Federico Scavia

CONTACT INFORMATION

Laboratoire Analyse, Géométrie et Applications, Institut Galilée
Université Sorbonne Paris Nord

99 avenue Jean-Baptiste Clément,
93430 Villetaneuse,
France

RESEARCH INTERESTS

Algebraic geometry, arithmetic geometry.

EDUCATION

University of British Columbia

Ph.D. in Mathematics (September 2017 - November 2021)

- PhD Thesis: Essential dimension of representations of algebras
- Advisor: Zinovy Reichstein

Scuola Normale Superiore di Pisa

Diploma in Mathematics, 70/70 cum laude (September 2012 - May 2017)

- Advisor: Angelo Vistoli

Università di Pisa

M.S. in Mathematics, 110/110 cum laude (September 2015 - May 2017)

- Master Thesis: The stack of admissible double covers
- Advisor: Angelo Vistoli

B.A. in Mathematics, 110/110 cum laude (September 2012 - June 2015)

- Senior Thesis: The Riemann Hypothesis for curves over finite fields
- Advisor: Angelo Vistoli

APPOINTMENTS

University of California, Los Angeles

Hedrick Adjunct Assistant Professor (November 2021 - December 2023)

- Mentor: Alexander Merkurjev

Chargé de recherche CNRS (January 2024 -)

Université Sorbonne Paris Nord (January 2024 -)

VISITING POSITIONS

Université Paris Sud (Orsay)

Visiting Scholar (September 2019 - December 2019)

- Host: Jean-Louis Colliot-Thélène
- Sponsored by Mitacs Globalink Research Award

Visiting Scholar (May 2021 - October 2021)

- Host: Kestutis Cesnavicius

Institut des Hautes Études Scientifiques (Bures-sur-Yvette)

Invited Researcher (October 2021 - December 2021)

PhD students

Université Sorbonne Paris Nord

Filippo Belfiori (September 2025 -)

Undergraduate students supervised

Université Sorbonne Paris Nord

Tianyang Wang (2024): Supervision of Master Thesis titled *La preuve de la conjecture de Weil par Deligne*.

Tim Ziaran (2024): Supervision of a reading course on the book *Rational points on elliptic curves* by Silverman and Tate.

University of California, Los Angeles

Jerry Yang (2023): Supervised a reading course and original research on algebraic groups.

Five students (2023): Supervised a research project on matroids.

Honors and Awards

2022	AMS-Simons Travel Award
2019	Mitacs Globalink Research Award
2018	Graduate Research Award - UBC Graduate Studies
2018–2021	Four Year Doctoral Fellowship (4YF) - UBC Graduate Studies
2017–2021	Graduate Scholarship - UBC Graduate Studies
2012–2017	Scuola Normale di Pisa Full Scholarship
2012	Gold Medal at the Italian Mathematical Olympiad (national high school competition)
2011	Silver Medal at the Italian Mathematical Olympiad (national high school competition)

Publications and preprints

37. Brauer classes not split by genus one curves. With Zinovy Reichstein. Submitted August 2025. https://arxiv.org/abs/2508.07447
36. On direct summands of products of Jacobians over arbitrary fields. With Fumiaki Suzuki. Submitted July 2025. https://arxiv.org/abs/2507.09821
35. Specialization and rigidity. With Zinovy Reichstein. Submitted June 2025. https://arxiv.org/abs/2506.22314
34. Variétés réelles connexes non stablement rationnelles. With Jean-Louis Colliot-Thélène and Alena Pirutka. Submitted June 2025. https://arxiv.org/abs/2505.21477
33. Generically trivial torsors under constant groups. With Alexis Bouthier and Kęstutis Česnavičius. Submitted May 2025. https://arxiv.org/abs/2505.00505
32. The lifting problem for Galois representations. With Alexander Merkurjev. **Math. Ann.**, 394 (2026), no. 2, 29. https://doi.org/10.1007/s00208-026-03351-6
31. Galois representations modulo p that do not lift modulo p^2. With Alexander Merkurjev. **Journal of the American Mathematical Society**, 39 (2026), 73–94. https://doi.org/10.1090/jams/1059
30. Non-formality of Galois cohomology modulo all primes. With Alexander Merkurjev. **Compositio Mathematica**, 161 (2025), no. 4, 831–858. https://doi.org/10.1112/S0010437X25007018

29. On the Massey Vanishing Conjecture and Formal Hilbert 90. With Alexander Merkurjev. Submitted August 2023. https://doi.org/10.1112/plms.70036

28. Varieties over $\overline{\mathbb{Q}}$ with infinite Chow groups modulo almost all primes. Accepted by **J. London Math. Soc.** https://doi.org/10.1112/jlms.12994

27. Two coniveau filtrations and algebraic equivalence over finite fields. With Fumiaki Suzuki. Accepted by **Algebraic Geometry, Foundation Compositio Mathematica**. https://arxiv.org/abs/2304.08560

26. The Massey Vanishing Conjecture for fourfold Massey products modulo 2. With Alexander Merkurjev. Accepted by **Ann. Sci. Éc. Norm. Supér** https://doi.org/10.24033/asens.2612

25. Sur l'injectivité de l'application cycle de Jannsen. With Jean-Louis Colliot-Thélène. *Perspectives on Four Decades of Algebraic Geometry, Volume 1. Progress in Mathematics, vol 351. pp. 151-183. Birkhäuser, Cham (2025).* *https://doi.org/10.1007/978-3-031-66230-0_6*

24. *Eilenberg-Moore spectral sequence and Hodge cohomology of classifying stacks. With Dmitry Kubrak.* ***Journal of Algebraic Geometry****, 34: 613-683 (2025).* *https://doi.org/10.1090/jag/846*

23. *Quotient singularities in the Grothendieck ring of varieties. With Louis Esser.* ***Journal of Algebraic Geometry****, 34: 183-204 (2025).* *https://doi.org/10.1090/jag/832*

22. *Degenerate fourfold Massey products in Galois cohomology. Accepted by* ***Journal of the European Mathematical Society****.* *https://arxiv.org/abs/2208.13011*

21. *Non-injectivity of the cycle class map in continuous ℓ-adic cohomology. With Fumiaki Suzuki.* ***Forum of Mathematics, Sigma****, 2023;11:e6.* *https://doi.org/10.1017/fms.2023.1*

20. *Non-algebraic geometrically trivial cohomology classes over finite fields. With Fumiaki Suzuki.* Advances in Mathematics, 458 (2024), part A, Paper No. 109964, 30 pp. https://doi.org/10.1016/j.aim.2024.109964

19. Pathologies du groupe des classes de R-équivalence d'un groupe algébrique linéaire. **Mathematische Annalen**, 387, 1333–1342 (2023). https://doi.org/10.1007/s00208-022-02490-w

18. The behavior of essential dimension under specialization II. With Zinovy Reichstein. **Algebra & Number Theory**, 17(11): 1925–1958 (2023). https://doi.org/10.2140/ant.2023.17.1925

17. The behavior of essential dimension under specialization. With Zinovy Reichstein. Volume 6 (2022). **Épijournal de Géométrie Algébrique**. https://doi.org/10.46298/epiga.2022.8910

16. Sur la conjecture de Tate entière pour certains produits en dimension 3 sur un corps fini. **Épijournal de Géométrie Algébrique** Volume 6 (2022). https://doi.org/10.46298/epiga.2022.volume6.8550

15. Steenrod operations on the de Rham cohomology of algebraic stacks. **Journal Inst. Math. Jussieu**, 2023;22(2):493–540. https://doi.org/10.1017/S1474748021000177

14. Essential dimension of extensions of finite groups by tori. With Zinovy Reichstein. **Algebraic Geometry, Foundation Compositio Mathematica** 8 (6) (2021) 749-769. https://doi.org/10.14231/ag-2021

13. On the Mixed Tate property and the motivic class of the classifying stack of a finite group. **Algebra & Number Theory**, 16(10): 2265–2287 (2022). https://doi.org/10.2140/ant.2022.16.2265

12. Motivic classes and the integral Hodge Question. **C. R. Math. Acad. Sci. Paris**. Volume 359, issue 3 (2021), p. 305-311. https://doi.org/10.5802/crmath.178

11. Sur la conjecture de Tate entière pour le produit d'une courbe et d'une surface CH_0-triviale sur un corps fini. With Jean-Louis Colliot-Thélène. **Rend. Circ. Mat. Palermo**, II. Ser 72, 2895–2927 (2023). https://doi.org/10.1007/s12215-023-00870-y

10. Torsion classes in the equivariant Chow groups of algebraic tori. **Ann. Sci. Éc. Norm. Supér**. Tome 56, fascicule 2 (2023), p. 571-587. https://doi.org/10.24033/asens.2540

9. Embeddings of maximal tori in groups of type F4. With Andrew Fiori. **Pacific Journal of Mathematics**, Vol. 311 (2021), No. 1, 53-88. https://doi.org/10.2140/pjm.2021.311.53

8. The Noether problem for spinor groups of small rank. With Zinovy Reichstein. **Journal of Algebra** 548 (2020), 134-152. https://doi.org/10.1016/j.jalgebra.2019.12.005

7. On the Noether problem for torsion subgroups of tori. **Pacific Journal of Mathematics** 306 (2020), no. 2, 699-719. https://doi.org/10.2140/pjm.2020.306.699

6. Motivic classes of classifying stacks of some semi-direct products. With Ivan Martino. **Journal of Algebra** 544 (2020), 62-74. https://doi.org/10.1016/j.jalgebra.2019.09.033

5. Essential dimension and genericity for quiver representations. **Documenta Mathematica** 25 (2020), 329-364. https://doi.org/10.25537/dm.2020v25.329-364

4. Retract rationality and algebraic tori. **Canadian Math. Bulletin** 63 (2020), no. 1, 173-186. https://doi.org/10.4153/S0008439519000079

3. On the motivic class of an algebraic group. **Algebra & Number Theory** 14 (2020), no. 4, 855-866. https://doi.org/10.2140/ant.2020.14.855

2. Rational Picard group of moduli of pointed hyperelliptic curves. **International Math. Research Notices** 21 (2020), 8027-8056. https://doi.org/10.1093/imrn/rnaa003

1. Essential dimension of representations of algebras. **Commentarii Mathematici Helvetici** 95 (2020), 661-702. https://doi.org/10.4171/cmh/500

Invited Talks

62. *Classes de Brauer non déployées par des courbes de genre* 1, Séminaire de géométrie algébrique ENS–Jussieu–Sophie-Germain, Bâtiment Sophie-Germain Paris, (April 9, 2026)

61. *The lifting problem for Galois representations*, Joint Number Theory Seminar NYU–Columbia–CUNY, New York University, New York (March 12, 2026)

60. *Generically trivial torsors under algebraic groups*, Columbia University, New York (February 20, 2026)

59. *Generically trivial torsors under algebraic groups*, Algebraic Geometry Seminar, Princeton University, Princeton (March 3, 2026)

58. *Generically trivial torsors under algebraic groups*, Tata Institute, Mumbai (February 2, 2026)

57. *Inaugural lecture for the Thematic Programme on Rational Points, Algebraic Cycles and the Local-Global Principle*, Lodha Mathematical Sciences Institute, Mumbai (January 12, 2026)
56. *Brauer classes not split by genus one curves*, Quadratic forms and algebraic cycles (A conference in honor of Nikita Karpenko), Villetaneuse (October 29, 2025).
55. *Generically trivial torsors under algebraic groups*, Online seminar, China
54. *Generically trivial torsors under algebraic groups*, Pisa
53. *The lifting problem for Galois representations*, Imperial College London
52. *The lifting problem for Galois representations*, Northwestern University, Evanston
51. *The lifting problem for Galois representations*, University of Chicago, Chicago
50. *Generically trivial torsors under algebraic groups*, Banff
49. *The lifting problem for Galois representations*, Arithmetic and Algebraic Geometry Week, Iași (September 1, 2025)
48. *Groupes de Chow à coefficients tordus (d'après Burt Totaro)*, Arithmetic Geometry Preprint Seminar, Jussieu (May 7, 2025)
47. *The lifting problem for Galois representations*, Squares in Dortmund, on occasion of Hoffmann's 64th birthday, Dortmund (April 2, 2025)
46. *Le problème de relèvement des représentations galoisiennes*, Séminaire Arithmétique et Géométrie Algébrique, Orsay (March 18, 2025)
45. Finite braid group orbits on SL_2-character varieties: Proofs of the main theorems (after Yeuk Hay Joshua Lam, Aaron Landesman, and Daniel Litt), Workshop on motives, mapping class groups, and monodromy. Lanzarote (March 1, 2025)
44. *The lifting problem for Galois representations*, Algebraic Geometry Seminar, University of British Columbia (UBC), Vancouver (February 3, 2025)
43. *La conjecture de Grothendieck–Serre* Séminaire "Groupes Réductifs et Formes Automorphes", Jussieu (January 13, 2025)
42. *The Grothendieck–Serre conjecture for constant groups*, Séminaire Géométrie Algébrique, Angers (December 12, 2024)
41. *Massey products in Galois cohomology* (joint with A. Merkurjev), four lectures delivered at the 2024 Graduate Summer School, Park City Mathematical Institute, Park City, Utah. (July 8 – 12, 2024)
40. *The Massey Vanishing Conjecture for fourfold Massey products modulo* 2 (joint with A. Merkurjev), four lectures delivered at the Workshop on Galois Cohomology and Massey Products, A conference in honour of Jan Minac's 71st birthday, University of Ottawa (June 13 – 16, 2024).
39. *Produits de Massey en cohomologie galoisienne*, Séminaire "Variétés Rationnelles", Jussieu, Paris. (March 29, 2024)
38. *Principe local-global et conjecture de Tate entière pour certaines variétés (d'après Zhiyu Tian)*, Arithmetic Geometry Preprint Seminar, Jussieu (February 29, 2024)
37. *Produits de Massey en cohomologie galoisienne*, Université Sorbonne Paris Nord, Villetaneuse. (January 26, 2023)
36. *Classi non algebriche geometricamente banali su campi finiti*, Giornate di Geometria Algebrica e Argomenti Correlati XVI, Cetraro. (September 14, 2023).
35. *Massey products in Galois cohomology*, University of California, Los Angeles. (May 5, 2023)

34. *Massey products in Galois cohomology*, University of Chicago, Chicago. (April 26, 2023)
33. *Massey products in Galois cohomology*, Northwestern University, Evanston. (April 24, 2023)
32. *Massey products in Galois cohomology*, University of California, Irvine. (February 13, 2023)
31. *Massey products in Galois cohomology*, École Polytechnique Fédérale de Lausanne, Lausanne. (January 31, 2023)
30. *Massey products in Galois cohomology*, King's College, London, online talk. (January 19, 2023)
29. *Massey products in Topology and Algebra*, University of Southern California, Los Angeles. (January 18, 2023)
28. *Degenerate Massey products over arbitrary fields*, Quadratic forms, Linear algebraic groups and Beyond, online talk. (December 7, 2022)
27. *On the integral Tate conjecture over finite fields*, University of California, Los Angeles. (June 3, 2022)
26. *Sur la classe motivique d'un groupe algébrique*, Bures-sur-Yvette, Institut des Hautes Études Scientifiques, Séminaire de géométrie arithmétique. (December 1, 2021)
25. *Sur la conjecture de Tate entière pour certains produits en dimension* 3 *sur un corps fini*, Villetaneuse, Paris 13, Séminaire de Géométrie Arithmétique et Motivique. (November 26, 2021)
24. *Sur la conjecture de Tate entière pour certains produits en dimension* 3 *sur un corps fini*, Strasbourg, IRMA, Séminaire Arithmétique et géométrie algébrique. (November 18, 2021)
23. *La conjecture de Grothendieck–Serre*, Séminaire RéGA, Institut Poincaré, Paris. (November 10, 2021)
22. *Dimension essentielle et déformations*, Bordeaux, Séminaire Théorie des Nombres. (October 29, 2021)
21. *The Grothendieck ring of algebraic stacks*, Stanford Algebraic Geometry Seminar, online talk. (July 30, 2021)
20. *The behavior of essential dimension under deformation*, Conference in honor of Zinovy Reichstein's sixtieth birthday, online talk. (June 28, 2021)
19. *The behavior of essential dimension under deformation*, Algebra and Geometry of Homogeneous Spaces (AGHS) online workshop, online talk. (June 3, 2021)
18. *Motivic classes of algebraic stacks*, American Graduate Student Algebraic Geometry Seminar (AGSAGS), online talk. (January 25, 2021)
17. *Steenrod operations on the de Rham cohomology of algebraic stacks*, Algebra Seminar, University of Western Ontario, online talk. (January 15, 2021)
16. *On the Grothendieck ring of algebraic stacks.* AMS Special Session on Galois Cohomology in Arithmetic Geometry, Joint Mathematics Meetings, online talk. (January 7, 2021)
15. *On the motivic class of an algebraic group*, Columbia-CUNY-NYU Joint Number Theory Seminar, online talk. (October 22, 2019)
14. *Steenrod operations on the de Rham cohomology of algebraic stacks*, Algebra-Number Theory Seminar, University of Maryland, online talk. (September 9, 2020)

13. *The Grothendieck ring of stacks*, Ottawa Mathematics Conference, online talk. (June 2, 2020)
12. *Codimension two cycles on classifying stacks of algebraic tori*, Quadratic forms, Linear algebraic groups and Beyond, online talk. (May 29, 2020)
11. *Codimension two cycles on classifying stacks of algebraic tori*, Algebraic Geometry Seminar, University of British Columbia, Vancouver (Canada). (February 10, 2020)
10. *On the motivic class of an algebraic group*, Algebra and Geometry Seminar, University of Lancaster, Lancaster (UK). (November 6, 2019)
9. *Sur la classe motivique d'un groupe algébrique*, Séminaire "Variétés Rationnelles", Jussieu, Paris. (October 18, 2018)
8. *Essential dimension of representations of algebras*, Algebra and Algebraic Geometry Seminar, IPAM workshop on Braids, Resolvent Degree and Hilbert's 13th Problem, Los Angeles. (February 20, 2019)
7. *Motivic classes of algebraic groups*, UBC Algebraic Geometry Seminar, University of British Columbia, Vancouver. (February 4, 2019)
6. *Motivic classes of linear groups*, Algebra and Geometry Seminar, Genoa. (January 8, 2019)
5. *Motivic classes of linear groups*, Seminari di Algebra e Geometria Algebrica, Turin. (December 19, 2018)
4. *Motivic classes of algebraic groups*, Geometry, Physics, and Representation Theory Seminar, Northeastern University, Boston. (December 7, 2018)
3. *Essential dimension of representations of algebras*, Algebra and Algebraic Geometry Seminar, University of Washington, Seattle. (November 13, 2018)
2. *Essential dimension of representations of algebras*, Séminaire "Variétés Rationnelles", Jussieu, Paris. (May 18, 2018)
1. *Essential dimension of representations of algebras*, UBC Algebraic Geometry Seminar, University of British Columbia, Vancouver. (January 29, 2018)

Courses taught

University of California, Los Angeles

Fall	2023	Course Instructor, 214A Algebraic Geometry, 115A Linear Algebra
Summer	2023	Course Instructor, 132 Complex Analysis, 131A Real Analysis
Spring	2023	Course Instructor, 131B Group Theory
Winter	2023	Course Instructor, 115A Linear Algebra, 131B Group Theory
Fall	2022	Course Instructor, 31B Calculus
Spring	2022	Course Instructor, 131A Real Analysis (2 sections)
Winter	2022	Course Instructor, 32A Multivariable calculus (2 sections)

University of British Columbia

Spring	2021	Teaching Assistant, Coding Theory
Fall	2020	Teaching Assistant, Number Theory and Calculus
Summer	2020	Teaching Assistant, Number Theory
Spring	2020	Course Instructor, Multivariable and Integral Calculus
Fall	2019	Webwork Teaching Assistant, Differential Calculus
Summer	2019	Teaching Assistant, Number Theory
Spring	2019	Teaching Assistant, Complex Analysis
Fall	2018	Head Teaching Assistant, Multivariable Calculus
Spring	2018	Teaching Assistant, Multivariable Calculus
Fall	2017	Teaching Assistant, Group Theory

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Referee for Mathematische Zeitschrift, Documenta Mathematica, Transformation Groups, Transactions of the American Mathematical Society, International Mathematics Research Notices, New York Journal of Mathematics, Forum of Mathematics: Sigma, Rendiconti del Circolo Matematico di Palermo, Journal of the American Mathematical Society, Crelle, Algebra & Number Theory.