Nikodym

Advisor: [Clemente Zanco](#)

July 2006

Teaching Experience

Université Paris Cité

- Teaching various courses as maître de conférences

September 2013 - present

Università degli Studi di Milano, Italy

- Teaching assistant, Calculus III course
- Teaching assistant, Algebra II course

November 2008 - February 2009

March 2011 - July 2011