

# Asher Auel

# Curriculum Vitae

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## Education

- 2009 UNIVERSITY OF PENNSYLVANIA, Philadelphia, Pennsylvania  
Ph.D. Mathematics (Advisor Ted Chinburg)
- 2004 UNIVERSITÉ PARIS-SUD XI ORSAY, Paris, France  
D.E.A. (Diplôme d'Études Approfondies) Mathématiques Pures (Advisor Guy Henniart)
- 2003 REED COLLEGE, Portland, Oregon  
A.B. Mathematics (Advisor Joe P. Buhler)

## Appointments

- 2021– DARTMOUTH COLLEGE, Hanover, New Hampshire  
Associate Professor
- 2019–2021 DARTMOUTH COLLEGE, Hanover, New Hampshire  
Assistant Professor
- 2014–2019 YALE UNIVERSITY, New Haven, Connecticut  
Gibbs Assistant Professor
- 2013–2014 YALE UNIVERSITY, New Haven, Connecticut  
Postdoctoral Associate
- 2012–2013 COURANT INSTITUTE OF MATHEMATICAL SCIENCES, NEW YORK UNIVERSITY, New York  
NSF Postdoctoral Research Fellow (Sponsor Yuri Tschinkel)
- 2010–2011 MAX PLANCK INSTITUTE FOR MATHEMATICS, Bonn, Germany  
Postdoctoral Fellow/Guest (Sponsor Günter Harder)
- 2009–2012 EMORY UNIVERSITY, Atlanta, Georgia  
NSF Postdoctoral Research Fellow (Sponsor R. Parimala)

## Grants

- 2022–2025 *National Science Foundation Grant* (PI) \$360,000, DMS-2200845, Aug 2022–Jul 2025
- 2020–2025 *Simons Foundation Collaboration Grant for Mathematicians* (PI) \$42,000, Sep 2020–Aug 2025 (declined 2022)
- 2016–2018 *NSA Young Investigator Grant* (PI) \$39,338, H98230-16-1-0321, Nov 2016–Dec 2018
- 2013–2015 *NSA Young Investigator Grant* (PI) \$39,755, H98230-13-1-0291, Aug 2013–Aug 2015
- 2011 *NSA Conference Grant* (co-PI) \$14,800, May 2011
- 2010–2011 *NSF Conference Grant* (co-PI) \$24,295, May 2011
- 2009–2013 *NSF Mathematical Sciences Postdoctoral Research Fellowship* (PI) \$135,000, DMS-0903039

## Awards and Fellowships

- 2022 *Senior Faculty Grant*, Dartmouth College
- 2021 *Susan and Gib Myers 1964 Faculty Fellowship*, Dartmouth College
- 2019 *Walter and Constance Burke Research Initiation Award*, Dartmouth College
- 2009 *Carlitz-Zippin Thesis Prize*, Mathematics Department, University of Pennsylvania
- 2008 *School of Arts and Sciences Dissertation Completion Fellowship*, University of Pennsylvania
- 2004–2008 *Calabi Fellow*, Mathematics Department, University of Pennsylvania
- 2003–2004 *U.S. Advanced Student Fulbright Grant (France)*, Université Paris-Sud XI Orsay
- 2002–2003 *Barry M. Goldwater Scholarship*, Reed College

## Teaching Awards

- 2007 *School of Arts and Sciences Award for Distinguished Teaching*, University of Pennsylvania
- 2007 *Penn Prize for Excellence in Teaching by Graduate Students*, University of Pennsylvania
- 2005–2007 *Good Teaching Award*, Mathematics Department, University of Pennsylvania

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**Published Books**

- 1 *Brauer Groups and Obstruction Problems: Moduli Spaces and Arithmetic* (co-edited with Brendan Hassett, Anthony Várilly-Alvarado, and Bianca Viray), Progress in Mathematics, Volume 320, Birkhäuser Basel, 2017

**Published Articles**

- 2 *Brill–Noether special cubic fourfolds of discriminant 14*, Facets of Algebraic Geometry: A Volume in Honour of William Fulton’s 80th Birthday, Vol. 1 (eds. Paolo Aluffi, David Anderson, Milena Hering, Mircea Mustața, Sam Payne), London Mathematical Society Lecture Note Series **472** (2022), Cambridge University Press, pp. 29–53
- 3 *Thinking about abstracts*, Notices of the AMS **68**, no. 10 (November 2021), 1755–1756
- 4 *Unramified Brauer groups of conic bundles threefolds in characteristic two* (with Alessandro Bigazzi, Christian Böhning, and Hans-Christian Graf von Bothmer), American Journal of Mathematics **143** (2021), 1601–1631
- 5 *Conic bundle fourfolds with nontrivial unramified Brauer group* (with Christian Böhning, Hans-Christian Graf von Bothmer, and Alena Pirutka), Journal of Algebraic Geometry **29** (2020), 285–327
- 6 *Universal triviality of the Chow group of 0-cycles and the Brauer group* (with Alessandro Bigazzi, Christian Böhning, and Hans-Christian Graf von Bothmer), International Mathematics Research Notices, rnz171 (2019)
- 7 *The mathematics of Grace Murray Hopper*, Notices of the American Mathematical Society **66** (March 2019), no. 3, 330–340
- 8 *Period-index bounds for arithmetic threefolds* (with Benjamin Antieau, Colin Ingalls, Daniel Krashen, Max Lieblich), Inventiones mathematicae **26** (2019), no. 2, 301–335
- 9 *Azumaya algebras without involutions* (with Uriya First and Ben Williams), Journal of the European Mathematical Society **21** (2019), no. 3, 897–921
- 10 *Stable rationality of quadric and cubic surface bundle fourfolds* (with Christian Böhning and Alena Pirutka), European Journal of Mathematics **4** (2018), no. 3, 732–760
- 11 *Some non-special cubic fourfolds* (with Nick Addington), Documenta Mathematica **23** (2018), 637–651
- 12 *Semiorthogonal decompositions and birational geometry of del Pezzo surfaces* (with Marcello Bernardara), Proceedings of the London Mathematical Society **117** (2018), no. 1, pp. 1–64
- 13 *Cycles, derived categories, and rationality* (with Marcello Bernardara), Surveys on Recent Developments in Algebraic Geometry, Proceedings of Symposia in Pure Mathematics, Volume 95, American Mathematical Society, Providence, RI, 2017, pp. 199–266
- 14 *Universal unramified cohomology of cubic fourfolds containing a plane* (with Jean-Louis Colliot-Thélène and R. Parimala), Brauer Groups and Obstruction Problems: Moduli Spaces and Arithmetic, Progress in Mathematics, Volume 320, Birkhäuser Basel, 2017, pp. 29–56
- 15 *Surjectivity of the total Clifford invariant and Brauer dimension*, Journal of Algebra **443** (2015), 395–421
- 16 *Quadric surface bundles over surfaces* (with R. Parimala and V. Suresh), Documenta Mathematica, Extra Volume: Alexander S. Merkurjev’s Sixtieth Birthday (2015), 31–70
- 17 *Fibrations in complete intersections of quadrics, Clifford algebras, derived categories, and rationality problems* (with Marcello Bernardara and Michele Bolognesi), Journal de Mathématiques Pures et Appliquées **102** (2014), no. 1, 249–291
- 18 *Cubic fourfolds containing a plane and a quintic del Pezzo surface* (with Marcello Bernardara, Michele Bolognesi, and Anthony Várilly-Alvarado), Algebraic Geometry **1** (2014), no. 2, 181–193

### Published Articles (continued)

- 19 *The transcendental lattice of the septic Fermat surface* (with Christian Böhning and Hans-Christian Graf von Bothmer), *Mathematical Research Letters* **20** (2013), no. 6, 1017–1031
- 20 *Exceptional collections of line bundles on projective homogeneous varieties* (with Alexey Ananyevskiy, Skip Garibaldi, and Kirill Zainoulline), *Advances in Math.* **236** (2013), 111–130
- 21 *Vector bundles of rank four and  $A_3 = D_3$* , *International Mathematical Research Notices* (2013), no. 15, 3450–3476
- 22 *Remarks on the Milnor conjecture over schemes*, *Galois-Teichmüller Theory and Arithmetic Geometry* (Kyoto, 2010), *Advanced Studies in Pure Mathematics*, Volume 63, 2012, pp. 1–30
- 23 *Open problems on central simple algebras*, (with Eric Brussel, Skip Garibaldi, Uzi Vishne), *Transformation Groups* **16** (2011), no. 1, 219–264

### Submitted Articles

- 24 *Stickelberger’s discriminant theorem for algebras* (with Owen Biesel and John Voight), preprint 2021, 17 pp.
- 25 *Maximal Brill-Noether loci via K3 surfaces* (with Richard Haburcak), preprint 2022, 29 pp.
- 26 *Failure of the local-global principle for isotropy of quadratic forms over function fields* (with V. Suresh), arXiv:1709.03707, 7 pp.
- 27 *Explicit descent on elliptic curves and splitting Brauer classes* (with Benjamin Antieau), arXiv:2106.04291, 31 pp.

### Non-Peer-Reviewed Published Articles

- 28 *Failure of the local-global principle for isotropy of quadratic forms over surfaces*, *Quadratic Forms and Linear Algebraic Groups*, *Oberwolfach Reports* **10** (2013), no. 2, 1823–1825
- 29 *Clifford invariants of line bundle-valued quadratic forms*, *Max-Planck Institute for Mathematics series* **33** (2011), 55 pp.

### Invited Lecture Series

- 2018 Jan *Quadratic forms over function fields of complex curves and surfaces* (3 lectures)  
Quadratic Forms in Chile 2018 Summer School, Universidad de Santiago de Chile
- 2017 Jul *Local-global principles in number theory and geometry* (3 lectures)  
Quadratic Forms and Local-Global Principles, University of Antwerp, Belgium
- 2016 Feb *Unramified cohomology, derived categories, and rationality* (2 lectures with 2 pretalks)  
FRG Mini-Workshop, University of Utah, Salt Lake City

### Invited Conference Talks

- 2021 Jan *The local-global principle for quadratic forms over function fields*  
JMM, Special Session on Galois Cohomology in Arithmetic Geometry (virtual)
- 2020 Oct *Brill-Noether special cubic fourfolds*  
AMS Meeting, Special Session on Geometry and Arithmetic of Hyperkähler Manifolds (virtual)
- Jun *Elliptic curves and the local-global principle for quadratic forms*  
Connecticut Summer School in Number Theory 2020 Conference (virtual)
- 2019 Oct *Brauer classes split by genus one curves*  
Maine/Québec Number Theory Conference, University of Maine, Orono
- Jul *Unramified cohomology and the specialization method*  
Workshop on Rationality Problems in Algebraic Geometry, American Institute of Mathematics, San Jose, CA
- 2018 Sep *Isotropy of quadratic forms over function fields*  
Affine Algebraic Groups, Motives and Cohomological Invariants, Banff, Canada
- May *The period-index problem for surfaces over a local field*  
Bi-annual Algebraic and Tropical Meetings of Brown and YaLE, MIT

### Invited Conference Talks (continued)

- 2017 Aug *Segre fourfold and sextic del Pezzo fibrations*  
Simons Conference on Birational Geometry, New York, NY
- Mar *Decomposition of the diagonal and phantom categories on surfaces*  
New Trends in Arithmetic and Geometry of Algebraic Surfaces, Banff, Canada
- 2016 Nov *Stable rationality of conic bundle fourfolds*  
AGNES Fall 2016, University of Massachusetts, Amherst, MA
- Oct *Stable rationality of conic bundle fourfolds*  
Alberta British Columbia (ABC) Algebra Mini-Workshop, University of Alberta, Canada
- Jul *Torsion universal 0-cycles on fibrations*  
Interacting Algebraic Geometry, University of Bourgogne, Dijon, France
- Jun *The torsion order of an algebraic variety*  
New Methods in Birational Geometry, University of Toulouse, France
- Jun *Stable rationality of some fibrations*  
Edge Days 2016, University of Edinburgh, Scotland, UK
- Apr *Stable rationality of quadric bundles*  
Simons Symposium, Geometry over Nonclosed Fields, Schloss Elmau, Bavaria, Germany
- 2015 Oct *Local-global obstructions for quadrics over function fields*  
Local-Global Principles and Their Obstructions, University of Pennsylvania
- Sep *Algebras of composite degree split by genus one curves*  
The Use of Linear Algebraic Groups in Geometry and Number Theory, Banff, Canada
- Mar *On the Euclidean Division (on behalf of Eva Bayer-Fluckiger)*  
AMS Spring Southeastern Sectional Meeting, University of Alabama in Huntsville
- 2014 Mar *Azumaya algebras without involution*  
AMS Meeting Knoxville, Special Session on Galois Cohomology and the Brauer Group
- 2013 June *Failure of the local-global principle for isotropy of quadratic forms over surfaces*  
Quadratic Forms and Linear Algebraic Groups, Oberwolfach, Germany
- May *Orthogonal group schemes with simple degeneration*  
Spring School on Torsors, Fields Institute, Toronto, Ontario, Canada
- Jan *Quadric surface bundles and quaternion algebras*  
JMM San Diego, Special Session on Number Theory and Geometry
- 2012 Mar *Fröhlich twisting via orthogonal motives*  
AMS Meeting Tampa, Special Session Hopf Algebras and Galois Module Theory
- 2010 Oct *A global Milnor conjecture*  
Galois-theoretic Arithmetic Geometry, Kyoto, Japan
- Oct *A Milnor conjecture for p-adic curves*  
Young Researchers in Arithmetic and Algebraic Geometry, Mainz, Germany
- Jun *Involutions on Clifford algebras of line bundle-valued quadratic forms*  
Lens Mini-Course, Université d'Artois, Lens, France
- 2009 Oct *Clifford sequences in the theory of quadratic forms over arithmetic schemes*  
AMS Meeting Boca Raton, Special Session on Arithmetic Geometry
- Sep *A Clifford invariant for line bundle-valued quadratic forms*  
Linear Algebraic Groups and Related Structures, Banff, Alberta, Canada

### Contributed Conference Talks

- 2015 Jul *Brill–Noether special cubic fourfolds*  
AMS Summer Institute in Algebraic Geometry, University of Utah, Salt Lake City
- 2010 Jan *(Non-)surjectivity of the Clifford invariant*  
Brauer Group in Israel, Kibbutz Ketura, Israel
- 2009 Jan *Characteristic classes and root numbers for motives associated with  $\mathbf{GO}_n$*   
Joint Mathematics Meetings 2009, Washington, DC

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**Selected Research Seminar Talks**

- 2022 Jan *Brauer classes split by genus one curves*  
QFLAG: Quadratic forms, Linear algebraic groups and Beyond (virtual)
- 2021 Nov *Recent breakthroughs in the rationality problem*  
Colloquium, Rice University, Houston (virtual)
- Apr *Brill–Noether theory for cubic fourfolds*  
Hodge seminar, University of Edinburgh, UK (virtual)
- Apr *Brauer classes split by genus one curves*  
Quebec–Vermont Number Theory Seminar, Quebec City/Montreal/Burlington (virtual)
- Mar *The local-global principle for quadratic forms over function fields*  
Number Theory and Algebraic Geometry Seminar, Simon Fraser University, Canada (virtual)
- Feb *Brill–Noether theory for cubic fourfolds*  
Algebraic Geometry Seminar, University of Warwick, UK (virtual)
- Jan *The local-global principle for quadratic forms over function fields II*  
Algebra and Number Theory Seminar, Dartmouth College (virtual)
- 2020 Oct *Sextic normal genus one curves*  
Algebra and Number Theory Seminar, Dartmouth College (virtual)
- May *The local-global principle for quadratic forms over function fields*  
Séminaire Variétés Rationnelles, Sorbonne Université Jussieu, Paris (virtual)
- 2019 Apr *Torsors over moduli of genus one curves and splitting Brauer classes*  
Algebraic Geometry Seminar, Courant Institute, New York University, New York
- Jan *Quadratic forms in four variables*  
Colloquium, Dartmouth College, Hanover
- 2018 May *Noether’s problem*  
Colloquium, Dartmouth College, Hanover
- Jan *Rationality of two-three fourfolds*  
Algebraic Geometry Seminar, Yale University, New Haven
- Jan *A tale of two-three fourfolds*  
Algebraic Geometry Seminar, University of Michigan, Ann Arbor
- 2017 Dec *The local-global principle for isotropy over function fields*  
Algebra seminar, University of Pennsylvania, Philadelphia
- Oct *The local-global dimension spectrum of quadratic forms*  
Algebraic Geometry Seminar, Courant Institute, New York University
- Mar *Geometry via counting points*  
Colloquium, Center for Communications Research, Princeton
- 2016 Nov *Torsion order of an algebraic variety*  
Algebraic Geometry Seminar, University of British Columbia, Vancouver, Canada
- Jun *Brill–Noether theory for cubic fourfolds*  
Edge Algebra Seminar, University of Edinburgh, Scotland
- Apr *Universal triviality of 0-cycles and the degeneration method*  
Algebraic Geometry Seminar, University of Illinois, Chicago
- Jan *The rationality problem in algebraic geometry*  
Colloquium, University of Connecticut, Storrs
- 2015 Oct *Curves, K3 surfaces, and cubic fourfolds*  
Algebra Seminar, University of Connecticut, Storrs
- Feb *Pfaffian cubic fourfolds and curves of genus 8*  
Algebraic Geometry Seminar, Stony Brook University
- Feb *Cycles on cubic fourfolds*  
Algebraic Geometry Seminar, University of Michigan, Ann Arbor
- Feb *Recent upsets in some rationality problems*  
Colloquium, University of Michigan, Ann Arbor
- 2014 Sep *Points, lines, and surfaces in cubic fourfolds*  
Valley Geometry Seminar, University of Massachusetts, Amherst

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**Selected Research Seminar Talks (continued)**

- 2013 Sep *Three approaches to the rationality problem for cubic fourfolds*  
Algebraic and Tropical Geometry Seminar, Yale University
- Apr *Unramified cohomology of cubic fourfolds*  
Algebraic Geometry Seminar, Courant Institute, New York University
- Apr *Rational cubic fourfolds containing a plane*  
Algebraic Geometry Seminar, Brown University
- Feb *Cubic fourfolds containing a plane and a quartic scroll*  
Algebraic Geometry Seminar, Columbia University
- Feb *Quaternions over quadratic rings and quaternary quadratic forms*  
Number Theory Seminar, Massachusetts Institute of Technology
- Feb *Introduction to the anabelian conjectures and  $p$ -adic Hodge theory* (three 1.5 hour talks)  
Lucien Szpiro's Impromptu Seminar, CUNY Graduate Center, New York
- 2012 Oct *Nontrivial rational cubic fourfolds containing a plane*  
Algebra Seminar, University of Pennsylvania
- Sep *Quadric surfaces and quaternion algebras*  
Algebraic Geometry Seminar, Courant Institute, New York University
- May *Quadric surface bundles over surfaces*  
Algebra Seminar, University of Pennsylvania
- 2011 Oct *Rationality of families of intersections of quadrics and derived categories*  
Algebraic Geometry Seminar, Rice University
- Jun *Quadratic forms over curves*  
Number Theory Seminar, Technische Universität Dortmund, Germany
- Jun *Les invariants de Clifford–Hasse–Witt sur les courbes  $p$ -adiques*  
Number Theory Seminar, Université de Bordeaux 1, France
- Jun *Décomposition motivique des quadriques et des espaces homogènes projectifs*  
Géométrie Algébrique et Géométrie Arithmétique (GAGA), Université de Bordeaux 1, France
- Jan *Milnor's conjecture for  $p$ -adic curves*  
Number Theory Seminar, Max-Planck-Institut für Mathematik, Bonn, Germany
- 2010 Dec *Decompositions of rank four vector bundles*  
Oberseminar, Universität Duisburg-Essen, Essen, Germany
- Dec *Rank four vector bundles on four-folds and “exceptional” isomorphisms of algebraic groups*  
MAThematics Center Heidelberg (MATCH), Universität Heidelberg, Germany
- Nov *Rank four vector bundles on fourfolds*  
Seminar Algebraic Geometry (SAG), Universität Bonn, Germany
- Feb *Chow groups of quadrics I/II* (two talks)  
Algebra Seminar, Emory University
- 2009 Nov *Essentially self-dual vector bundles on algebraic varieties*  
Algebraic Geometry Seminar, Duke University
- Oct *Invariants of quadratic forms over algebraic varieties*  
Number Theory Seminar, University of Georgia, Athens
- Sep *Mod 4 invariants of line bundle-valued quadratic forms*  
Algebra Seminar, Emory University
- 2008 Nov *Self-dual Galois representations*  
Colloquium, Center for Communications Research West, La Jolla
- May *Invariants “modulo 4” de formes quadratiques à valeurs dans des fibrés*  
Number Theory Seminar, Université Bordeaux-I, France
- 2007 Aug *Iwasawa theory over imaginary quadratic fields*  
Fields Institute Summer School in Iwasawa Theory, McMaster University
- 2004 Oct *The probability that a  $p$ -adic polynomial splits*  
Graduate Student Pizza Seminar, University of Pennsylvania, Philadelphia
- 2002 Dec  *$p$ -adic polynomials*  
Mathematics Colloquium, Reed College

## Selected Undergraduate Research Talks

- 2018 Mar *Noether's problem*  
Colloquium, Reed College, Portland, OR
- 2016 Oct *Packing in lattices*  
Yale Undergraduate Math Society, Yale University
- 2015 Apr *How to take the derivative of the Dirac delta function*  
Yale Undergraduate Math Society, Yale University
- 2014 Jun *Crab puzzles on lattices*  
Summer Undergraduate Mathematics Research at Yale (SUMRY) Colloquium
- Mar *Points and conics*  
Math Club, University of Connecticut, Storrs
- 2013 Oct *A game on the exceptional group  $G_2$  and a conjecture concerning flag varieties*  
Algebra Seminar, Wesleyan University
- 2011 Jun *Zéros des formes quadratiques sur les corps globaux*  
Séminaire "Jouve-Pazuki", Université de Bordeaux 1, France
- 2009 Nov *Quaternions and conic sections: from algebra to geometry*  
Mathematics Colloquium, Wake Forest University
- 2008 Nov *From quaternion algebras to conic sections*  
Mathematics Colloquium, Reed College
- 2002 Dec *p-adic polynomials*  
Mathematics Colloquium, Reed College

## Workshops/Research Visits

- 2020 Oct *AGNES*, Stony Brook University (virtual)
- 2019 July *Workshop on Rationality Problems in Algebraic Geometry*, American Institute of Mathematics
- 2018 Sep *Affine Algebraic Groups, Motives and Cohomological Invariants*, Banff, Canada
- Jul *Classical algebraic geometry*, Oberwolfach, Germany
- May *Algebra/Number Theory Group*, Dartmouth College, Hanover (visiting John Voight)
- Jan *Algebra/Algebraic Geometry Group*, University of Michigan, Ann Arbor (visiting Bill Fulton)
- Jan *Quadratic forms in Chile 2018 Summer School*, Universidad de Santiago de Chile
- 2017 Aug *Simons Conference on Birational Geometry*, New York
- Jul *ALGAR 2017: Quadratic Forms and Local-Global Principles*, University of Antwerp, Belgium
- Mar *New Trends in Arithmetic and Geometry of Algebraic Surfaces*, Banff, Canada
- 2016 Nov *AGNES*, University of Massachusetts, Amherst
- Jul *Interacting Algebraic Geometry*, Institut de Mathématiques de Bourgogne, Dijon
- Jun *New methods in birational geometry*, University of Toulouse, France
- Jun *Edge Days 2016*, University of Edinburgh, Scotland
- Apr *Simons Symposium: Geometry over nonclosed fields*, Schloss Elmau, Bavaria, Germany
- Apr *AGNES*, Yale University
- Feb *Unramified cohomology, derived categories, and rationality*, FRG Workshop, Salt Lake City
- 2015 Oct *AGNES*, Brown University
- Oct *Local-Global Principles and Their Obstructions*, FRG Workshop, University of Pennsylvania
- May *The Use of Linear Algebraic Groups in Geometry and Number Theory*, Banff, Alberta, Canada
- Mar *Arizona Winter School 2015: Arithmetic and Higher-Dimensional Varieties*, Tucson
- Feb *Algebra/Algebraic Geometry Group*, University of Michigan, Ann Arbor (visiting Bill Fulton)
- 2014 July *SQuaREs: The geometry of Azumaya algebras in dimension 3*, AIM, Palo Alto
- 2013 Jun *Quadratic Forms and Linear Algebraic Groups Workshop*, Oberwolfach, Germany
- May *Torsors, Motives and Cohomological Invariants*, Fields Institute, Toronto, Ontario, Canada
- Feb *Brauer groups and obstruction problems: moduli spaces and arithmetic*, AIM, Palo Alto

### Workshops/Research Visits (continued)

- 2012 Mar *Arizona Winter School 2012: Ramification in Geometry*, Tucson
- 2011 Jun *IRMAR*, Université de Rennes 1, France (visiting Michele Bolognesi)
- Jun *IMB*, Université Bordeaux I (visiting Philippe Cassou-Noguès)
- May *Forschungsinstitut für Mathematik*, ETH Zürich, Switzerland (visiting Max-Albert Knus)
- Mar *Progrès récents en théorie des modules galoisiens*, CIRM, Luminy, France
- 2010 Oct *Galois-theoretic Arithmetic Geometry (RIMS camp-style seminar)*, IIAS, Kyoto, Japan
- Jun *Lens Mini-Course on Linear Algebraic Groups and Quadratic Forms*, Université d'Artois, France
- 2010 Jan *The Brauer Group in Israel*, Kibbutz Ketura, Israel
- 2009 Dec *Non-Abelian Fundamental Groups in Arithmetic Geometry*, Newton Institute, Cambridge, UK
- 2009 Sep *Linear Algebraic Groups and Related Structures*, Banff, Alberta, Canada
- Mar *Arizona Winter School 2009: Quadratic Forms*, Tucson
- 2008 May *MIMS*, University of Manchester, UK (visiting Martin Taylor)
- 2008 May *IMB*, Université Bordeaux-I, France, (visiting Philippe Cassou-Noguès)
- 2007 Aug *Fields Institute Summer School in Iwasawa Theory*, McMaster University, Canada
- 2007 Mar *Arizona Winter School 2007: p-adic geometry*, Tucson
- 2006 Jul *Clay Mathematics Institute 2006 Summer School: Arithmetic Geometry*, Göttingen, Germany

### Conference Organizing

- 2019 Oct *New Facets* (early career workshop preceding Facets of Algebraic Geometry conference), University of Michigan, Ann Arbor, with Melody Chan, Tyler Foster, and Milena Hering
- 2018– *Algebraic Geometry Northeastern Series (AGNES)*, Organizing Committee
- 2018 May *Birational Geometry and Arithmetic*, Institute for Computational and Experimental Research in Mathematics (ICERM), Providence, with Marta Pieropan, Sho Tanimoto, Yuri Tschinkel, and Anthony Várilly-Alvarado
- 2016 Apr *Algebraic Geometry Northeastern Series (AGNES)*, Yale University, with José González and Sam Payne
- 2015 May *Rational Points on Varieties*, Instituto Nacional de Matemática Pura e Aplicada (IMPA), Rio de Janeiro, Brazil, with Cecilia Salgado and Anthony Várilly-Alvarado
- Mar *Special Session on Quadratic Forms in Arithmetic and Geometry*, AMS Meeting, University of Alabama in Huntsville, with Jorge Morales and Anne Quéguiner-Mathieu
- 2014 Nov *Special Session on Exceptional Groups in Physics, Algebra, and Geometry*, AMS Meeting, University of North Carolina at Greensboro, with Anthony Ruoizzi and George McNinch
- 2014–2016 *SQuaREs: The geometry of Azumaya algebras in dimension 3*, American Institute of Mathematics, with Ben Antieau, Colin Ingalls, Danny Krashen, and Max Lieblich
- 2013 Feb *Brauer groups and obstruction problems: moduli spaces and arithmetic*, American Institute of Mathematics, with Brendan Hassett, Tony Várilly-Alvarado, and Bianca Viray
- Jan *AMS-AWM Special Session: The Brauer Group in Algebra and Geometry*, Joint Mathematics Meetings, San Diego, with Kelly McKinnie and V. Suresh
- 2011 May *Ramification in Algebra and Geometry* at Emory University (RAGE), with Eric Brussel, Skip Garibaldi, Daniel Krashen, and R. Parimala

### Seminar/Mini-Workshop Series Organizing

- 2019– *Dartmouth Algebra and Number Theory Seminar* (co-organizer)
- 2014– *Bi-annual Algebraic and Tropical Meetings of Brown and Yale* (co-founder, co-organizer)
- 2014–2019 *Yale Algebra and Lie Groups Seminar* (co-organizer)
- 2014–2015 *Yale Algebra and Number Theory Seminar* (co-organizer)
- 2013–2019 *Yale Algebraic and Tropical Geometry Seminar* (co-organizer)
- 2012–2013 *RTG Joint Columbia/CUNY/NYU Number Theory Seminar* (NYU organizer)



## Postdoc Mentoring

2020– *Postdoc mentor*: Jack Petok, Dartmouth College

## Graduate Mentoring

2020– *PhD advisor*: Richard Haburcak (4rd year PhD student, Dartmouth College)  
 2018–2019 *Postbac advisor*: Andres Mejia, Emerging Scholars Initiative Post-baccalaureate Research Education Program (ESI PREP), Yale University  
 2015 Mar *Study group leader*, guided a group of graduate students through material on K3 surfaces during the Arizona Winter School 2015  
 2014–2016 Co-organized learning seminar for graduate students to prepare for talks in Yale’s Algebraic and Tropical Geometry seminar  
 2013 Feb Mock orals chair for graduate student at Courant Institute  
 2006–2008 *TA Training Program* (leader) and *Master TA* (teaching assistant mentor), organized a week-long teacher training program each fall and conducted long-term evaluation of incoming graduate student TAs at University of Pennsylvania

## Graduate Reading Courses/Learning Seminars Directed

2022 Wtr *Learning Seminar: Hilbert modular forms*, Dartmouth College  
 2021 Sum *Spectral sequences* (with Juanita Duque Rosero and Richard Haburcak), Dartmouth College  
 2021 Spr *Learning Seminar: Group schemes*, Dartmouth College  
*Moduli spaces of sheaves* (with Richard Haburcak), Dartmouth College  
 2021 Wtr *Intersection Theory* (with Richard Haburcak), Dartmouth College  
 2020 Fall *K3 Surfaces* (with Richard Haburcak), Dartmouth College  
 2020 Sum *Algebraic Geometry* (with Richard Haburcak), Dartmouth College  
*Algebraic Geometry* (with Grant Molnar), Dartmouth College  
 2020 Spr *Algebraic Geometry* (with Richard Haburcak), Dartmouth College  
 2020 Wtr *Central Simple Algebras* (with Lizzie Buchanan), Dartmouth College  
*Commutative Algebra and Algebraic Number Theory* (with Steve Fan), Dartmouth College  
*Algebraic Curves* (with Richard Haburcak), Dartmouth College  
 2019 Fall *Commutative Algebra and Algebraic Geometry* (with Richard Haburcak), Dartmouth College  
*Learning Seminar: Shimura Varieties*, Dartmouth College  
 2012 Spr *Global Class Field Theory* (with Nivedita Bhaskara), Emory University

## Graduate Oral Examination Committees

2020 May *Algebraic Geometry and Cohomology*, Richard Haburcak, Dartmouth College  
 2019 Dec *Algebra and Commutative Algebra*, Richard Haburcak, Dartmouth College  
 2019 Oct *Algebraic Geometry and Elliptic Curves*, Grant Molnar, Dartmouth College

## Graduate Advancement Committees

2020 Dec Ben Adenbaum (combinatorics and representation theory), Dartmouth College  
 2020 Oct Juanita Duque-Rosero (arithmetic geometry), Dartmouth College

## PhD Dissertation Committees

2020 May Ben Breen, Dartmouth College  
 2019 Jul Sam Schiavone, Dartmouth College

## Undergraduate Theses

2019 Spr *Coding Theory*, Claire Thompson (at Goldman Sachs), Yale University  
 2018 Fall *Algebraic Geometry*, Connor Halleck-Dube (PhD student at Berkeley), Yale University  
 2018 Spr *Algebra*, Elijah Gunther (PhD student at UPenn), Yale University  
 2017 Spr *Étale Cohomology*, Stanislav Atanasov (PhD student at Columbia), Yale University  
 2015 Fall *Algebraic Curves*, Louis Gaudet (PhD student at Rutgers), Yale University

## Undergraduate Mentoring

- 2020–      *Pre-Major Advisor* for first and second year students Dartmouth College
- 2018–2019 *College Advisor* for first year students at Grace Hopper College, Yale University
- 2014–2019 *Academic Advisor* for third and fourth year undergraduate math majors, Yale University
- 2014–2019 *Sophomore Advisor* for second year undergraduate math majors, Yale University

## Teaching

- 2022 Spr    *Math 75 Mathematics of Cryptography*, Dartmouth College
- 2022 Wtr    *Math 125 Galois Cohomology and Descent* (Graduate Course), Dartmouth College
- 2021 Fall    *Math 71 Algebra*, Dartmouth College
- 2020 Fall    *Math 101 Topics in Algebra: Quadratic Forms* (Graduate Course), Dartmouth College
- 2020 Fall    *Math 11 Accelerated Multivariable Calculus* (Course Coordinator), Dartmouth College
- 2020 Spr    *Math 75 Mathematics of Cryptography*, Dartmouth College
- 2020 Wtr    *Math 101 Abstract Algebra* (Graduate Course), Dartmouth College
- 2019 Fall    *Math 11 Accelerated Multivariable Calculus*, Dartmouth College
- 2019 Spr    *Math 370 Fields and Galois Theory*, Yale University
- 2019 Spr    *Math 373/573 Algebraic Number Theory* (Graduate Course), Yale University
- 2018 Fall    *Math 608 Introduction to Arithmetic Geometry* (Graduate Course), Yale University
- 2018 Spr    *Math 225 Linear Algebra and Matrix Theory* (Two Sections), Yale University
- 2018 Spr    *Math 370 Fields and Galois Theory*, Yale University
- 2017 Fall    *Math 115 Calculus of Functions of One Variable II* (Flipped Classroom), Yale University
- 2017 Fall    *Math 350 Introduction to Abstract Algebra*, Yale University
- 2017 Spr    *Math 225 Linear Algebra and Matrix Theory*, Yale University
- 2016 Fall    *Math 350 Introduction to Abstract Algebra*, Yale University
- 2016 Fall    *Math 604 Introduction to Quadratic Forms* (Graduate Course), Yale University
- 2016 Spr    *Math 235 Reflection Groups*, Yale University
- 2016 Spr    *Math 608 Introduction to Arithmetic Geometry* (Graduate Course), Yale University
- 2015 Fall    *Math 350 Introduction to Abstract Algebra*, Yale University
- 2015 Spr    *Math 612 Arithmetic and Geometry of Linear Algebraic Groups* (Graduate Course), Yale
- 2015 Spr    *Math 225 Linear Algebra and Matrix Theory*, Yale University
- 2014 Fall    *Math 115 Calculus of Functions of One Variable II*, Yale University
- 2014 Spr    *Math 225 Linear Algebra and Matrix Theory*, Yale University
- 2013 Fall    *Math 115 Calculus of Functions of One Variable II*, Yale University
- 2012 Fall    *Math 121 Calculus I*, New York University
- 2012 Spr    *Math 211 Multivariable Calculus*, Emory University
- 2011 Fall    *Math 211 Multivariable Calculus*, Emory University
- 2010 Spr    *Math 211 Multivariable Calculus*, Emory University
- 2007 Sum    *Math 170 Ideas in Mathematics: Patterns and Codes* (Summer Instructor), Penn
- 2007 Spr    *Math 371: Abstract Algebra II* (Teaching Assisitant), Penn
- 2006 Fall    *Math 370: Abstract Algebra I* (Teaching Assistant), Penn
- 2006 Sum    *Math 170: Ideas in Mathematics: Logic and Foundations* (Summer Instructor), Penn
- 2006 Spr    *Math 203: Proving Things (Algebra)* (Teaching Assistant), Penn
- 2005 Fall    *Math 104: Calculus I* (Teaching Assistant), Penn
- 2004–2005 *Sunday Math Review* (Teaching Assistant), Penn

## Academic Outreach

- 2020 May *What's the Big Idea?* outreach program connecting classrooms to researchers through video interviews, Hanover, NH
- 2017 Dec *Synapse Resonance* high school outreach program and Tedx talks, New Haven, CT
- 2016–2017 *Iota*, named for the inclusion map, is a group of undergraduate math majors concerned with issues of diversity and inclusion at Yale; served as a faculty liason and consulted with about the creation of a peer-tutoring program for upper level math courses
- 2016 *Math Mornings*, series of public lectures for middle school outreach in New Haven, CT
- 2015 Jan *Art of the Equation*, exhibition of prints and public conversation with David Mumford at the Yale University Art Gallery, reviewed in *Scientific American* article “Math Is Beautiful, But Is It Art?”
- 2014–2019 *Pathways to Science Café*, high school science outreach program in New Haven, CT
- 2014–2019 Departmental liason for the *Yale Undergraduate Math Society*, co-organized series of evening talks for undergraduates
- 2013 Nov Screening of *Colors of Math* film with public Q&A with executive producer Yuri Tschinkel at the Whitney Humanities Center, Yale University

## Academic Service

- 2021– Graduate Admissions Committee Chair, Dartmouth College Mathematics Department
- 2020– Faculty Advisor, Directed Reading Program, Dartmouth College Mathematics Department
- 2020– Graduate Recruiting Chair, Dartmouth College Mathematics Department
- 2020– Graduate Admissions Committee, Dartmouth College Mathematics Department
- 2020– Working Group on Equity in Graduate Admissions, *paraDIGMS: Diversity in Graduate Mathematical Sciences*, AMS/IMSI joint national initiative
- 2020– Ad-Hoc Preliminary Exam Committee, Dartmouth College Mathematics Department
- 2019– Recruitment Committee, Dartmouth College Mathematics Department
- 2015–2017 Algebra Qualifying Exam Board, Yale University Mathematics Department
- 2014–2016 Graduate Admissions Committee, Yale University Mathematics Department
- 2013–2019 Website Revitalization Committee (chair), Yale University Mathematics Department
- 2013–2018 Organized academic jobs information session and panel for graduate students, Yale University Mathematics Department
- 2011–2013 Zentralblatt MATH reviewer
- 2009 Jan *AMS Session on Number Theory, III* (co-chair), Joint Mathematics Meetings, Washington D.C., with Emma Previato
- 2007–2008 Member of graduate student committee spearheading the development of an honors calculus course, Math 116/260, offered at University of Pennsylvania since Fall 2008

## Editorial Work

Referee for *Advances in Applied Clifford Algebras*, *Advances in Geometry*, *Advances in Mathematics*, *Algebra and Number Theory*, *Algebraic Geometry*, *American Journal of Mathematics*, *Annals of K-Theory*, *Annales de l'institut Fourier*, *Annali della Scuola Normale Superiore di Pisa*, *Acta Mathematica*, *Bulletin des Sciences Mathématiques*, *Canadian Journal of Mathematics*, *Canadian Mathematical Bulletin*, *Compositio Mathematica*, *Documenta Mathematica*, *Duke Mathematical Journal*, *Forum Mathematicum*, *Geometriae Dedicata*, *Geometry & Topology*, *Glasnik Matematicki*, *Indian Journal of Pure and Applied Mathematics*, *International Mathematics Research Notices*, *Inventiones mathematicae*, *Journal de l'Ecole Polytechnique*, *Journal de Théorie des Nombres de Bordeaux*, *Journal für die reine und angewandte Mathematik*, *Journal of Algebraic Geometry*, *Journal of the AMS*, *Journal of K-theory*, *Journal of Number Theory*, *Journal of Pure and Applied Algebra*, *Linear Algebra and Applications*, *Manuscripta Mathematica*, *Mathematische Zeitschrift*, *Michigan Mathematical Journal*, *Notices of the American Mathematical Society*, *Pacific Journal of Mathematics*, *Proceedings of Edinburgh Mathematical Society*, *Proceedings of the London Mathematical Society*, *Proceedings of the AMS*, *Rendiconti Padova*, *Research in the Mathematical Sciences*, *Revista Matemática Complutense*, *Transactions of the AMS*, and various conference proceedings volumes.