

Riccardo Brasca

Contact Information

- Institut de Mathématiques de Jussieu-Paris Rive Gauche
Université Paris Cité
Bâtiment Sophie Germain
75205 Paris Cedex 13
France
 - Office: 605
 - Email: riccardo.brasca@gmail.com
 - Website: <https://webusers.imj-prg.fr/~riccardo.brasca/>
 - Phone (+33) 01 57 27 93 02
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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](#). *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](#). 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](#).

Scientific activities

- Maintainer of [Mathlib](#) 2022 - present
- 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

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

- Famiglie p -adiche 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

Conference *p-adic aspects of modular forms* June 2014

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 O -modules and p -adic modular forms December 2012
Oberseminar
 University of Zürich - Switzerland
- Strict 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

July 2006

Università degli Studi di Milano

Spazi di Banach e proprietà di Radon-Nikodym

Advisor: [Clemente Zanco](#)

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