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. *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 Synthéses, 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
- 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   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'Arithmetique

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-́etale extensions

Advisor: Fabrizio Andreatta

B.Sc. in Mathematics   July 2006

Università degli Studi di Milano

Spazi di Banach e propriet`a 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   November 2008 - February 2009
- Teaching assistant, Algebra II course   March 2011 - July 2011