ALENA PIRUTKA

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POSITIONS

Courant Institute, NYU, Professor, from September 2024
Courant Institute, NYU, Associate Professor, 2017-2024
Courant Institute, NYU, Assistant Professor, 2015-2017
CNRS, Chargé de Recherche, 2012-2015 (at IRMA, Strasbourg University, 2012-2013, and at CMLS
École Polytechnique, Paris, from September 2013)
IRMA, Strasbourg University, postdoctoral fellow, 2011-2012

EDUCATION

Habilitation
Université Paris-Sud, Orsay, December 2016
Title : "Invariants birationnels, cycles algébriques et rationalité."

Ph.D. in Mathematics
Université Paris-Sud, Orsay, October 2011
Dissertation topic: "Deux contributions à l'arithmétique des variétés : R-équivalence et cohomologie non ramifiée."
Advisor: Jean-Louis Colliot-Thélène

Master in Mathematics, "Algebra and Geometry"
Université Paris 6, 2008
Master thesis: "Cycles évanescents sur des schémas formels."
Advisor: Joseph Ayoub

Mathematics, undergraduate
École Normale Supérieure, Paris, undergraduate fellowship "Sélection Internationale", 2005-2008
Applied Mathematics and Computer Science
Belarusian State University, Minsk, 2002-2005

GRANTS AND FELLOWSHIPS

National Science Foundation Grant 1601680 (PI): March 1, 2016 - February 28, 2019
National Science Foundation Grant 2201195 (PI): April 15, 2022 - March 31, 2025

HONORS AND AWARDS

International Mathematics Competitions for University Students 2004, 2005 and 2006 (Second Prize, First Prize and Second Prize)
International Mathematical Olympiad 2002, Bronze medalist

PUBLICATIONS AND PREPRINTS

1. *Cohomologie non ramifiée en degré trois d'une variété de Severi-Brauer*, C. R. Acad. Sci. Paris, Ser. I **349** (2011), 369–373.

2. *Sur le groupe de Chow de codimension deux des variétés sur les corps finis*, Algebra and Number Theory **5-6** (2011), 803–817.

3. *R-équivalence sur les familles de variétés rationnelles et méthode de la descente*, J. de Théorie des Nombres de Bordeaux **24**, no. 2, (2012), 461–473.

4. *R-equivalence on low degree complete intersections*, J. of Algebraic Geom. **21** (2012), 707–719.

5. *Invariants birationnels dans la suite spectrale de Bloch-Ogus*, J. of K-theory **10** (2012), 565–582.

6. *A bound to kill the ramification over function fields*, J. Algebra **377** (2013), 173–178.

7. (with F. Charles), *La conjecture de Tate entière pour les cubiques de dimension quatre sur un corps fini*, Compositio Mathematica **151**, no. 2, (2015), 253–264.

8. (with N. Yagita), *Note on the counterexamples for the integral Tate conjecture over finite fields*, Documenta Math. Extra Volume: Alexander S. Merkurjev's Sixtieth Birthday, (2015), 501–511.

9. *Sur la cohomologie non ramifiée en degré trois d'un produit*, Bulletin de la SMF **144**, 1 (2016), 53–75.

10. (with J.-L. Colliot-Thélène), *Hypersurfaces quartiques de dimension 3 : non rationalité stable*, Ann. Sci. Ecole Norm. Sup. (2) **49** (2016), 371–397.

11. (with J.-L. Colliot-Thélène), *Cyclic covers that are not stably rational*, (2015), Izvestiya RAN, Ser. Mat. **80**, 4 (2016), 35-47.

12. (with F. Bogomolov and A. Silberstein), *Families of disjoint divisors on varieties*, European Journal of Mathematics, **2**, 4 (2016), 917–928.

13. *On a local-global principle for H^3 of function fields of surfaces over a finite field*, In: A. Auel, B. Hassett, A. Várilly-Alvarado, B. Viray, Brauer Groups and Obstruction Problems. Progress in Mathematics **320**, Birkhäuser Basel, 2017.

14. (with B. Hassett and Y. Tschinkel), *Intersections of three quadrics in P^7*, Surveys in Differential Geometry, **22**(1), 259-274, (2017).

15. *Varieties that are not stably rational, zero-cycles and unramified cohomology*, in Algebraic Geometry (Salt Lake City, UT, 2015), Proc. Sympos. Pure Math., **97**, 459–484. Amer. Math. Soc., Providence, RI, 2018.

16. (with B. Hassett and Y. Tschinkel), *Stable rationality of quadric surface bundles over surfaces*, Acta Mathematica, **220**, (2018), 341–365.

17. (with A. Auel and C. Böhning), *Stable rationality of quadric and cubic surface bundle fourfolds*, European Journal of Mathematics (2018), 1–29.

18. (with J.-L. Colliot-Thélène), *Troisième groupe de cohomologie non ramifiée d'un solide cubique sur un corps de fonctions d'une variable*, Epijournal de géométrie algébrique (EPIGA), volume 2, article no.13 (2018).

19. (with B. Hassett and Y. Tschinkel), *A very general quartic double fourfold is not stably rational*, Algebraic Geometry, **6**(1), 64-75, (2019).

20. (with A. Auel, C. Böhning and H-C. von Bothmer), *Conic bundles over rational threefolds with nontrivial unramified Brauer group*, J. Algebraic Geom. **29** (2020), no. 2, 285–327

21. (with A. Cadoret), *Reconstructing function fields from Milnor K-theory*, Algebra Number Theory **15** (2021), no. 9, 2261–2288.

22. (with F. Bogomolov and C. Böhning) *On stable cohomology of central extensions of elementary abelian groups*, In: Ahmadinezhad, H. and Kasprzyk, A. and Mori, S., (eds.) London Mathematical Society. Lecture Note Series. Cambridge University Press (2021).

23. (with F. Charles) *Finitude uniforme pour les cycles de codimension 2 sur les corps de nombres*, to appear in Perspectives on four decades of Algebraic Geometry: in Memory of Alberto Collino, Progress in Mathematics (2022).

24. *Cubic surface bundles and the Brauer group*, preprint (2023) to appear in Int. Math. Res. Not.

25. (with J.-L. Colliot-Thélène) *Certaines fibrations en surfaces quadriques réelles*, preprint (2024).

26. (with Zh. Zhang) *Computing the equivariant Brauer group*, preprint (2024), to appear in International Journal of Math.

27. (with A. Cadoret) *Uniform bounds for obstructions to the integral Tate conjecture*, preprint (2024).

28. (with O. Benoist) *On the rationality of some real threefolds*, preprint (2024).

SEMINAR AND CONFERENCE TALKS

Algebraic geometry seminar, Columbia University, September 2024

Algebra seminar, University of Pennsylvania, April 2024

Birational geometry seminar, online seminar, April 2024

The Quebec-Vermont Number Theory Seminar, Montreal, February 2024

Algebraic geometry seminar, Dartmouth College, October 2023

Arithmetic Algebraic Geometry Conference, in memory of Jan Nekovář, IHES, October 2023

Algebraic geometry seminar, University of California San Diego, April 2023

Algebraic geometry seminar, University of Ferrara, March 2023

Birational complexity of algebraic varieties conference, Stony Brook, December 2022

MMP and moduli conference, Simons Foundation, October 2022

Advances in Algebra and Applications conference, Minsk, June 2022

Algebraic K-theory workshop, Oberwolfach, May 2022

Stony Brook Algebraic Geometry seminar, March 2022

Rutgers Number Theory seminar, March 2022

ZAG online seminar, February 2022

qflag.org online seminar, November 2021

Hodge Theory and Rationality, Virtual Conference, IMSA Miami, October 2020

Algebraic Geometry Seminar, University of Wisconsin-Madison, April 2018

Conference on Birational Geometry, Simons Foundation, New York, August 2017

Inaugural conference for Laboratory of Mirror Symmetry and Automorphic forms, Moscow, HSE, June 2017

Emory Conference on Higher Obstructions to Rational Points, Emory University, Atlanta, May 2017

Conference on Geometry and Topology, In Celebration of the 50th Anniversary of the Journal of Differential Geometry, Harvard University, April-May 2017

Yale Algebraic and Tropical Geometry seminar, Yale University, April 2017

Algebra Seminar, University of Pennsylvania, Philadelphia, April, 2017.

Algebro-Geometric and Homotopical Methods, Research Program, Institut Mittag-Leffler, Stockholm, February 2017

ANR Gatho Conference, IHP Paris, December 2016

Columbia University, New York, Algebraic geometry seminar, December 2016

University of Illinois, Chicago, Algebraic geometry seminar, November 2016

Stony brook University, Stony brook, Algebraic geometry seminar, October 2016

University of Michigan, Michigan, Algebraic geometry seminar, October 2016

Northeastern University, Boston, Algebraic geometry seminar, October 2016

Washington University, Saint Louis, Colloquim, September 2016

Levico terme, Geometria delle Varietà Algebriche, June 2016

Edinburgh, Edge Days, June 2016

Simons symposium "Geometry over non-closed fields", Ellmau, April 2016

Yale University, AGNES meeting, April 2016

Rice University, Algebraic Geometry seminar, March 2016

Jussieu, Paris, "Autour des cycles algébriques", December 2015

Brown University, Algebraic Geometry seminar, November 2015

Emory University, Atlanta, GAGS meeting, October 2015

University of Washington, WAGS meeting, October 2015

CIRM, Luminy, Méthodes cohomologiques dans la théorie des groupes algébriques, September 2015

Salt Lake City, AMS Summer Institute in Algebraic Geometry, July 2015

Saint Petersburg, Arithmetic geometry, Chow groups and rational points, June 2015

CIRM, Luminy, Arithmétique, Géométrie, Cryptographie et Théorie des Codes, May 2015

Stony Brook University, New Techniques in Birational Geometry, April 2015

University of Chicago, Algebraic Geometry seminar, April 2015

Simons symposium "Geometry over non-closed fields", Puerto Rico, April 2015

Arizona Winter School, Exercise sessions, March 2015

Princeton, IAS, Chow groups, motives and derived categories, March 2015

Université Paris-Sud, Orsay, SAGA seminar, December 2014

Essen, Germany, Algebraic Geometry seminar, November 2014

Harvard, Cambridge, Number Theory seminar, October 2014

MIT, Cambridge, Algebraic Geometry seminar, October 2014

University of Pennsylvania, Galois seminar, October 2014

Yale University, Algebra and Lie Groups seminar, October 2014

CUNY, New York, New York Joint Number Theory Seminar, October 2014

Courant Institute, New York, Algebraic Geometry seminar, October 2014

Mainz University, conference "Around forms, cycles and motives", September 2014

Tel Aviv, Israel, AMS meeting speaker, June 2014

Lausanne, EPFL, Algebraic Geometry seminar, April 2014

Jussieu, Paris, seminar "Autour des cycles algébriques", April 2014

Université d'Artois, Lens, March 2014

Université de Rennes 1, Algebraic Geometry seminar, February 2014

Göttingen University, postdoc seminar, November 2013

Lyon, seminar "Arithmétique", October 2013

Moscow, conference "Global Fields", September 2013

Oberwolfach, workshop "Algebraic K-theory and Motivic Cohomology", June 2013

Fields Institute, Toronto, "Spring school and workshop on Torsors, Motives and Cohomological Invariants", May 2013

Université Paris 7, seminar "Autour des cycles algébriques", April 2013

IHP, Paris, seminar "Variétés rationnelles", April 2013

Universität Zürich, Algebraic Geometry seminar, April 2013

Mainz University, "SFB seminar", January 2013

Lausanne, Number Theory seminar, December 2012

Grenoble, "Points entiers, points rationnels", October 2012

Strasbourg, Algebraic Geometry seminar, September 2012

University of Heidelberg, seminar "Algebra und Zahlentheorie", June 2012

IMJ, Paris, Number Theory seminar, May 2012

Université Versailles, seminar "Algèbre et Géométrie", March 2012

Universität Zürich, Symposium, February 2012

Université Rennes 1, Algebraic Geometry seminar, February 2012

Université Bordeaux 1, Number Theory seminar, February 2012

Institut Fourier, Grenoble, Number Theory seminar, February 2012

IRMA Strasbourg, Freiburg-Nancy-Strasbourg joint seminar in Algebraic and Complex Geometry, January 2012

Tokyo, Graduate School of Mathematics, University of Tokyo, International Workshop on motives,

December 2011

London, Imperial College, Number Theory seminar, November 2011

Besançon, Université de Franche-Comté, Algebra and Number Theory seminar, October 2011

Besançon, Université de Franche-Comté, seminar "doctorant", October 2011

CIRM Luminy, workshop "Géométrie arithmétique et motivique", September 2011

ENS Paris, seminar "Variétés rationnelles", title: "Invariants birationnels dans la suite spectrale de Bloch-Ogus", June 2011

Tübingen, seminar "Algebraische Geometrie", May 2011

Atlanta, Georgia, USA, conference "Ramification in Algebra and Geometry", May 2011

IRMA Strasbourg, "Géométrie algébrique et arithmétique : nouvelles tendances", March 2011

Université Lille 1, seminar "Théorie de Galois et méthodes explicites", November 2010

Université Paris 6, seminar "doctorant", April 2010

Université Lille 1, seminar "Arithmétique", March 2010

ETH Zürich, seminar "Arithmetic and Geometry", September 2009

ENS Paris , seminar "Variétés rationnelles", title : "R-équivalence sur les intersections complètes", September 2009

LECTURE SERIES, SEMINARS AND CONFERENCES ORGANIZED

1. Courant Algebraic Geometry seminar.

2. Joint CUNY-Columbia-NYU Number Theory seminar.

3. AIM workshop *Rationality problems in Algebraic Geometry*, (July 2019, with A. Perry and S. Schreieder).

4. Lecture series, *Problems in rationality*, Moscow, HSE, (June 2018).

5. Lecture series, *Rationality problems*, Besançon, École jeunes chercheurs en théorie des nombres (June 2018).

6. Reading group *Anabelian geometry*, Courant Institute (January 2018 to March 2018, with A. Cadoret).

7. *Conference on Algebraic Geometry and Number Theory*, Florence (December 2017, with O. Wittenberg).

8. *Conference on Birational Geometry*, Simons Foundation, New York (August 2017, with I. Cheltsov and Y. Tschinkel).

9. Thematic program *Advances in Birational Geometry*, ESI, Vienna, (April-May 2017, with F. Bogomolov, J.-L. Colliot-Thélène. L. Katzarkov, A. Kuznetsov, Y. Tschinkel).

10. Lecture series, *Irrationality problems*, ESI, Vienna (April 2017).

11. Lecture series *Stable rationality*, GAGC, Luminy (January 2017).

12. Conference *Arithmetic Algebraic Geometry*, Courant Institute NYU, (August 2016, with Y. Tschinkel and D. Zakharov)

13. Lecture series *Stable rationality questions*, Liverpool (June 2015)

14. Lecture series *Diagonal Arithmetics*, IMPA, Rio de Janeiro (May 2015)

15. Seminar *Algebraic cycles*, Jussieu and Paris 7, (from September 2013, with B. Kahn and B. Klingler)

16. Conference *Global fileds*, Moscow, (September 2013, with M. Hindry, Ph. Lebacque, M. A. Tsfasman, A. Zykin)

17. Students seminar *Quadratic forms*, Zürich University (February-March 2013)

18. Working group *p-adic deformations of algebraic cycle classes, after S. Bloch, H. Esnault et M. Kerz*, École Polytechnique, (2012, with A.Cadoret)

19. Working group *Rational connectedness, log pairs and stacks*, IRMA, Strasbourg University (2012-2013, with C. Gasbarri and G. Pacienza)

20. Seminar *Arithmetic geometry*, Strasbourg (2012-2013, with Ch. Huyghe)

21. Lecture series *Algebraic and geometric aspects of rationality and unirationality questions*, Yaroslavl summer school (July 2012)

22. Lecture series *Moduli spaces of rational curves and R-equivalence*, Grenoble summer school "Aspects arithmétiques des courbes rationnelles" (June 2010)

23. Working group *Zero-cycles on algebraic varieties over p-adic fields, after Saito and Sato*, École Normale Supérieure, (Paris 2010, with F. Charles and O. Wittenberg)

SERVICE

Journal of the European Mathematical Society (editor since January 2024)

TEACHING

Courant Institute, 2015-present
(undergraduate and graduate classes, independent studies for undergraduate and master's students)
École Polytechnique, Paris, 2013-2017

LANGUAGES

English (fluent), French(fluent), Russian/Belarusian (native speaker)