

Riccardo Brasca

Contact Information

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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
- 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

- 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
Conference *p-adic methods for Galois representations and modular forms*
Universitat de Barcelona - Spain
 - Hida theory over some Shimura varieties without ordinary locus
Number Theory Seminar
Cambridge University - UK
 - Hida theory over some Shimura varieties without ordinary locus
Arithmetic and Algebraic Geometry Seminar
University of Amsterdam - The Netherlands
 - Eigenvarieties for non-cuspidal Siegel modular forms
Québec-Vermont Number Theory Seminar
McGill University - Montreal, Canada
 - Variété de Hecke pour formes de Siegel non cuspidales
Séminaire d'Arithmétique
Université de Lille - France
 - Famiglie p -adiche di forme modulari non cuspidali
Conference of the UMI, the Italian Mathematical Society
University of Siena - Italy
 - Almost mathematics
Summer school *Perfectoid spaces*
Organized by the University of Padova - Brixen, Italy
 - Eigenvarieties for non-cuspidal Siegel modular forms
Conference *Journées arithmétiques à Lyon*
ENS-Lyon - France
 - About the notion of p -adic family of modular forms
Seminar *Number Theory and Algebraic Geometry*
KU Leuven - Belgium
 - Hida theory over some Shimura varieties without ordinary locus
Number Theory Seminar at Johns Hopkins University
Johns Hopkins University - Baltimore, USA
 - Hida theory over some Shimura varieties without ordinary locus
Seminar *Automorphic Forms and Arithmetic*
Columbia University - New York City, USA
 - Théorie de Hida pour certaines variétés de Shimura sans lieu ordinaire
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
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*
IISER - Pune, India
 - Familles des formes modulaires p -adiques et variétés de Hecke
Séminaire MathJeunes
ENS Ulm - Paris, France
 - Autour d'une construction géométrique des variétés de Hecke
Séminaire groupes réductifs et formes automorphes

February 2017

May 2016

April 2016

March 2016

October 2015

September 2015

September 2015

June 2015

April 2015

March 2015

December 2014

November 2014

October 2014

June 2014

January 2014

October 2013

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

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