Maria Rosaria Pati
mariarosariapati@gmail.com

Personal data

Name	Maria Rosaria
Surname	Pati
Date of birth	November 24, 1987
Place of birth	Cosenza, Italy
Citizenship	Italian

Current position

01/11/2024 - present: Department of Mathematics, University of Genova. Ricercatore in tenure track.

Postdoctoral positions

01/10/2024 - 31/10/2024 Laboratoire de Mathématiques Nicolas Oresme, University of Caen Normandy, CNRS researcher.

01/11/2022 - 30/09/2024 Laboratoire de Mathématiques Nicolas Oresme, University of Caen Normandy, project: *p-adic Kudla program in higher dimension*, funded by KUPSUP RIN Emergent 2022 Region Normandie, holder: MARC-HUBERT NICOLE.

01/02/2022 - 31/10/2022 Department of Mathematics, University of Padova.

01/01/2021 - 31/12/2021 Department of Mathematics, University of Genova.

01/09/2020 - 28/02/2021 Centre de Recherches Mathématiques, University of Montréal, thematic semester: *Number Theory - Cohomology in Arithmetic*.

01/01/2020 - 31/07/2020 Laboratoire Paul Painlevé, University of Lille.

01/01/2019 - 31/12/2019 Department of Mathematics, University of Padova, project: *p-adic L-functions and generalized Heegner cycles*.

01/01/2017 - 31/12/2018 Department of Mathematics, University of Padova, project: *Anticyclotomic Iwasawa Main Conjecture at ramified primes*.

Education

Ph.D. in Mathematics, University of Pisa, Italy (2012 - 2016).
Thesis: *Extensions of p-power degree of a p-adic field*
Advisor: Prof. Roberto Dvornicich.

Laurea Magistrale in Mathematics, University of Calabria, Italy (2009 - 2011).
Thesis: *Coomologia di campi di numeri*.
Advisor: Prof. Andrea Bandini.
Mark: 110/110 with honour.

Laurea in Mathematics, University of Calabria, Italy (2006 - 2009).
Thesis: *Il Teorema di Mordell-Weil*.
Advisor: Prof. Andrea Bandini.
Mark: 110/110 with honour.

Fields of Interest

Number Theory, Arithmetic Geometry, Rigid Geometry.
I work on the arithmetic of elliptic curves and modular forms, more precisely on the relations between p-adic L-functions and Heegner cycles for modular forms.

Publications and Preprints

1. M. R. Pati, *Extensions of degree p^ℓ of a p-adic field*, Annali di Matematica Pura ed Applicata (2017), vol. 196, pp. 457-477

2. M. R. Pati, *Extensions of degree p^4 of a p-adic field*, Annales mathématiques du Québec (2018), vol. 42, pp. 107-125.

3. M. Longo and M. R. Pati, *Exceptional zero formulae for anticyclotomic p-adic L-functions of elliptic curves in the ramified case*, Journal of Number Theory (2018), vol. 190, pp. 187-211.

4. M. Longo and M. R. Pati, *Generalized Heegner cycles on Mumford curves*, Mathematische Zeitschrift (2021), vol. 297, pp. 483-515.

5. L. Gehrmann and M. R. Pati, *$\mathcal{L}$-invariants for cohomological representations of PGL_2 over arbitrary number fields*, Forum of Mathematics Sigma. (2024), vol. 12, Paper No. e71, 27.

6. M. R. Pati, G. Ponsinet and S. Vigni, *On Shafarevich-Tate groups and analytic ranks in families of modular forms, II. Coleman families*, Mathematical Research Letters. (2024), vol. 31, pp. 861-913.

7. M. R. Pati, *On the anticyclotomic Iwasawa Main Conjecture for modular forms in a quaternionic setting*, Forum Mathematicum. (2025), vol. 37, pp. 225-245.

8. M. Longo, M. R. Pati and S. Vigni, *Kolyvagin's conjecture for modular forms*, submitted.

9. M. Longo, M. R. Pati and S. Vigni, *Perrin-Riou's main conjecture for modular forms*, in preparation.

Invited talks

September 10-12, 2025, University of Bremen, Germany: TBA;

July 28-30, 2025, University of Regensburg, Germany: Minicourse *Iwasawa Theory: from the foundations to some recent developments* at the conference "Regensburg GAP Days";

June 18-20, 2025, Université de Caen Normandie, France: *Perrin-Riou's main conjecture for modular forms* at the "Rencontres Arithmétiques de Caen: aspects p-adiques et modulo p";

January 20-23, 2025, Università di Genova: *Perrin-Riou's main conjecture for modular forms* at the conference "Young researchers in Galois representations";

July 25-26, 2024, Università di Palermo: *Kolyvagin's conjecture and Perrin-Riou's main conjecture for modular forms, part II* at the "2nd AMS-UMI International Joint Meeting";

June 12, 2024, Università della Calabria: *On the anticyclotomic Iwasawa Main Conjecture for modular forms in a quaternionic setting*;

September 5, 2023, Università di Pisa: *On the anticyclotomic Iwasawa Main Conjecture for modular forms in a quaternionic setting* at the "XXII Congresso dell'Unione Matematica Italiana";

February 24, 2023, Laboratoire de Mathématiques Nicolas Oresme, Université de Caen Normandie, France: *On the anticyclotomic Iwasawa Main Conjecture for modular forms*;

October 17, 2022, University of Warwick, UK: *$\mathcal{L}$-invariamts for cohomological representations of* PGL_2 *over an arbitrary number field*;

September 9, 2022, University of Duisburg-Essen, Germany: *On Shafarevich-Tate groups and analytic ranks in Coleman families* at the "School on Arithmetic Geometry on the occasion of Massimo Bertolini's 60th birthday";

February 18, 2021, Online format: *On the $\mathcal{L}$-invariant for Hilbert modular forms* at the conference "Number Theory Online";

September 7, 2019, Università di Pavia: *Cicli di Heegner generalizzati e derivate di funzioni L p-adiche* at the "XXI Congresso dell'Unione Matematica Italiana";

April 11, 2019, Università di Genova: *Generalized Heegner cycles and derivatives of p-adic L-functions*;

November 13, 2018, Laboratoire de Mathématiques de Besançon, France: *Generalized Heegner cycles and derivatives of p-adic L-functions* at the conference "Arithmetic and L-functions";

December 12, 2017, CIB - EPF Lausanne, Switzerland: *Exceptional zero formulae for anti-cyclotomic p-adic L-functions of elliptic curves in the ramified case* at the conference "Recent Developments on the Arithmetic of Special Values of L-functions";

March 23, 2017, Università di Parma: *Anticyclotomic p-adic L-functions of modular elliptic curves*;

September 27 and 29, 2016, Università di Padova: *p-adic L-functions, following Bertolini-Darmon-Iovita-Spiess construction*;

November 19, 2015, Universidad Complutense de Madrid: *Extensions of degree p^ℓ of a p-adic field*.

Organization of conferences and schools

Arithmetic Theta Series and p-adic Modular Forms, June 3-7, 2024, Cetraro (CS), with J.H. Bruinier, D. Disegni, M.-H. Nicole.

Research stays

February 26 - March 23, 2024, Università di Genova:
Visiting for scientific collaborations and for giving the PhD course *Introduction to Hida theory*.

September 24 - October 31, 2016, Università di Padova:
I gave two talks on the construction of the anticyclotomic p-adic L-function attached to a modular elliptic curve and an imaginary quadratic field K and the related questions about the existence of exceptional zeroes. Both are given following the work of Bertolini, Darmon, Iovita, Spiess. I continued the research on these topics, trying to generalize to the case in which p is ramified in K.

January 25 - February 28, 2016, Concordia University (Montréal), supervisor Adrian Iovita:
I attended the course "Complex and p-adic Analytic Number Theory" by Adrian Iovita and I started the study of p-adic L-functions attached to modular elliptic curves. I also studied the Schlessinger's paper *Functors of Artin rings* in view to the application to Mazur's deformation theory of Galois representations.
I regularly attended the QVNTS, Québec-Vermount Number Theory Seminar, a bi-weekly seminar organized by Darmon, Goren, Iovita and others.

Teaching Positions

2024/2025

Geometria, Laurea in Ingegneria Navale

Algebra Lineare e Geometria Analitica, Laurea in Fisica

Elementi di Matematica 2, Laurea in Chimica e Tecnologie Chimiche

Introduction to Hida theory, PhD course, Università di Genova. 8h, 2023/2024.

Teaching assistance at *Elliptic Curves Graduate School*, Baskerville Hall, Wales (UK), August 8-12, 2022.

Basics on Hida Theory, PhD course, Università di Padova. 8h in collaboration with L. Dall'Ava, 2021/2022.

Pre-course in Mathematics, Laurea in Scienze Statistiche, Università di Padova, 2018/2019.

Adjunct Professor for the course *Fondamenti di Algebra Lineare e Geometria*, Laurea in Ingegneria Civile and Laurea in Ingegneria per l'Ambiente e il Territorio, Università di Padova, 2017/2018.

Adjunct Professor for the course *Fondamenti di Algebra Lineare e Geometria*, Laurea in Ingegneria Civile and Laurea in Ingegneria per l'Ambiente e il Territorio, Università di Padova, 2016/2017.

Tutor in the course *Informatica Teorica*, Laurea in Mathematics, Università della Calabria, 2012/2013.

Tutor in the course *Geometria e Algebra Lineare*, Laurea in Mathematics, Università della Calabria, 2009/2010.

Other

Abilitazione all'insegnamento nella scuola secondaria di II grado (TFA), Università della Calabria, July 24, 2013. Mark: 100/100.

Member of the National Group for Algebraic and Geometric Structures, and their Applications (GNSAGA-INDAM).

Last updated: September 4, 2025