

# Jim L. Brown

---

*Work Address:*

Fowler 305  
Department of Mathematics  
Occidental College  
Los Angeles, CA 90041  
Phone: 323-259-2680  
jimlb@oxy.edu  
<http://jim-brown.oxycreates.org>

<b>ACADEMIC POSITIONS</b>
---------------------------

<b>2018 - current</b>	<b>Professor,</b> Occidental College, Los Angeles, CA.
<b>Spring 2002</b>	<b>Visiting Professor,</b> UCLA, Los Angeles, CA.
<b>Winter 2022</b>	<b>Visiting Professor,</b> California Institute of Technology, Pasadena, CA.
<b>2018 - 2021</b>	<b>Chair, Department of Mathematics,</b> Occidental College, Los Angeles, CA.
<b>2017 - 2018</b>	<b>Professor,</b> Clemson University, Clemson, SC.
<b>2012 - 2017</b>	<b>Associate Professor,</b> Clemson University, Clemson, SC.
<b>2015-2016</b>	<b>Gorenstein Distinguished Visiting Associate Professor of Mathematics,</b> City University of New York - Queens College, Queens, NY.
<b>2008-2012</b>	<b>Assistant Professor,</b> Clemson University, Clemson, SC.
<b>2007-2008</b>	<b>Olga Taussky - John Todd Instructor,</b> California Institute of Technology, Pasadena, CA.
<b>2005-2007</b>	<b>VIGRE Arnold Ross Assistant Professor,</b> The Ohio State University, Columbus, OH.

<b>EDUCATION</b>
------------------

- 1999-2005**                      **University of Michigan**, Ann Arbor, Michigan.  
 Ph.D. in Mathematics, July 2005.  
 Dissertation: *Saito-Kurokawa Lifts, L-Values for  $GL(2)$ , and Congruences Between Siegel Modular forms*  
 Advisor: Prof. Christopher Skinner
- 1995-1999**                      **Michigan State University**, East Lansing, Michigan.  
 B.S. with High Honors in Mathematics, December, 1998.

### CITIZENSHIP

United States of America.

### RESEARCH

- Current Interests**                      Algebraic number theory, applications of algebraic geometry and number theory to coding theory, automorphic forms, Galois representations, Iwasawa theory

### HONORS AND AWARDS

- 2018**                                      **Mathematical Sciences Outstanding Service to Graduate Students Award**
- 2013**                                      **Mathematical Sciences Faculty Teaching Award**  
 Clemson University, Clemson, SC.
- 2004-2005**                              **Graduate Student Instructor of the Year**  
 University of Michigan, Ann Arbor, MI.

### RESEARCH PAPERS

(\*=undergraduate student coauthor, \*\*=graduate student coauthor)

1. L. Betti\*, J. Brown, F. Gaitan\*, A. Spear\*, J. Varlack\*, *Lattices in real quadratic fields and associated theta series arising from codes over  $\mathbf{F}_4$  and  $\mathbf{F}_2 \times \mathbf{F}_2$* , preprint, 1-15, 2022.
2. J. Brown, J. Dell\*, H.-N. Griesbach\*, A. Hernandez\*, *Eigenform product identities of genus two Siegel modular forms of general congruence level*, *International J. Number Theory*, to appear, 2021.
3. J. Brown and H. Li\*\*, *Congruence primes for automorphic forms on symplectic groups*, *Glasgow Math. J.*, **63** , no. 3, 660-681, 2021.

4. J. Brown, B. Gunsolus\*, J. Lilly\*, F. Manganiello, *Hilbert modular forms and codes over  $\mathbb{F}_{p^2}$* , Finite Fields and Their Applications, **67**, 2020.
5. J. Brown and K. Klosin, *Congruence primes for automorphic forms on unitary groups and applications to the arithmetic of Ikeda lifts*, Kyoto J. Math., **60**(1), 179-217, 2020.
6. J. Brown, H. Geller\*\*, R. Vicente\*, A. Walsh\*, *Eigenform product identities for degree two Siegel modular forms*, J. Number Theory, **204**, 25-40, 2019.
7. J. Brown and K. Klosin, *On the action of the  $U_p$  operator on Siegel modular forms*, Rama. J., **44**(3), 597-615, 2017.
8. J. Brown, D. Heras\*, K. James, R. Keaton\*\*, A. Qian\*, *Amicable pairs and aliquot cycles for elliptic curves over number fields*, Rocky Mountain Math. J., **46**(6), 1853-1866, 2016.
9. J. Brown, R. Cass\*, K. James, R. Keaton\*\*, S. Parenti\*, D. Shankman\*, *Counting tamely ramified extensions of local fields up to isomorphism*, Integers, #A53, **16**, 1-12, 2016.
10. J. Brown and D. Zantout\*\*, *Mixed level Saito-Kurokawa lifts*, Rama. J., **39**, 247-257, 2016.
11. M. Agarwal and J. Brown, *Saito-Kurokawa lifts of odd square-free level*, Kyoto J. Math, **55**(3), 641-662, 2015.
12. J. Brown and R. Keaton\*\*, *Congruence Primes for Ikeda Lifts and the Ikeda ideal*, Pacific J. Math, **274**(1), 27-52, 2015.
13. J. Brown, A. Hasmani\*, L. Hiltner\*, A. Kraft\*, D. Scofield\*, K. Wash\*\*, *Classifying extensions of the field of formal Laurent series over  $\mathbb{F}_p$* , Rocky Mountain Math. J., **45**(1), 115-130, 2015.
14. J. Brown, R. Cass\*, R. Keaton\*\*, S. Parenti\*, D. Shankman\*, *Degree 14 extensions of  $\mathbb{Q}_7$* , Int. J. of Pure and Appl. Math., **100**(2), 337-345, 2015.
15. M. Agarwal and J. Brown, *On the Bloch-Kato conjecture for elliptic modular forms of square-free level*, Math. Z., **276**(3), 889-924, 2014.
16. J. Brown and A. Pitale, *Special values of  $L$ -functions for Saito-Kurokawa lifts with square-free level*, Math. Proc. Cambr. Phil. Soc., **155**(2), 237-255, 2013.
17. J. Brown and R. Keaton\*\*, *Level stripping for Siegel modular forms with reducible Galois representations*, J. Number Theory, **133** (5), 1492-1501, 2013.
18. N. Amersi\*, J. Beyerl\*\*, J. Brown, A. Proffer\*, L. Rolén\*, *Pullbacks of Siegel Eisenstein series and associated critical  $L$ -values*, Rama. J., **27**(2), 151-162, 2012.
19. J. Brown, *On the cuspidality of pullbacks of Siegel Eisenstein series to  $\mathrm{Sp}(2m) \times \mathrm{Sp}(2n)$* , J. Number Theory, **131**, 106-119, 2011.

20. J. Brown, *On the cuspidality of pullbacks of Siegel Eisenstein series and applications to the Bloch-Kato conjecture*, Int. Math. Res. Not., **7**, 1706-1756, 2011.
21. J. Brown, *Special Values of L-functions on  $\mathrm{GSp}_4 \times \mathrm{GL}_2$  and the Non-Vanishing of Selmer Groups*, Int. J. Number Theory, **6**(8), 1901-1926, 2010.
22. J. Brown, *On the congruence primes of Saito-Kurokawa lifts of odd square-free level*, Math. Res. Lett., **17**(5), 977-991, 2010.
23. J. Brown and Y. Li\*, *Level lowering for half-integral weight modular forms*, Proc. Amer. Math. Soc., **138**, 1171-1173, 2010.
24. J. Brown, *The first negative Hecke eigenvalue of genus 2 Siegel cuspforms with level  $N \geq 1$* , Int. J. Number Theory, **6**(4), 857-867, 2010.
25. J. Brown and Y. Li\*, *Distribution of powers of the partition function modulo  $\ell^j$* , J. Number Theory, **129**, 2557-2568, 2009.
26. J. Brown, *Residually reducible representations of algebras over local Artinian rings*, Proc. Amer. Math. Soc., **136**, 3409-3414, 2008.
27. J. Brown, *Saito-Kurokawa lifts and applications to arithmetic*, Conference Proceedings of the 9th Autumn Workshop on Number Theory, Hakuba, Japan, 1-11, 2007.
28. J. Brown, *An inner product relation on Saito-Kurokawa lifts*, Rama. J., **14**(1), 89-105, 2007.
29. J. Brown, *Saito-Kurokawa lifts and applications to the Bloch-Kato conjecture*, Compos. Math., **143**(2), 290-322, 2007.

<b>EXTERNAL GRANT FUNDING (Total funding = \$2,872,030)</b>
---

1. *REU on Coding Theory, Number Theory, and Related Topics*, National Security Agency, PI, 2022, \$110,461.
2. *Number Theory Series in Los Angeles*, National Security Agency, PI, 2020-21, \$11,351.
3. *Building Bridges: 5th EU/US Summer School on Automorphic Forms and Related Topics*, National Science Foundation, PI, 2020-21, \$19,125
4. *Building Bridges: 5th EU/US Workshop on Automorphic Forms and Related Topics*, National Security Agency, PI, 2020-21, \$23,570
5. *REU: Data science, number theory, and positional game theory*, National Science Foundation, PI, 2019-21, \$180,000.
6. *Number Theory Series in Los Angeles*, National Science Foundation, PI, 2019-21, \$15,000.

7. *Number Theory Series in Los Angeles*, National Security Agency, PI, 2019-20, \$11,029.
8. *Number Theory Meetings in the Southeast*, National Science Foundation, PI, 2017-18, \$22,233.
9. *RTG: Coding Theory, Cryptography, and Number Theory*, National Science Foundation, PI, 2016-18, \$2,126,971.
10. *Southeast Number Theory Meetings*, National Science Foundation, Co-PI, 2015-16, \$13,615.
11. *Southeast Number Theory Meetings*, National Security Agency, Co-PI, 2015-16, \$15,675.
12. *Southeastern conference for undergraduate women in mathematics*, TENSOR Women and Mathematics Grants, MAA, PI, 2014-15, \$3,000.
13. *Southeastern conference for undergraduate women in mathematics*, TENSOR Women and Mathematics Grants, MAA, PI, 2013-14, \$5,998.
14. *Southeastern number theory meetings*, National Science Foundation, Co-PI, 2013-14, \$12,696.
15. *PANTS and SERMON meetings in the Southeast*, National Security Agency, Co-PI, 2013-14, \$15,926.
16. *Collaborative Research: Research Experience for Undergraduates: Algebraic geometry, combinatorics, and number theory*, National Science Foundation, PI, 2012-14, \$240,789.
17. *Southeastern Number Theory Meetings*, National Science Foundation, Co-PI, 2012-13, \$12,012.
18. *Palmetto Number Theory Series/SouthEast Regional Meeting on Numbers*, National Security Agency, PI, 2011-12, \$14,483.
19. *Palmetto Number Theory Series/SouthEast Regional Meeting on Numbers*, National Science Foundation, Co-PI, 2011-12, \$11,223.
20. *The arithmetic of Siegel modular forms*, Young Investigator Grant, National Security Agency, PI, 2011-13, \$30,000.
21. *Palmetto Number Theory Series*, National Science Foundation, Co-PI, 2010-11, \$13,423.
22. *Palmetto Number Theory Series*, National Security Agency, PI, 2009-10, \$13,507.
23. *Palmetto Number Theory Series*, National Science Foundation, Co-PI, 2009-10, \$11,096.

<b>GRADUATE STUDENT ADVISING</b>
----------------------------------

### Former Students

- Huixi Li, “*Some conjectures in additive number theory*”, 74 pages, (Ph.D. Clemson '18)

– Initial employment: Three year postdoc at the University of Nevada - Reno

- Hugh Geller, “*Ramanujan type congruences for the Klingen-Eisenstein series*”, 77 pages, (M.S. Clemson '16)
- Rodney Keaton, “*Level stripping of genus 2 Siegel modular forms*,” 136 pages, (Ph.D. Clemson '14)

– Initial employment: Three year postdoc at the University of Oklahoma

- Dania Zantout, “*On the cuspidality of Maass-Gritsenko and mixed level lifts*,” 247 pages, (Ph.D. Clemson '13)

– Initial employment: Visiting assistant professor at Clemson University

- Sevasti (Cindy) Tagaris, (Job at NSA before completing M.S., '13)
- Rodney Keaton, “*Explicit level-lowering for 2-dimensional modular Galois representations*,” (M.S. Clemson '10, Advised jointly with Kevin James)

#### **Doctoral Committee Member**

- Aliekber Gürel (Caltech '07)
- Jeff Beyerl (Clemson '12)
- Luke Giberson (Clemson '17)
- Catherine Trentacoste (Clemson '12)
- Chris Johnson (Clemson '13)
- Kirsti Wash (Clemson '14)
- Sarah Anderson (Clemson '15)

#### **Masters Committee Member**

- Jeff Beyerl (Clemson '09)
- Catherine Trentacoste (Clemson '09)
- Jeannie Friedel (Clemson '10)
- Jason Hedetniemi (Clemson '12)
- Trevor Vildari (Clemson '13)

- Luke Giberson (Clemson '14)

<b>UNDERGRADUATE STUDENT ADVISING</b>
---------------------------------------

### Undergraduate Research Mentoring:

#### 1. REU Occidental College

- “Codes over  $\mathbf{F}_4$ , real quadratic fields, and theta series” Summer 2021
  - Livia Betti (University of Rochester)
  - Fernando Gaitan (Wesleyan University)
  - Aiyana Spear (Wellesley College)
  - Japheth Varlack (Lee University)
- “Products of Siegel eigenforms with general level” Summer 2020
  - Justine Dell (Haverford College)
  - Hanna Noelle Griesbach (Elon University)
  - Amanda Hernandez (Rice University)

#### 2. Occidental Undergraduate Summer Research Program: 2019

- Products of Siegel eigenforms with non-trivial level
  - Junepyo Lee (Occidental College)

#### 3. RTG REU Clemson: Summer 2018

- “Product identities for Siegel modular forms”
  - Rico Vicente (California State University, Long Beach)
  - Alexandra Walsh (Brown University)
- “Coding theory and modular forms” (co-advised with Felice Manganiello)
  - Beren Gunsolus (University of Minnesota)
  - Jeremy Lilly (Oregon State University)

#### 4. Clemson University

- Jarryd Boyle, Luna Bozeman, Catherine Kenyon, Sloan Neitert, Trevor Squires, Bo Sun
  - (a) 2016-17 Creative Inquiry: “Counting sums of squares using modular forms”
- Patrick Dynes (co-advised with Kevin James)
  - (a) 2015-17 Honors Thesis: “Lang-Trotter conjecture for Siegel modular forms”
- Patrick Dynes, Rivers Jenkins, Dalton Randall (co-advised with Felice Manganiello)

- (a) 2015 Creative Inquiry: “Coding theory”
  - Sam Mixon, Kristen Savary, Ashley Stanziola (co-advised with Felice Manganiello)
    - (a) 2015 Creative Inquiry: “Cryptography”
  - Andrew Bell, Patrick Dynes, Debra Parmentola, Brittany Rosener
    - (a) 2013-14 Creative Inquiry: “Public key cryptography”
  - Joel Clingempeel
    - (a) 2011-12 “Siegel modular forms”
    - (b) 2012-13 Honors Thesis: “Averages of standard  $L$ -values of genus 2 Siegel modular forms”
5. Program Director: Clemson REU in Combinatorics, Computational Algebraic Geometry, and Number Theory: Summer 2013
- “Degree 14 extensions of  $\mathbb{Q}_7$ ”
    - Robert Cass (University of Kentucky)
    - Salvatore Parenti (University of Michigan)
    - Daniel Shankman (University of Tennessee - Knoxville)
  - “Eta quotients” (Jointly advised with Kevin James)
    - Allison Arnold-Roksandich (Harvey Mudd College)
    - Kimberly Stubbs (University of North Carolina - Asheville)
6. City University of New York - Queens College
- Palak Bhasin
    - (a) 2015-16 Honors Thesis: “Elliptic curves and applications to cryptography”
7. Program Director: Clemson REU in Combinatorics, Computational Algebraic Geometry, and Number Theory: Summer 2012
- “Classifying local fields of characteristic  $p$ ”
    - Alfeen Hasmani (Molloy College)
    - Lindsey Hiltner (University of North Dakota)
    - Angela Kraft (Bethany Lutheran College)
    - Daniel Scofield (Grove City College)
  - “Amicable pairs for elliptic curves over number fields” (Jointly advised with Kevin James)
    - David Heras (Radford University)
    - Andrew Qian (University of California at Berkeley)
  - “Champion primes for elliptic curves” (Jointly advised with Kevin James)



- Brandon Tran (Massachusetts Institute of Technology)
  - Minh-Tam Trinh (Princeton University)
  - Philip Wertheimer (Johns Hopkins University)
8. Faculty research advisor: Clemson REU in Combinatorics and Computational Number Theory: Summer 2010
- “Average values for  $L$ -functions on  $GL(2)$ ”
    - Nadine Amersi (University College London)
    - Allison Proffer (Virginia Commonwealth University)
    - Larry Rolin (University of Wisconsin-Madison)
9. California Institute of Technology (Summer Undergraduate Research Fellowship)
- Yingkun Li (Caltech)
    - (a) Summer 2008 “Distribution of powers of the partition function modulo  $\ell^j$ ”

<b>EXPOSITORY WRITING</b>
---------------------------

1. J. Brown, Graduate Linear Algebra, (209 pages, 2015)
2. J. Brown and K. Klosin with an appendix by K. Conrad, *On the norm of  $p$ -stabilized elliptic newforms*, 18 pages.
3. J. Brown, Introductory Topology, (271 pages, 2010)
4. J. Brown, Local class field theory, (97 pages, 2008)
5. J. Brown, *Alex, I will take congruent numbers for one million dollars please*, (14 pages, 2007)
6. J. Brown, *Congruent numbers and elliptic curves*, (26 pages, 2007)
7. J. Brown, An introduction to Iwasawa theory, (102 pages, 2006)
8. J. Brown, *Abel and the insolvability of the quintic*, (13 pages, 2005)
9. J. Brown, *Complex theory of abelian varieties*, (16 pages, 2004)
10. J. Brown, *An introduction to algebraic number theory*, (120 pages, 2001)

<b>PLENARY ADDRESSES</b>
--------------------------

1. *Congruence primes for automorphic forms on unitary groups and applications to the arithmetic of Ikeda lifts*, Southern California Number Theory Day, University of California - Irvine (October 12, 2019)

2. *Congruence primes for automorphic forms on unitary groups and applications to the arithmetic of Ikeda lifts*, Galois Representation and Automorphic Forms, Polish Academy of Sciences Conference Center, Bedlewo, Poland (August 18, 2016)
3. *Ikeda lifts, the Ikeda ideal, and a conjecture of Katsurada*, Workshop on Bianchi and Siegel modular forms, University of Sheffield, Sheffield, UK (July 16, 2014)
4. *Applications of Saito-Kurokawa lifts to arithmetic*, 9th Autumn Workshop on Number Theory (focusing on  $\mathrm{GSp}(4)$ ), Hakuba, Japan. (November 6, 2006)
5. *Saito-Kurokawa lifts and the Bloch-Kato conjecture*, Midwest Number Theory Day, University of Wisconsin, Madison, WI. (November 4, 2005)

<b>COLLOQUIUM TALKS</b>
-------------------------

1. *Codes, lattices, and modular forms*, Oregon State University, Corvallis, OR. (March 2, 2020)
2. *Applications of number theory to coding theory*, Washington State University, Pullman, WA. (October 8, 2018)
3. *Prime factorization, class groups, and generalizations*, University of Idaho, Moscow, ID. (November 9, 2017)
4. *Right triangles and a problem worth a million dollars*, City University of New York - Queens College. (March 30, 2016)
5. *Sums of squares, generating functions, and other applications of modular forms*, City University of New York - Queens College. (March 13, 2016)
6. *Sums of squares, generating functions, and other applications of modular forms*, Colby College, Waterville, ME. (January 28, 2016)
7. *Sums of squares, generating functions, and other applications of modular forms*, Hofstra University, Hempstead, NY. (January 27, 2016)
8. *Sum of squares and other applications of modular forms*, Fordham University, Bronx, NY. (December 1, 2015)
9. *Right triangles and a million dollars*, San Jose State University, San Jose, CA. (February 20, 2015)
10. *The interplay of complex analysis and arithmetic in number theory*, California Polytechnic State University, San Luis Obispo, CA. (February 6, 2015)
11. *Right triangles and a million dollars*, Elon University, Elon, NC. (October 29, 2014)

12. *Right triangles and a million dollars*, High Point University, High Point, NC. (October 28, 2014)
13. *Right triangles and a million dollars*, Fordham University, Bronx, NY. (January 29, 2014)
14. *Prime factorization, complex analysis, and arithmetic geometry*, Dartmouth College, Hanover, NH (September 26, 2013)
15. *Prime factorization, complex analysis, and arithmetic geometry*, Fordham University, Bronx, NY. (April 18, 2013)
16. *Rational right triangles and a million dollar problem*, University of San Diego, San Diego, CA. (February 16, 2012)
17. *Rational right triangles and a million dollar problem*, Haverford College, Haverford, PA. (January 30, 2012).
18. *Dirichlet's class number formula and generalizations*, Clemson University, Clemson, SC. (February 21, 2008)
19. *Dirichlet's class number formula and generalizations*, Florida State University, Tallahassee, FL. (January 18, 2008)
20. *Dirichlet's class number formula and generalizations*, Oregon State University, Corvallis, OR. (November 16, 2007)
21. *The congruent number problem and elliptic curves*, Math Coffees, Davidson College, Davidson, NC. (February 5, 2007)
22. *Automorphy, L-functions, and problems in arithmetic*, Bucknell University, Lewisburg, PA. (January 25, 2007)
23. *L-functions and arithmetic*, Arizona State University, Phoenix, AZ. (April 5, 2006)
24. *L-functions and arithmetic*, Armstrong Atlantic State University, Savannah, GA. (February 2, 2005)
25. *L-functions and arithmetic*, Stephen F. Austin University, Nacogdoches, TX. (January 26, 2005)

<b>INVITED CONFERENCE TALKS</b>
---------------------------------

1. *When is the product of two Siegel eigenforms an eigenform?*, Special Session: Number Theory at Liberal Arts Colleges, Joint Mathematics Meetings, Baltimore, MD (January 16, 2019)

2. *Increasing diversity in mathematics*, (Panel Member) Building Bridges: 2nd EU/US Workshop on Automorphic Forms and Related Topics, University of Bristol, Bristol, UK (July 9, 2014)
3. *Congruence Primes for Ikeda Lifts and the Ikeda ideal*, 27th Automorphic Forms Workshop, University College Dublin, Dublin, Ireland (March 11, 2013)
4. *The CAP ideal and applications*, Special Session on Automorphic and Modular Forms, AMS Sectional Meeting: 2012 Spring Western Meeting, Honolulu, HI (March 3-4, 2012)
5. *Eisenstein series on  $GU(3,3)$  and non-trivial torsion in Shafarevich-Tate groups*, Special Session on Elliptic Curves, Modular Forms, and Related Topics, AMS Sectional Meeting: 2011 Fall Southeastern Meeting, Winston-Salem, NC (September 24, 2011)
6. *Research with Students: from attracting students to publishing*, (Panel Member) 25th Automorphic Forms Workshop, Oregon State University, Corvallis, OR. (March 24, 2011)
7. *Congruence primes of Saito-Kurokawa lifts*, Special Session on Automorphic forms, L-functions and applications, AMS Sectional Meeting: 2010 Spring Eastern Sectional Meeting, Newark, NJ. (May 22, 2010)
8. *Giving an effective talk*, (Panel Member), Midwest Number Theory Conference for Graduate Students III, University of Wisconsin, Madison, WI. (November 5, 2005)

<b>INVITED RESEARCH SEMINARS</b>
----------------------------------

1. *When is the product of two Siegel eigenforms an eigenform?* Algebra/Number Theory/Combinatorics Seminar at the Claremont Colleges, Claremont, CA. (February 26, 2019)
2. *Congruence primes for automorphic forms on unitary groups and applications to the arithmetic of Ikeda lifts*, Collaborative Number Theory Seminar at the CUNY Graduate Center, NYC, NY. (February 3, 2016)
3. *L-functions, modular forms, and arithmetic*, Dartmouth College, Hanover, NH. (September 26, 2013)
4. *Congruence Primes for Ikeda Lifts and the Ikeda ideal*, Number Theory Seminar, University of North Carolina - Chapel Hill, Chapel Hill, NC. (September 10, 2013)
5. *On the Bloch-Kato conjecture for elliptic modular forms of square-free level*, Collaborative Number Theory Seminar at the CUNY Graduate Center, NYC, NY. (April 19, 2013)
6. *L-functions and arithmetic*, Michigan State University, East Lansing, MI. (November 19, 2012)
7. *L-functions and arithmetic*, Research Seminar, University of San Diego, San Diego, CA. (February 16, 2012)

8. *Congruences of automorphic forms and torsion in the Bloch-Kato conjecture*, Number Theory Seminar, Texas A&M University, College Station, TX. (February 9, 2011)
9. *The Eisenstein ideal and generalizations*, Number Theory Seminar, University of South Carolina, Columbia, SC. (November 11, 2008)
10. *Saito-Kurokawa lifts and lower bounds on Selmer groups*, Number Theory Seminar, UCLA, Los Angeles, CA. (March 10, 2008)
11. *Congruences between automorphic forms and applications to arithmetic*, Algebra Seminar, Florida State University, Tallahassee, FL. (January 17, 2008)
12. *Saito-Kurokawa lifts,  $L$ -values for  $GL(2)$ , and congruences between Siegel modular forms*, Algebra Seminar, Boston University, Boston, MA. (February 7, 2005)

<b>CONTRIBUTED TALKS AND PRESENTATIONS</b>
--

1. *Basics of Cryptography*, Undergraduate Research Center, Occidental College. (June 22, 2020).
2. *Product identities for Siegel modular forms*, Building Bridges: 4th EU/US Workshop on Automorphic Forms and Related Topics, Alfred Renyi Institute of Mathematics, Budapest, Hungary. (July 18, 2018)
3. *Congruences for paramodular Saito-Kurokawa lifts and applications*, Building Bridges: 4th EU/US Workshop on Automorphic Forms and Related Topics, Alfred Renyi Institute of Mathematics, Budapest, Hungary. (July 16, 2018)
4. *Congruences for paramodular Saito-Kurokawa lifts and applications*, 32nd Automorphic Forms Workshop, Tufts University, Boston, MA, (March 21, 2018)
5. *Congruences for paramodular Saito-Kurokawa lifts and applications*, Southeast Regional Meeting on Numbers, East Tennessee State University, Johnson City, TN (March 10, 2018).
6. *A (somewhat) gentle introduction to Hida theory*, Algebraic Geometry and Number Theory Seminar, Clemson University, Clemson, SC (April 14, 2015).
7. *Southeastern Conference for Undergraduate Women in Mathematics*, Poster presentation Mathematical Outreach Programs, Joint AMS-MAA Mathematics Meetings, San Antonio, TX. (January 11, 2015).
8. *Combing a hairy coconut (or fun facts in topology)*, Math Club Talk, Clemson University, Clemson, SC. (September 12, 2014).
9. *Aliquot cycles for elliptic curves over number fields*, Building Bridges: 2nd EU/US Workshop on Automorphic Forms and Related Topics, University of Bristol, Bristol, UK (July 10, 2014).

10. *The  $U_p$  operator and some applications*, Algebraic Geometry and Number Theory Seminar, Clemson University, Clemson, SC (February 19, 2014)
11. *L-functions, modular forms, and arithmetic geometry*, Algebra and Discrete Mathematics Seminar, Clemson University, Clemson, SC (October 17, 2013)
12. *Right triangles and a million dollars*, Math Club Talk, Clemson University, Clemson, SC (September 17, 2013).
13. *Number theory projects from the 2013 Clemson REU*, Algebraic Geometry and Number Theory Seminar, Clemson University, Clemson, SC (August 28, 2013).
14. *What is ... the BSD conjecture?* Algebra and Discrete Mathematics Seminar, Clemson University, Clemson, SC. (November 8, 2012).
15. *What is a ..  $p$ -adic  $L$ -function?* Number Theory Seminar, Clemson University, Clemson, SC. (September 19, 2012).
16. *The Bloch-Kato conjecture for modular forms of square-free level*, Building Bridges: 1st EU-US conference on automorphic forms and related topics, RWTH Aachen University, Aachen, Germany. (August 9, 2012).
17. *Congruences of automorphic forms and torsion in the Bloch-Kato conjecture*, PANTS XV, Clemson University, Clemson, SC. (February 19, 2011)
18. *2010 Clemson REU in Combinatorics and Computational Number Theory*, Algebra and Discrete Math Seminar, Clemson University, Clemson, SC. (September 2, 2010)
19. *Some background on elliptic curves and Galois cohomology*, PANTS X, Armstrong Atlantic State University, Savannah, GA. (September 20, 2009)
20. *A survey of the Hodge conjecture*, Clemson REU, Clemson University, Clemson, SC. (June 6, 2009)
21. *A survey of the Birch and Swinnerton-Dyer conjecture*, Clemson REU, Clemson University, Clemson, SC. (May 28, 2009)
22. *An introduction to  $p$ -adic  $L$ -functions*, PANTS IX, Clemson University, Clemson, SC. (February 8, 2009)
23. *Number Theory at Clemson*, 1st Year Graduate Student Seminar, Clemson University, Clemson, SC. (February 3, 2009)
24. *An introduction to Iwasawa theory*, Number Theory Seminar, Clemson University, Clemson, SC. (January 13, 20, 27, 2009)

25. *Modular forms and partitions*, Algebra, Discrete Mathematics, and Number Theory Seminar, Clemson University, Clemson, SC. (October 3, 2008)
26. *Saito-Kurokawa lifts and lower bounds on Selmer groups*, Number Theory Seminar, Caltech, Pasadena, CA. (April 3, 2008)
27. *Attaching Galois representations to modular forms*, Graduate student number theory seminar, The Ohio State University, Columbus, OH. (April 25, May 2, 2007)
28. *L-functions on  $GSp(4) \times GL(2)$  and the Bloch-Kato conjecture*, Canadian Number Theory Association IX Meeting, University of British Columbia, Vancouver, BC, Canada. (July 12, 2006)
29. *L-functions on  $GSp(4) \times GL(2)$  and the Bloch-Kato conjecture*, The 20th Annual Workshop on Automorphic Forms and Related Topics, University of Colorado, Boulder, CO. (March 30, 2006)
30. *Mathematics and internet security*, Mathematics Undergraduate Awards Ceremony, The Ohio State University, Columbus, OH. (May 5, 2006)
31. *The congruent number problem and elliptic curves*, Radical Pi (undergraduate math club) The Ohio State University, Columbus, OH. (February 1, 2006)
32. *Number Theory: A couple of "simple" problems*, Invitation to Research (Incoming graduate students are exposed to current research areas in various topics.) The Ohio State University, Columbus, OH. (January 23,30, 2006)
33. *Abel and the insolvability of the quintic*, VIGRE Reading Classics Working Group, The Ohio State University, Columbus, OH. (November 1, 2005)
34. *Saito-Kurokawa lifts and applications to the Bloch-Kato conjecture*, Number Theory Seminar, The Ohio State University, Columbus, OH. (October 3,10, 2005)
35. *Saito-Kurokawa lifts, L-values for  $GL_2$ , and congruences between Siegel modular forms*, The 19th Annual Workshop on Automorphic Forms and Related Topics, University of North Texas, Denton, TX. (March 20, 2005)
36. *Saito-Kurokawa lifts, L-values for  $GL_2$ , and congruences between Siegel modular forms*, AMS-MAA Joint Meeting, Atlanta, GA. (January 06, 2005)
37. *Saito-Kurokawa lifts, L-values for  $GL_2$ , and congruences between Siegel modular forms*, West Coast Number Theory Conference, UNLV, Las Vegas, NV. (December 18, 2004)
38. *Saito-Kurokawa Lifts and Congruences Among Siegel Modular Forms*, Midwest Number Theory Conference for Graduate Students and Recent PhDs, University of Wisconsin, Madison, WI. (October 25, 2003)

39. *Variation of Hodge Structures: Some Examples*, Arizona Winter School, Southwestern Center for Arithmetic Algebraic Geometry. University of Arizona, Tucson, AZ. (March 18, 2002) This was done as a group projection under the direction of Johan de Jong.

<b>TEACHING</b>
-----------------

**Occidental College:**

- Introductory Cryptography (F'19, F'20)
- Calculus I (F'19, Su'20, Su'21)
- Calculus II Advanced Placement (F'18)
- Discrete Mathematics (F'20, F'21)
- Multivariable Calculus (S'19, Su'20, F'21)
- Junior Colloquium (S'20, S'21)
- Complex Analysis (S'19)
- Abstract Algebra Independent Study (S'19)
- Abstract Algebra (S'21)
- Number Theory (F'21)

**Clemson University:**

- Calculus I (Su '15, F '16)
- Honors Calculus I (F '09, F '11)
- Honors Calculus II (S '10, F '13, F'14)
- Multivariable Calculus (F '08, S '09, Su '15, Su '17)
- Honors Multivariable Calculus (F '10, S '14, S '15, F '16, F 17)
- Linear Algebra (S '13)
- Complex Analysis (F '12)
- Advanced Calculus I (S '12)
- Advanced Calculus II (Su '10, Su '13)



- Graduate Linear Algebra (F '12, Su '13, Su '14, F '14)
- Graduate Abstract Algebra I (F '10)
- Graduate Abstract Algebra II (S '11, S '15)
- Graduate Number Theory (F '17)
- Graduate Introductory Topology (F '09)
- Graduate Algebraic Topology (S '10)
- Commutative Algebra (Su '10)
- Elliptic Curves (F '11)
- Further Topics in Elliptic Curves (S '12)
- Introduction to Lie Groups and Lie Algebras (F '11)
- Riemann surfaces and algebraic curves (S '13)
- Algebraic Geometry I (F '13)
- Algebraic Geometry II (S '14)

**Queens College:**

- Calculus II (S '16)
- Introduction to Algebraic Structures (S '16)
- Number Theory (F '15)

**Caltech:**

- Local Class Field Theory (W '08)
- Global Class Field Theory (S '08)

**The Ohio State University:**

- Multivariable Calculus (F '05)
- Discrete Mathematical Structures II (W '07)
- Introductory Number Theory (S '07)
- Undergraduate Abstract Algebra I (W '06)

- Undergraduate Abstract Algebra II (S '06)
- Introduction to Iwasawa Theory (F '06)

**The Ross Program:** (Seminar Instructor)

A program for gifted middle/high school students to learn basic number theory through exploration. (Su '06, '07)

**The University of Michigan:**

- Calculus I Assistant Course Coordinator with Karen Rhea (W '04, F '04)
- Calculus II Assistant Course Coordinator with Bob Megginson (F' 01) and with Al Taylor (F '03)
- Data, Functions, and Graphs (F '99)
- Calculus II (W '00 - W '02)
- Mathematics Help Lab Graduate Student Supervisor (F '00)

**Michigan Mentorship Program:** (Mentor)

Worked with a gifted high school student teaching him abstract algebra and number theory. Ann Arbor, MI. (Su '00, '01, '02)

**Michigan State University:**

- College Algebra (S '99)
- Intermediate Algebra (Su '98, '99)
- Calculus II and Calculus III Teaching Assistant ('97-'98)

<b>EDUCATION SEMINARS AND WORKSHOPS</b>
---

1. *MAA Minicourse on Java Applets in Mathematics Participant and MAA Minicourse on Teaching Galois Theory to Undergraduates*, AMS-MAA Joint Meetings, Atlanta, GA. (January, 2005)
2. *VIGRE Mathematics Education Seminar Participant*, University of Michigan, Ann Arbor, MI. (2001-2004)
3. *VIGRE Mathematics Education Seminar Research Assistant*, University of Michigan, Ann Arbor, MI. Helped analyze videos of calculus students attempting to explain the concept of a derivative. (Fall 2003)

4. *The Engaged Classroom: Getting Students Involved in the Learning Process*, Center for Research on Learning and Teaching, University of Michigan, Ann Arbor, MI. Attended seminar. (Fall 2003)

<b>SERVICE</b>
----------------

1. *Member at Large (appointed by president of AMS)*, Committee on the Profession, American Mathematical Society, (2021-2024).
2. *Vice program chair (elected position)*, SoCal-Nevada Section, Mathematical Association of America, (2021-2024).
3. *Member (presidential appointee)*, Advisory Council, Occidental College (2020-2023).
4. *Conference organizer*, Southern California REU Conference, Occidental College (virtual), (August 12, 2020).
5. *Member*, Subcommittee on Finance (SCOF), Occidental College (2019-2020).
6. *Faculty advisor*, Men's basketball, Occidental College (2019-2020).
7. *Founder and organizer*, Number Theory Series in Los Angeles (two meetings thus far)
8. *Conference co-organizer*, Research Training Group Workshop, National Science Foundation, Arlington, VA. (Fall 2018).
9. *Conference co-organizer*, Building Bridges: 4th EU/US Workshop on Automorphic Forms and Related Topics, Alfred Renyi Institute of Mathematics, Budapest, Hungary. (July 2018)
10. *External Expert*, Senior Research Project of Ray Wang at Heathwood Hall High School, Columbia, SC. (Fall 2017-18)
11. *Conference Organizer*, PANTS XXIX, Clemson University, Clemson, SC. (December 2-3, 2017)
12. *Conference co-organizer*, PANTS XXV, Clemson University, Clemson, SC. (December 5-6, 2015)
13. *Co-founder and director*, Program to assign teaching mentors to incoming graduate students, Clemson University, Clemson, SC (Fall 2014 - 2015)
14. *Co-founder*, Graduate teaching assistant training program, Clemson University, Clemson, SC (Fall 2014)
15. *Faculty Advisor*, AMS student chapter at Clemson University, Clemson University, Clemson, SC (2013 - 2018)

16. *Elected Representative*, College of Engineering and Science Representative, Calhoun Honors College Committee, Clemson University, Clemson, SC (Fall 2013 - 2016)
17. *Elected Representative*, College of Engineering and Science Representative, Athletic Advisory Council, Clemson University, Clemson, SC (Fall 2013 - 2016)
18. *Affiliated Faculty* AWM Student Chapter, Clemson University, Clemson, SC (2013-2018)
19. *Volunteer* Clemson FIRST program, Clemson University, Clemson, SC. (2013-2018)
20. *Committee member*, Algebra preliminary examination committee, Clemson University, Clemson, SC. (2011 - 2018).
21. *Department representative*, Graduate student recruitment fair, Joint Mathematics Meetings. (2010 - 2015)
22. *Committee member*, Graduate Affairs, Department of Mathematical Sciences, Clemson University, Clemson, SC (2014 - 2015)
23. *Co-organizer*, Southeastern Regional Meeting on Numbers, Winthrop University, Rock Hill, SC (March 28-29, 2015)
24. *Conference founder and organizer*, Southeastern Conference for Undergraduate Women in Mathematics, Clemson University, Clemson, SC (2013, 2014)
25. *Chair*, Calculus Committee (committee to evaluate effectiveness of calculus instruction at Clemson), Department of Mathematical Sciences, Clemson University, Clemson, SC (2013-14)
26. *Conference organizer*, PANTS XXI, Clemson University, Clemson, SC. (December 7-8, 2013)
27. *Conference organizer*, 4th Annual Southeastern REU Symposium, Clemson University, Clemson, SC (July 9, 2013)
28. *Committee member*, Undergraduate Affairs, Department of Mathematical Sciences, Clemson University, Clemson, SC (Fall 2013)
29. *Judge* Undergraduate Creative Inquiry Posters, Clemson University, Clemson, SC (April 9, 2013)
30. *Judge* MAA Undergraduate Student Poster Session, Joint Mathematics Meetings. (2013-2014)
31. *Algebra and Discrete Mathematics subfaculty representative*, Graduate student open house recruitment, Clemson University, Clemson, SC. (2009, 2013)
32. *Volunteer*, Clemson Calculus Challenge, Clemson University, Clemson, SC. (2012, 2013)
33. *Conference organizer*, PANTS XVII, Clemson University, Clemson, SC. (December 3-4, 2011)

34. *Conference organizer*, PANTS XV, Clemson University, Clemson, SC. (February 19-20, 2011)
35. *Referee*, Comp. Math., IJNT, J. of Comm. Alg., JNT, Math. Res. Lett., Rocky Mount. Math., Glasgow Math., etc.
36. *Algebra and Discrete Mathematics Subfaculty Coordinator*, Clemson University, Clemson, SC. (2010 - 2015)
37. *Research Mentor*, Clemson REU in Combinatorics and Computational Number Theory, Clemson University, Clemson, SC. (Summer 2010)
38. *Member*, Clemson Calculus Textbook Committee, Clemson University, Clemson, SC. (Spring 2010)
39. *Conference organizer*, PANTS XII, Clemson University, Clemson, SC. (February 20-21, 2010)
40. *Conference co-organizer*, PANTS X, Armstrong Atlantic State University, Savannah, GA. (September 19-20, 2009)
41. *Conference organizer*, PANTS IX, Clemson University, Clemson, SC. (February 7-8, 2009)
42. *Member*, Clemson Research Committee, Clemson University, Clemson, SC. (Fall 2008 - Fall 2010)
43. *Reviewer*, Mathematical Reviews, 22 reviews, (Fall 2007 - present)
44. *Conference co-organizer*, PANTS IV, Clemson University, Clemson, SC. (February 7-8, 2009)
45. *Seminar Organizer*, Algebraic Geometry and Number Theory Seminar, Clemson University, Clemson, SC. (2008 - 2015)
46. *Conference co-organizer*, Southern California Number Theory Day, Caltech, Pasadena, CA. (March 8, 2008)
47. *Reading Course Instructor*, Supervised a student in a reading course of algebraic number theory at The Ohio State University. (Summer 2006)
48. *Seminar Organizer*, Number Theory Seminar, The Ohio State University, Columbus, OH. (2006-2007)
49. *Chair Number Theory Session III*, AMS-MAA Joint Meetings, Atlanta, GA. (January 6, 2005)
50. *Freshmen/Sophomore Mathematics Program Committee*, Mathematics Department, University of Michigan, Ann Arbor, MI. (2004-2005)

51. *King-Chavez-Parks Program Host*, Gave talk to area high school students entitled “Clocks, Doughnuts, Paper-twisting, and Snowflakes and How They Relate to Modern Mathematics,” Office of Academic Multicultural Initiatives, University of Michigan, Ann Arbor, MI. (November 13, 2003)
52. *Seminar Organizer*, Student Number Theory Seminar, University of Michigan, Ann Arbor, MI. (2000-2001, 2002-2003)