

Davide Lombardo

Curriculum Vitae

Percorso accademico

- 12/2022–oggi **Professore associato**, *Università di Pisa*.
- 12/2019–12/2022 **Ricercatore a tempo determinato (contratto "Senior")**, *Università di Pisa*.
- 06/2017–12/2019 **Ricercatore a tempo determinato (contratto "Junior")**, *Università di Pisa*.
- 10/2016–04/2017 **Post-doc**, *Leibniz Universität (Hannover)*, sotto la supervisione del Prof. Ulrich Derenthal.
- 09/2016 **Riemann Fellow**, *Riemann Center for Geometry and Physics (Hannover)*.

Percorso di studi

- 10/12/2015 **Discussione tesi di dottorato**. Tesi preparata sotto la direzione di Nicolas Ratazzi, intitolata "Représentations galoisiennes et groupe de Mumford-Tate associé à une variété abélienne" ("Rappresentazioni di Galois e gruppo di Mumford-Tate associato ad una varietà abeliana").
Commissione: Daniel Bertrand, Anna Cadoret, Guy Henniart, Pierre Parent, Nicolas Ratazzi, Jean-Pierre Wintenberger (referee). Referee esterno: Kenneth A. Ribet.
- 10/2013–09/2016 **Dottorato**, *Université Paris-Sud*, France, frequentato grazie ad una borsa di studio su base di merito della Fondation Mathématique Jacques Hadamard.
- 10/2012–07/2013 **Master 2 "Arithmetic and Algebraic Geometry"**, *Université Paris-Sud (France)*, frequentato grazie ad una borsa di studio "Advanced Master" della Fondation Mathématique Jacques Hadamard.
- 10/2008–07/2013 **Corso Ordinario – Classe di Scienze (Matematica)**, *Scuola Normale Superiore*, Pisa, votazione finale 70/70.
- 09/2011–07/2013 **Laurea Magistrale in Matematica**, *Università di Pisa*, votazione finale 110 e lode.
- 09/2008–06/2011 **Laurea Triennale in Matematica**, *Università di Pisa*, votazione finale 110 e lode.

Conferenze (relatore invitato)

- 09/2025 **Arithmétique en Plat Pays**, *Leuven*.
- 07/2025 **Workshop on Rational Points**, *Schney*.
- 06/2025 **Arithmetic, Geometry, Cryptography and Coding Theory**, *CIRM Marseille*.
- 09/2024 **Eighth Number Theory Meeting**, *Politecnico di Torino*.
- 06/2024 **Curves, Abelian Varieties and Related Topics**, *Universitat de Barcelona*.
- 06/2024 **Regulators V**, *Università di Pisa*.
- 04/2024 **Eighth Mini Symposium of the Roman Number Theory Association**, *Università Roma Tre*.
- 09/2023 **Rational Points on Modular Curves**, *ICTS Bangalore*.
- 09/2023 **Italian Mathematical Union quadriennial meeting**, *Pisa (semi-plenary speaker)*.
- 06/2023 **Representation theory XVIII**, *Dubrovnik*.
- 04/2023 **British Mathematical Colloquium 2023**, *University of Bath*.
- 09/2022 **Diophantine Geometry and L-functions: Hindry 65**, *Institut de Mathématiques de Bordeaux*.
- 06/2021 **Arithmetic, Geometry, Cryptography and Coding Theory**, *CIRM Marseille*.
- 06/2020 **Workshop on Arithmetic Geometry, Number Theory, and Computation**, *ICERM, Brown University*.
- 12/2019 **Second Fall Number Theory Workshop**, *Barcelona University*.
- 06/2019 **Arithmetic of low-dimensional abelian varieties**, *ICERM, Brown University*.
- 05/2018 **Géométrie diophantienne**, *CIRM Marseille*.
- 07/2017 **Abelian Varieties & Galois Actions**, *Poznań*.
- 11/2014 **Workshop on Galois representations**, *University of Luxembourg*.
- 05/2014 **Hauteurs, modularité, transcendance**, *CIRM Marseille*.

Conferenze e summer school (organizzatore)

- 09/2018 UMI-SIMAI-PTM joint meeting, Wrocław (sessione di geometria aritmetica)
- 09/2024 MINT – a Modern Introduction to Number Theory (summer school), Pisa
- 09/2025 Algebraic and geometric methods for Diophantine problems, Pisa
- 12/2025 December workshop in Number Theory, Pisa

Pubblicazioni

- 2015 Bounds for Serre's open image theorem for elliptic curves over number fields (*Algebra & Number Theory* 9-10 (2015), 2347–2395. DOI 10.2140/ant.2015.9.2347)
- 2016 On the ℓ -adic Galois representations attached to nonsimple abelian varieties (*Annales de l'Institut Fourier* no. 3 (2016), 1217–1245)
- 2016 Explicit surjectivity of Galois representations for abelian surfaces and GL_2 -varieties. (*Journal of Algebra* Volume 460, 15 August 2016, 26–59)
- 2016 Roots of unity and torsion points of abelian varieties (*Ramanujan Journal* 2016, 1–21)
- 2016 An explicit open image theorem for products of elliptic curves (*Journal of Number Theory* Volume 168, November 2016, 386–412)
- 2017 On the analytic bijections of the rationals in $[0, 1]$ (*Rendiconti Lincei – Matematica e Applicazioni*, Volume 28, Issue 1, 2017, p. 65–83)
- 2017 Galois representations attached to abelian varieties of CM type (*Bulletin de la Société Mathématique de France*, 145, fascicule 3, 2017, 469–501)
- 2017 Pink-type results for general subgroups of $SL_2(\mathbb{Z}_\ell)^n$ (*Journal de Théorie des Nombres de Bordeaux*, 29, no. 1, 2017, p. 85–127)
- 2017 The 1-eigenspace for matrices in $GL_2(\mathbb{Z}_\ell)$ (con A. Perucca. *New York Journal of Mathematics*, 23:897–925, 2017)
- 2018 On the uniform Rasmussen-Tamagawa conjecture in the CM case (*Mathematical Research Letters*, Volume 25, No. 6, 2018, pp. 1893–1910)
- 2018 The twisting Sato-Tate group of the curve $y^2 = x^8 + 14x^4 + 1$ (con S. Arora, A. Landesman, V. Cantoral-Farfán, J. S. Morrow. *Mathematische Zeitschrift*, Volume 290, Issue 3–4, 2018)
- 2018 Abelian varieties as automorphism groups of smooth projective varieties (con A. Maffei. *International Mathematics Research Notices*, Volume 2020, Issue 7, April 2020, pp. 1942–1956)
- 2019 Computing twists of hyperelliptic curves (con E. Lorenzo-García. *Journal of Algebra*, Volume 519, 1 February 2019, 474–490)
- 2019 Computing the geometric endomorphism ring of a genus-2 Jacobian (*Mathematics of Computation* 88, 2019, 889–929)
- 2019 Appendix to "Surjectivity of Galois representations in rational families of abelian varieties" (A. Landesman, A. A. Swaminathan, J. Tao, Y. Xu. *Algebra & Number Theory* 13 (2019), 995–1038)
- 2021 Reductions of points on commutative algebraic groups (con A. Perucca. *Journal de l'Institut de Mathématiques de Jussieu*, Volume 20, Issue 5. September 2021, pp. 1637-1669)

- 2021 Identifying central endomorphisms of an abelian variety via Frobenius endomorphisms (con E. Costa e J. Voight. *Research in Number Theory*, 2021, 7:46)
- 2021 Decomposing Jacobians via Galois covers (con E. Lorenzo García, C. Ritzenthaler e J. Sijsling. *Experimental Mathematics*, 2021)
- 2022 Effective Kummer theory for elliptic curves (con S. Tronto. *International Mathematics Research Notes*, Volume 2022, Issue 22, November 2022, Pages 17662–17712)
- 2022 How far is an extension of p -adic fields from having a normal integral basis? (con I. Del Corso e F. Ferri. *Journal of Number Theory* Volume 233, April 2022, Pages 158-197)
- 2022 Local opers with two singularities: the case of $\mathfrak{sl}(2)$ (con G. Fortuna, A. Maffei e V. Melani. *Communications in Mathematical Physics*, 2022)
- 2022 On the distribution of rational points on ramified covers of abelian varieties (con P. Corvaja, J. Demejo, A. Javanpeykar, U. Zannier. *Compositio Mathematica* 2022;158(11):2109–2155.)
- 2022 A family of quintic Thue equations by Skolem's p -adic method (*Rivista di Matematica dell'Università di Parma* 13, 2022, no. 1, 161–173)
- 2022 Some uniform bounds for elliptic curves over \mathbb{Q} (con S. Tronto. *Pacific Journal of Mathematics*, Vol. 320 (2022), No. 1, 133–175)
- 2023 Non-isogenous abelian varieties sharing the same division fields (*Transactions of the AMS* 376, 2023, 2615–2640)
- 2024 On the local-global principle for isogenies of abelian surfaces (con M. Verzobio. *Selecta Mathematica*, 30, 18)
- 2024 The semi-infinite cohomology of Weyl modules with two singular points (con G. Fortuna, A. Maffei e V. Melani. *Pure and Applied Mathematics Quarterly*, Special Issue in Honor of Claudio Procesi, pp. 1251-1284)
- 2025 On the L -polynomials of curves over finite fields (con F. Ballini e M. Verzobio).
Proceedings of the Royal Society of Edinburgh, in stampa
- 2025 Classification of rational angles in plane lattices II (con R. Dvornicich, F. Veneziano e U. Zannier).
Mathematische Annalen, in stampa
- 2025 Serre's uniformity question and proper subgroups of $C_{ns}^+(p)$ (con L. Furio).
Algebra & Number Theory, in stampa

Libri

- 2025 L -functions: an elementary introduction.
Libro di testo *UNITEXT Springer Nature*.

Studenti di dottorato

- 2021-2025 **Lorenzo Furio**, *Galois Representations Attached to Elliptic Curves: around Serre's Uniformity Question*, tesi difesa a febbraio 2025, ora postdoc a Parigi.
- 2022-ongoing **Andrea Gallese**, *Monodromy groups and algebraic cycles on CM abelian varieties*, discussione prevista per l'autunno 2026.
- 2024-ongoing **Luca Mauri**, *Endomorphism algebras of Jacobians from group actions*, discussione prevista per inizio 2028.
- 2025-ongoing **Veran Stojanovic**, *Real and complex multiplication of K3 surfaces and abelian varieties*, discussione prevista nel 2029.

Postdocs supervisionati

- 2021-2022 **Matteo Verzobio**.
- 2024-2025 **Matthew Bisatt**.

Prepubblicazioni

Explicit open image theorems for some abelian varieties with trivial endomorphism ring.

Disponibile all'indirizzo <http://arxiv.org/abs/1508.01293>

Torsion bounds for a fixed abelian variety and varying number field (con S. Le Fourn e D. Zywina).

Disponibile all'indirizzo <https://arxiv.org/abs/2208.02345>

Monodromy groups of Jacobians with definite quaternionic multiplication (con V. Cantoral Farfán e J. Voight).

Disponibile all'indirizzo <https://arxiv.org/abs/2303.00804>

Examples of effectivity for integral points on certain curves of genus 2 (con P. Corvaja e U. Zannier)

Disponibile all'indirizzo <https://arxiv.org/abs/2411.17930>

Monodromy groups and exceptional Hodge classes, I: Fermat Jacobians (con A. Gallese e H. Goodson)

Disponibile all'indirizzo <https://arxiv.org/abs/2405.20394>

Monodromy groups and exceptional Hodge classes, II: Sato-Tate groups (con A. Gallese e H. Goodson)

Disponibile all'indirizzo <https://arxiv.org/abs/2507.02535>

On 7-adic Galois representations for elliptic curves over \mathbb{Q} (con L. Furio)

Disponibile all'indirizzo <https://arxiv.org/abs/2507.17967>

Connected monodromy fields of Jacobians with complex multiplication (con A. Gallese)

Disponibile all'indirizzo <https://arxiv.org/abs/2510.21247>

Articoli in preparazione

Quadratic Chabauty and injectivity of reduction modulo p (con S. Le Fourn)

Equationless geometric Quadratic Chabauty (con S. Hashimoto, K. Khuri-Makdisi, G. Lido, N. Mascot e P. Parent)

p -adic Galois representations of elliptic curves (con M. Bisatt e L. Furio)

Cyclotomic points on algebraic varieties (con F. Veneziano)

Finiteness of étale cohomology over solvable extensions (con T. Szamuely)

Premi e certificazioni

- 11/2024 Abilitazione Scientifica Nazionale – Prima Fascia
- 07/2023 P.I. per il PRIN *Semiabelian varieties, Galois representations and related Diophantine problems*
- 09/2022 P.I. per il PRA *Spazi di moduli, rappresentazioni e strutture combinatorie* (finanziamento di due anni dell'Università di Pisa)
- 09/2018 Abilitazione Scientifica Nazionale – Seconda fascia
- 03/2018 Premio Baldassarri, menzione d'onore (Unione Matematica Italiana)
- 02/2016 Abilitazione francese alle funzioni di professore associato (*Qualification aux fonctions de maître de conférences*) per la sezione 25, matematica pura
- 09/2015 *Prix au Mérite en Sciences*, conferito dalla Chancellerie des Universités de Paris
- 06/2015 Premio in matematica *Benedetto Sciarra*, conferito ogni due anni dalla Scuola Normale Superiore di Pisa

Languages

Italiano	Lingua madre	
Inglese	Avanzato	<i>Scritto, letto e parlato correntemente</i>
Francese	Avanzato	<i>Scritto, letto e parlato correntemente</i>