Daniel Krashen **Curriculum Vitæ** March 5, 2021

CONTACT

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WEBSITE

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EDUCATION

PhD in Mathematics, 2001, University of Texas at Austin

BA, with honors in Mathemematics, 1994, Oberlin College

APPOINTMENTS

Professor, 2018-, Rutgers University

Professor, 2017-2018, University of Georgia

Associate Professor, 2012-2017, University of Georgia

Assistant Professor, 2008-2012, University of Georgia

Visiting Scholar, 2007-2008, University of Pennsylvania

Member, Fall 2006, Institute for Advanced Study, Princeton

Member, 2004-2005, Institute for Advanced Study, Princeton

Gibbs Assistant Professor, 2003-2007, Yale University

Visiting Scholar, 2002-2003, University of Michigan, Ann Arbor

VIGRE Assistant Professor, 2001-2003, University of California, Los Angeles

Graduate Instructor, 1997-2001, University of Texas at Austin

AWARDS AND HONORS

Fellow of the American Mathematical Society (2017)

Presidential Early Career Award for Scientists and Engineers (PECASE) (2016)

University of Georgia Outstanding Professor Award (2016)

Faculty Early Career Development (CAREER) (2012)

University of Georgia Creative Research Medal (2012)

Graduate Research Assistantship, UT Austin (1998-2000)

Edward and Louise Dodd Teaching Excellence Award, UT Austin (2000)

Continuing Fellowship, UT Austin (1998-1999)

David Bruton Jr. Fellowship, UT Austin (1996)

National Science Foundation Graduate Fellowship (1994-1997)

Rebecca Cary Orr Memorial Prize in Mathematics, Oberlin College (1994)

Grants

Active Grants

1. *Algebraic Structures and the Arithmetic of Fields, National Science Foundation (DMS-1902144 , 8/1/19-7/31/22)*
   PI: Daniel Krashen.
2. *Collaborative Research: AGNES: Algebraic Geometry Northeastern Series, National Science Foundation (11/1/19-10/31/22),*
   PI: Angela Gibney, coPIs: Lev Borisov, Anders Buch, Daniel Krashen.
3. *CAREER: The Arithmetic of Fields and the Complexity of Algebraic Structures, National Science Foundation (DMS-2049180 , 07/01/12-06/30/21)*
   PI: Daniel Krashen.

Previous Grants Awarded

4. *The 13th Brauer Group Meeting, National Science Foundation (3/1/2018-2/28/2019),* PI: Kelly McKinnie, coPIs: Daniel Krashen.
5. *FRG: Collaborative Research: Obstructions to Local-Global Principles and Applications to Algebraic Structures, National Science Foundation (1463901 , 07/01/15-06/31/20)* PI: Daniel Krashen (in collaboration with D. Harbater, J. Hartmann, R. Parimala, V. Suresh).
6. *Collaborative Research: Georgia Algebraic Geometry Symposium, National Science Foundation (06/15/15-05/31/18),* PI: Valery Alexeev, coPIs: Valery Alexeev, Noah Giansiracusa, Daniel Krashen, Angela Gibney, Dino Lorenzini.
7. *The 12th Brauer Group Meeting, National Science Foundation (04/01/15-03/31/16),* PI: Kelly McKinnie, coPIs: Daniel Krashen, Eric Brussel.
   http://torsor.github.io/brauer/index2015/.
8. *RTG: Algebra, Algebraic Geometry, and Number Theory, National Science Foundation (DMS-1344994 , 05/01/14-04/30/19)* PI: Dino Lorenzini, coPIs: Valery Alexeev, Pete L. Clark, Daniel Krashen, Angela Gibney.
   http://agant.torsor.org.
9. *The structure of invariants in algebra and geometry, National Science Foundation (DMS-1007462 , 09/01/10-08/31/13)* PI: Daniel Krashen.
10. *The 10th Brauer Group Meeting, National Science Foundation (DMS-1214939 , 06/01/12-05/31/13)* PI: Kelly McKinnie, coPIs: Daniel Krashen, Eric Brussel.
11. *Young Investigator's Grant, National Security Agency (2009-2010),* PI: Daniel Krashen.
12. *University of Georgia Foreign travel grant, University of Georgia (2009),* PI: Daniel Krashen.
13. *Young Investigator's Grant, National Security Agency (H98230-08-1-0109 , 2008-2009)* PI: Daniel Krashen.
14. *Young Investigator's Grant, National Security Agency (H98230-06-1-0032 , 2006-2007)* PI: Daniel Krashen.

Research Manuscripts

1. *A Tannakian approach to patching*, with Bastian Haase and Max Lieblich, preprint (arxiv).
2. *Schubert cycles and subvarieties of generalized Severi-Brauer varieties*, with Caroline Junkins and Nicole Lemire, preprint (arxiv).
3. *The Clifford algebra of a finite morphism*, with Max Lieblich, in revision for the Journal of Algebra (arxiv).
4. *Division algebras with common subfields*, with Eliyahu Matzri, Andre Rapinchuk, Louis Rowen and David Saltman, in revision for Manuscripta Mathematica.
5. *Local-Global Principles for Curves over Semi-Global Fields*, with David Harbater and Alena Pirutka, Bulletin of the London Mathematical Society, 53 (1), Feb. 2021, 177–193 (arxiv).
6. *Local-Global Principles for Tori over Arithmetic Curves*, with Jean-Louis Colliot-Thélène, David Harbater, Julia Hartmann, R. Parimala and V. Suresh, Algebraic Geometry, 7 (5) (2020) 607–633 (arxiv).
7. *Multiparty Non-Interactive Key Exchange and More From Isogenies on Elliptic Curves*, with Dan Boneh, Darren Glass, Kristin Lauter, Shahed Sharif, Alice Silverberg, Mehdi Tibouchi and Mark Zhandry, in the Journal of Mathematical Cryptology, Vol. 14, no. 1 (arxiv).
8. *Local-Global Principles for Zero-Cycles on Homogeneous Spaces over Arithmetic Function Fields*, with Jean-Louis Colliot-Thélène, David Harbater, Julia Hartmann, R. Parimala and V. Suresh, Transactions of the American Mathematical Society, 372 (2019), no. 8, 5263–5286 (arxiv).
9. *Period-index bounds for arithmetic threefolds*, with Benjamin Antieau, Asher Auel, Colin Ingalls and Max Lieblich, Inventiones Mathematicae, 216 (2019), no. 2, 301-335 (arxiv).
10. *Local-global Galois theory of arithmetic function fields*, with David Harbater, Julia Hartmann, R. Parimala and V. Suresh, Israel Journal of Mathematics, vol. 232, no. 2 (2019), 849-882 (arxiv).
11. *Derived categories for torsors for Abelian schemes*, with Benjamin Antieau and Matthew Ward, Advances in Mathematics, 306 (2017), 1-23 (arxiv).
12. *Period and index, symbol lengths, and generic splittings in Galois cohomology*, Bulletin of the London Mathematical Society, 48 (2016), no. 6, 985-1000 (arxiv).
13. *Local-global principles for torsors over arithmetic curves*, with David Harbater and Julia Hartmann, American Journal of Mathematics, 137 (2015), no. 6, 1559–1612 (arxiv).
14. *Diophantine and cohomological dimensions*, with Eliyahu Matzri, Proceedings of the AMS, 143 (2015), no. 7, 2779–2788 (arxiv).
15. *Refinements to patching and applications to field invariants*, with David Harbater and Julia Hartmann, International Math. Research Notices, doi: 10.1093/imrn/rnu278 (2015) (arxiv).

16. *Local-global principles for Galois cohomology*, with David Harbater and Julia Hartmann, Commentarii Mathematici Helvetici, 89 (2014), no. 1, 215–253 (arxiv).

17. *Weierstrass preparation and algebraic invariants*, with David Harbater and Julia Hartmann, Mathematische Annalen, 356 (2013), no. 4, 1405–1424 (arxiv).

18. *Relative Brauer groups of genus 1 curves*, with Mirela Ciperiani, Israel Journal of Mathematics, 192 (2012), no. 2, 921–949 (arxiv).

19. *Appendix to: Period and index in the Brauer group of an arithmetic surface*, Journal für die reine und angewandte Mathematik, 659 (2011), 1–41 (arxiv).

20. *Patching subfields of division algebras*, with David Harbater and Julia Hartmann, Transactions of the American Mathematical Society, 363 (2011), no. 6, 3335–3349 (arxiv).

21. *Distinguishing division algebras by finite splitting fields*, with Kelly McKinnie, Manuscripta Mathematica, 134 (2011), no. 1-2, 171–182 (arxiv).

22. *Field patching, factorization, and local-global principles*, Quadratic forms, linear algebraic groups, and cohomology, 57–82, Dev. Math., 18, Springer, New York, 2010 (arxiv).

23. *Corestrictions of algebras and splitting fields*, Transactions of the American Mathematical Society, 362 (2010), no. 9, 4781–4792 (arxiv).

24. *Zero cycles on homogeneous varieties*, Advances in Mathematics, 223 (2010), no. 6, 2022–2048 (arxiv).

25. *Applications of patching to quadratic forms and central simple algebras*, with David Harbater and Julia Hartmann, Inventiones Mathematicae, 178 (2010), no. 2, 231–263 (arxiv).

26. *Pointed trees of projective spaces.*, with Linda Chen and Angela Gibney, Journal of Algebraic Geometry, 18 (2009), no. 3, 477–509 (arxiv).

27. *Index reduction for Brauer classes via stable sheaves*, with Max Lieblich, International Mathematics Research Notices, no. 8 (2008), Art. ID rnn010, 31 pp (arxiv).

28. *Birational maps between generalized Severi-Brauer varieties*, Journal of Pure Applied Algebra, 212 (2008), no. 4, 689–703 (arxiv).

29. *Motives of unitary and orthogonal homogeneous varieties*, Journal of Algebra, 318 (2007), no. 1, 135–139 (arxiv).

30. *Severi-Brauer varieties and symmetric powers*, with David J. Saltman, Algebraic transformation groups and algebraic varieties, 59–70, Encyclopaedia Math. Sci., 132, Springer, Berlin, 2004.

31. *Severi-Brauer varieties of semidirect product algebras*, Documenta Mathematica, 8 (2003), 527–546 (electronic) (arxiv).

Presentations

(2022) *TBA*, Invited address at the Joint Mathematics Meetings, Seattle.

(2020) *A Tannakian Approach to Patching*, GAAAAG: Geometric, Algebraic and Analytic Approaches to Arithmetic Geometry.

(2020) *Field patching, local-global principles and rationality*, Online seminar on Quadratic forms, Linear algebraic groups and Beyond.

(2019) *Derived categories and motives*, MRC Workshop: Explicit Methods in Arithmetic Geometry in Characteristic p.

(2018) *Topological viewpoints on algebraic complexity*, Colloquium at the University of South Carolina.

(2018) *Brauer classes on p-adic surfaces*, Conference on Quadratic Forms in Chile.

(2017) *Extremely Indecomposable Algebras and the Symbol Length Problem*, RIMS Workshop: Noncommutative algebraic geometry and related topics, Research Institute for the Mathematical Sciences, Kyoto, Japan.

(2017) *Extremely Indecomposable Algebras and Algebraic Cycles*, The Stacks Project Workshop.

(2017) *The period-index problem for p-adic surfaces*, Advances in Noncommutative Algebra and Representation Theory, on the occasion of Louis Rowen's retirement.

(2016) *Clifford Algebras and the search for Ulrich bundles*, Algebraic Geometry Northeastern Series (AGNES), Yale University, New Haven, Connecticut.

(2015) *The Clifford Algebra of a finite morphism of schemes*, Banff International Research Station, Banff, Canada.

(2015) *Local-global principles and the patching Meyer-Vietoris sequence*, Local-Global Principles and Their Obstructions, FRG workshop.

(2015) *The Clifford Algebra of a finite morphism*, Special Session on Quadratic Forms in Arithmetic and Geometry, AMS Sectional Meeting, Huntsville, Alabama.

(2014) *Birational isomorphisms between noncommutative surfaces, finite over their centers*, Special Algebraic Geometry Seminar, UT Austin.

(2014) *Higher dimensional local-global principles for torsors under linear algebraic groups*, Special Session on Exceptional Groups in Physics, Algebra, and Geometry, AMS Southeastern Sectional Meeting University of North Carolina at Greensboro.

(2014) Workshop on Algebraic and Geometric Invariants of Linear Algebraic Groups and Homogeneous Spaces, University of Ottawa.

(2014) *Algebraic structures and the arithmetic of fields*, Invited address at the Sectional Meeting of the AMS, Knoxville, TN.

(2013) *Derived categories of torsors for Abelian varieties*, Winter Meeting of the Canadian Mathematical Society.

(2013) *Field patching and local-global principles*, Thematic Program on Torsors, Nonassociative Algebras and Cohomological Invariants, Fields Institute.

(2013) *The Clifford algebra of a morphism*, RIMS workshop, Kyoto, Japan.

(2013) *Bounding the symbol length in Galois cohomology*, Conference on Brauer groups, the Technion University, Haifa, Israel.

(2013) *Splitting dimension and symbol length in Galois cohomology*, AMS MAA Joint Meeting, Special session on the Brauer group on algebra and geometry, San Diego.

(2012) *Linear algebraic groups, local-global principles and patching*, Oberwolfach Seminar: Algebraic Groups and Patching, Oberwolfach, Germany.

(2010) *Field patching and local-global principles for Galois cohomology*, Motives and the Homotopy Theory of Schemes, Oberwolfach MFO, Germany.

(2009) *Field patching and local-global principles for Galois cohomology*, Quadratic Forms and Linear Algebraic Groups Oberwolfach MFO, Germany.

(2009) *Patching topologies and local-global principles*, Linear Algebraic Groups and Related Structures, Banff International Research Station.

(2009) *Patching subfields of division algebras*, Special session on Brauer groups, Quadratic Forms, Algebraic Groups, and Lie Algebras, AMS Southeastern Section Meeting Raleigh, NC.

(2008) *Local global principles for field patching and applications to quadratic forms and division algebras*, Quadratic forms, linear algebraic groups and cohomology, Hyderabad, India.

(2008) *Field patching, quadratic forms and division algebras*, Algebraic Groups session of the 2nd Canada-France Math Congress.

(2007) *Corestriction and splitting fields of algebras*, Linear Algebraic Groups and Cohomology, Emory University.

(2006) *Index reduction for genus* 1 *curves*, Algebraic Groups, Quadratic Forms and Related Topics, Banff International Research Station.

(2006) *Relative Brauer groups and index reduction for genus* 1 *curves*, Quadratic Forms and Linear Algebraic Groups, Mathematisches Forschungsinstitut Oberwolfach.

(2005) *Zero cycles on homogeneous varieties Applications of torsors to Galois cohomology and Lie theory*, Banff International Research Station.

(2005) *Zero cycles on homogeneous varieties*, AMS Summer Institute on Algebraic Geometry, Seattle.

(2004) *Cycles on homogeneous varieties and subfields of division algebras*, Conference on Brauer Groups, Pingree Park, Colorado.

(2002) *Moduli of subfields of central simple algebras*, Conference on Brauer Groups, Pingree Park, Colorado.

(2002) *Birational isomorphisms between generalized Severi-Brauer varieties*, Joint Mathematics Meetings, special session on forms, algebras and algebraic groups.

(2001) *Birational isomorphisms between generalized Severi-Brauer varieties*, Conference on K-Theory and Linear Algebraic Groups, Duisburg, Germany.

(1999) *Rational morphisms between Severi-Brauer varieties*, Summer Conference on Brauer Groups, University of Montana.

Community

EDITORIAL

Associate editor, Notices of the American Mathematical Society (2018-2020)

Associate editor, American Mathematical Monthly (2014-Present)

ADMINISTRATION

Co-organizer of UGA MathCamp (2013, 2014, 2016, 2018)
MathCamp is a week long outreach program for local high school students, involving UGA Math faculty, graduate students, and undergraduate majors.

NSF Research and Training Grant (Algebraic Geometry, Algebra and Number Theory) academic year coordinator (2016-2017)