

# Juliette Bruce

## Curriculum Vitae

Department of Mathematics  
University of Wisconsin  
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### Education

- **University of Wisconsin** Madison, WI  
*Ph.D. Mathematics* 2014 – Present  
– Advisor: Daniel Erman
- **University of Wisconsin** Madison, WI  
*M.A. Mathematics* 2014 – 2016
- **University of Michigan** Ann Arbor, MI  
*B.S. in Mathematics & Political Science* 2010 – 2014  
– With High Honors and Distinction

### Publications

10. J. Bruce. The Quantitative Behavior of Asymptotic Syzygies for Hirzebruch Surfaces. *Submitted*. E-Print: [arXiv:1906.07333](https://arxiv.org/abs/1906.07333).
9. J. Bruce, D. Erman, S. Goldstein, and J. Yang. The SchurVeronese package in Macaulay2. *Submitted*. E-print: [arXiv:1905.12661](https://arxiv.org/abs/1905.12661).
8. A. Almousa, J. Bruce, M. Loper, and M. Sayrafi. The Virtual Resolutions Package for Macaulay2. *Submitted*. E-print: [arXiv:1905.07022](https://arxiv.org/abs/1905.07022).
7. J. Bruce. Asymptotic Syzygies in the Setting of Semi-Ample Growth. *Submitted*. E-Print: [arXiv:1904.04944](https://arxiv.org/abs/1904.04944)
6. J. Bruce and W. Li. Effective bounds on the dimensions of Jacobians covering abelian varieties. *Submitted*. E-print: [arXiv:1804.11015](https://arxiv.org/abs/1804.11015).
5. J. Bruce, D. Erman, S. Goldstein, and J. Yang. Conjectures and computations about Veronese syzygies. *Experimental Mathematics*, To Appear. E-print: [arXiv:1711.03513](https://arxiv.org/abs/1711.03513).
4. M. Brandt, J. Bruce, T. Brysiewicz, R. Krone, and E. Robeva. The degree of  $SO(n)$ . *Combinatorial Algebraic Geometry*, 207-224, Fields Inst. Commun. **80**, (2017). E-print: [arXiv:1701.03200](https://arxiv.org/abs/1701.03200).
3. J. Bruce and D. Erman. A probabilistic approach to systems of parameters and Noether normalization. *Submitted*. E-print: [arXiv:1604.01704](https://arxiv.org/abs/1604.01704).

2. J. Bruce, M. Logue, and R. Walker. Monomial valuations, cusp singularities, and continued fractions. *Journal of Commutative Algebra*, **7** (2015) no. 4, 495-522. E-print: [arXiv:1311.6493](https://arxiv.org/abs/1311.6493).
1. J. Bruce, P. Kao, E. Nash, B. Perez, and P. Vermeire. Betti tables of reducible algebraic curves. *Proc. Amer. Math. Soc.* **142** (2014) 4039-4051. E-print: [arXiv:1210.3064](https://arxiv.org/abs/1210.3064).

## Grants

- **Conference Grant DMS-1908799 – \$15,000** March 2019  
*National Science Foundation*
- **Graduate Research Fellowship** 2015 – 2018  
*National Science Foundation*
- **Conference Grant DMS-1812462 – \$15,000** February 2018  
*National Science Foundation*
- **Professional Development Grant – \$1000** December 2016  
*Graduate School – University of Wisconsin*

## Awards, Grants & Honors

- **Elizabeth Hirschfelder Prize** October 2018  
*Dept. of Mathematics - University of Wisconsin*
- **Mathematics TA Service Award** April 2018  
*Dept. of Mathematics - University of Wisconsin*
- **Teaching Assistant Award for Exceptional Service** February 2018  
*University of Wisconsin (Campus Wide)*
- **Outstanding Achievement in Mathematics** May 2014  
*Dept. of Mathematics – University of Michigan*
- **Phi Beta Kappa** April 2014  
*University of Michigan*
- **Chancellor’s Opportunity Award** April 2014  
*University of Wisconsin*

## Research Presentations

- **Semi-Ample Asymptotic Syzygies** Stanford University  
*Algebraic Geometry Seminar* May 2019
- **Asymptotic Syzygies for Products of Projective Space** University of Kentucky  
*Algebra Seminar* April 2019
- **Semi-Ample Asymptotic Syzygies** University of Minnesota  
*Commutative Algebra Seminar* April 2019

- **Asymptotic Syzygies for Products of Projective Space (Poster)**  
*2019 AWM Research Symposium Poster Session* Rice University  
*April 2019*
- **Asymptotic Syzygies for Products of Projective Space**  
*KUMUNUjr.* University of Nebraska  
*March 2019*
- **Asymptotic Syzygies for Products of Projective Space**  
*Spring AMS Southeastern Sectional* Auburn University  
*March 2019*
- **Asymptotic Syzygies for Products of Projective Space**  
*Joint Math Meetings* Baltimore, MD  
*January 2019*
- **Covering Abelian Varieties and Effective Bertini**  
*Algebra and Algebraic Geometry Seminar* University of Wisconsin  
*November 2018*
- **Asymptotic Syzygies for Products of Projective Space**  
*Fall AMS Central Sectional* University of Michigan  
*October 2018*
- **Asymptotic Syzygies in the Semi-Ample Setting (Poster)**  
*AGNES Poster Session* Brown University  
*September 2018*
- **Covering Abelian Varieties and Effective Bertini**  
*Algebraic Geometry and Number Theory Seminar* Rice University  
*September 2018*
- **Syzygies of Surfaces via Distributed Computing**  
*Algebra Seminar* DePaul University  
*March 2018*
- **Asymptotic Syzygies in the Semi-Ample Setting**  
*Algebra and Algebraic Geometry Seminar* University of Wisconsin  
*February 2018*
- **Asymptotic Syzygies in the Semi-Ample Setting (Poster)**  
*Joint Math Meetings AWM Poster Session* San Diego, CA  
*January 2018*
- **Asymptotic Syzygies in the Semi-Ample Setting**  
*Commutative Algebra Seminar* University of Michigan  
*December 2017*
- **Asymptotic Syzygies in the Semi-Ample Setting**  
*Structures on Free Resolutions* Texas Tech University  
*October 2017*
- **A Distributed Numerical Approach to Syzygies of  $\mathbb{P}^2$  (Poster)**  
*Free Resolutions and Computations* UC - Berkeley  
*July 2017*
- **The Degree of  $SO(n)$  and Low-rank SDP**  
*Applied Algebra Seminar* University of Wisconsin  
*March 2017*
- **A Probabilistic Approach to Noether Normalization (Poster)**  
*Lectures on Arithmetic Geometry* Rice University  
*February 2017*
- **A Probabilistic Approach to Noether Normalization (Poster)**  
*Introductory Workshop: Combinatorial Algebraic Geometry* Fields Institute  
*August 2016*
- **A Probabilistic Approach to Noether Normalization (Poster)**  
*Commutative Algebra and Its Interactions with Algebraic Geometry* University of Michigan  
*July 2016*
- **A Probabilistic Approach to Noether Normalization (Poster)**  
*Midwest Commutative Algebra and Algebraic Geometry Conference* University of Notre Dame  
*May 2016*
- **Noether Normalization in Families**  
*Algebraic Geometry Seminar* University of Wisconsin  
*April 2016*
- **Betti Tables of Graph Curves**  
*Midwest Algebraic Geometry Graduate Conference* University of Illinois - Chicago  
*April 2015*
- **Betti Diagrams of Graph Curves**  
*Algebraic Geometry Seminar* University of Wisconsin  
*December 2014*

## Teaching Experience

- **Math 228: Wisconsin Emerging Scholars**  
*Instructor* University of Wisconsin  
*Fall 2018*
- **Math 221: Calculus and Analytic Geometry I**  
*Teaching Assistant & Course Coordinator* University of Wisconsin  
*Fall 2018*
- **Math 132: Problem Solving in Algebra, Statistics, & Probability**  
*Instructor* University of Wisconsin  
*Spring 2015*
- **Math 221: Calculus and Analytic Geometry I**  
*Teaching Assistant* University of Wisconsin  
*Fall 2014*
- **Math 310: Explorations in Randomness**  
*Course Assistant* University of Michigan  
*Winter 2014*
- **Math 490: Introduction to Topology**  
*Course Assistant* University of Michigan  
*Fall 2013*
- **Math 351: Principals of Analysis**  
*Course Assistant* University of Michigan  
*Winter 2013*
- **Math 105: Data, Functions, and Graphs**  
*Course Assistant* University of Michigan  
*Fall 2012*

## Conference Organizing

- **GWCAWMMG**  
*April 12 - April 14, 2019* University of Minnesota
- **Geometry & Arithmetic of Surfaces**  
*February 9 - February 10, 2019* University of Wisconsin
- **M2@UW**  
*April 14-17, 2018* University of Wisconsin
- **Math Careers Beyond Academia**  
*April 14, 2017* University of Wisconsin

## Outreach Activities

- **Undergrad Directed Reading Program**  
*Mentor* University of Wisconsin  
*January 2018 – Present*
- **Graduate Peer Mentoringt**  
*Mentor* University of Wisconsin  
*September 2018 – December 2018*
- **Girls Math Night Out**  
*Mentor* University of Wisconsin  
*September 2018 – December 2018*
- **Madison Math Circle**  
*Student Volunteer* University of Wisconsin  
*January 2015 – December 2018*

- **Madison Math Circle**  
*Lead Organizer* University of Wisconsin  
*January 2016 – December 2018*
- **Out in STEM (oSTEM) @ UW-Madison**  
*co-Founder* University of Wisconsin  
*July 2017 – Math 2018*
- **Out in Math: Professional Issues Facing LGBTQ Mathematicians**  
*Panelist* MAA Panel at the JMM  
*January 2018*
- **Michigan Math Circle**  
*Organizer* University of Michigan  
*January 2013 – June 2014*

## Service

- **AMS Graduate Student Blog**  
*Editor* American Mathematical Society  
*September 2015 – September 2018*
- **Committee on Inclusivity and Diversity**  
*Member* UW Dept. of Mathematics  
*November 2016 – August 2017*
- **Committee on TA Pay and Performance**  
*Member* UW Dept. of Mathematics  
*September 2015 – August 2017*
- **Instructor Excellence Program**  
*Teaching Mentor* UW Dept. of Mathematics  
*September 2015 – May 2016*
- **Society of Undergraduate Math Students**  
*President and Founder* University of Michigan  
*December 2012 – June 2014*

## Memberships

- **Society of Industrial and Applied Mathematics** January 2017 – Present
- **Association for Women in Mathematics** January 2016 – Present
- **American Mathematical Society** September 2014 – Present