

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. 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](https://doi.org/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](https://doi.org/10.1112/S0010437X12000449).
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Scientific activities

- 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

- 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 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 <i>Séminaire de théorie des nombres de Caen</i>	January 2013
Université de Caen Basse-Normandie - France	
• Hecke varieties for Shimura varieties with ordinary locus Conference <i>Variétés de Shimura et formes modulaires p-adiques</i>	January 2013
Université Paris 13 - France	
• Strict \mathcal{O} -modules and p -adic modular forms <i>Oberseminar</i>	December 2012
University of Zürich - Switzerland	
• Strict \mathcal{O} -modules and p -adic modular forms <i>Séminaire de théorie des nombres</i>	November 2012
Institut de Mathématiques de Bordeaux - France	
• p -adic modular forms of non-integral weight over Shimura curves <i>London number theory seminar</i>	May 2012
Kings College - London, UK	
• p -adic modular forms of non-integral weight over Shimura curves <i>Oberseminar</i>	May 2012
Max Planck Institute for Mathematics - Bonn, Germany	
• p -adic modular forms of non-integral weight Workshop <i>Algebraic Geometry and related topics</i>	May 2012
Centro di Ricerca Matematica Ennio De Giorgi - Pisa, Italy	
• Perfectoid fields and algebras <i>Almost Xmas Seminar</i>	December 2011
Università degli Studi di Milano - Italy	
• p -adic modular forms of non-integral weight <i>Christmas Seminar</i>	December 2011
Università degli Studi di Milano - Italy	
• p -adic modular forms of non-integral weight over Shimura curves <i>Seminario di teoria dei numeri</i>	June 2010
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	

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