# Juliette Bruce

**November 11, 2019**

Department of Mathematics
University of Wisconsin
480 Lincoln Dr.
Madison, WI 53706

juliette.bruce@math.wisc.edu
math.wisc.edu/~juliettebruce


## 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*

## Research Interests

Algebraic Geometry, Commutative Algebra, Arithmetic Geometry, Non-linear Algebra. Specifically, homological methods in algebraic geometry, and algebraic geometry over finite fields.

## Publications

10. J. Bruce and D. Erman. A probabilistic approach to systems of parameters and Noether normalization. *Algebra and Number Theory*, Accepted. E-print: arXiv:1604.01704.

9. J. Bruce and W. Li. Effective bounds on the dimensions of Jacobians covering abelian varieties. *Proc. Amer. Math. Soc.*, Accepted. E-print: arXiv:1804.11015.

8. J. Bruce, D. Erman, S. Goldstein, and J. Yang. Conjectures and computations about Veronese syzygies. *Experimental Mathematics*, To Appear. E-print: arXiv:1711.03513.

7. 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.

6. 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.

5. 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.

## Pre-Prints

4. J. Bruce. The Quantitative Behavior of Asymptotic Syzygies for Hirzebruch Surfaces. *Submitted.* E-Print: arXiv:1906.07333.

3. J. Bruce, D. Erman, S. Goldstein, and J. Yang. The SchurVeronese package in Macaulay2. *Submitted.* E-print: arXiv:1905.12661.

2. A. Almousa, J. Bruce, M. Loper, and M. Sayrafi. The Virtual Resolutions Package for Macaulay2. *Submitted.* E-print: arXiv:1905.07022.

1. J. Bruce. Asymptotic Syzygies in the Setting of Semi-Ample Growth. *Submitted.* E-Print: arXiv:1904.04944

## Software

2. SchurVeronese, (with D. Erman, S. Goldstein, and J. Yang). Submitted for distribution with future releases of Macaulay2, a compute algebra system focused on computations in algebraic geometry and commutative algebra.

1. VirtualResolutions, (with A. Almousa, M. Loper, and M. Sayrafi). Distributed with version 1.14 of Macaulay2 (2019).

## Multimedia

1. SyzygyData.com, (with D. Erman, S. Goldstein, and J. Yang). An online public database on large-scale syzygy computations.

## Awards & Honors

- **Excellence in Mathematical Research Award** October 2019
  *Award by the math department to a student for exceptional research in their thesis.*
- **Capstone Teaching Award** October 2019
  *Awarded to one student in the math dept. for an exceptional record of teaching excellence and service.*
- **Elizabeth Hirschfelder Prize** October 2018
  *Awarded to an outstanding female student who's demonstrated promise in their academic work.*
- **Mathematics TA Service Award** April 2018
  *Dept. of Mathematics - University of Wisconsin*
- **Teaching Assistant Award for Exceptional Service** February 2018
  *Campus-wide award recognizing TA's who perform exceptional service*
- **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*