

Jim L. Brown

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CURRENT POSITION

2008-current **Assistant Professor,**
Clemson University, Clemson, SC.

PREVIOUS EMPLOYMENT

2007-2008 **Olga Taussky - John Todd Instructor,**
California Institute of Technology, Pasadena, CA.

2005-2007 **VIGRE Arnold Ross Assistant Professor,**
The Ohio State University, Columbus, OH.

EDUCATION

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, arithmetic geometry, modular forms and applica-
tions, special values of L -functions, Galois representations, Iwasawa theory

HONORS AND AWARDS

2004-2005 **Graduate Student Instructor of the Year**
University of Michigan, Ann Arbor, Michigan.

2000-2004 **VIGRE Fellowship,** University of Michigan, Ann Arbor, Michigan.

RESEARCH PAPERS

in preparation *On the cuspidality of pullbacks of Siegel Eisenstein series to $GSp(m) \times$
 $GSp(n)$*

in preparation *L-values for $GL(2)$ and congruences between Ikeda lifts*

in preparation *Saito-Kurokawa lifts of square-free level and non-trivial torsion in Selmer
groups*

preprint *Pullbacks of Eisenstein series on $U(3, 3)$ and nonvanishing of Selmer groups
(44 pages)*

RESEARCH PAPERS (CONTINUED)	
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| submitted 2008 | <i>L-functions on $\mathrm{GSp}(4) \times \mathrm{GL}(2)$ and the Bloch-Kato conjecture</i> (26 pages) |
| submitted 2007 | <i>On the cuspidality of pullbacks of Siegel Eisenstein series and applications to the Bloch-Kato conjecture</i> (37 pages) |
| 2009 | <i>Level lowering for half-integral weight modular forms</i> with Yingkun Li (to appear Proc. Amer. Math. Soc.) |
| 2009 | <i>The first negative Hecke eigenvalue of genus 2 Siegel cuspforms with level $N \geq 1$</i> (to appear Int. J. Number Theory.) |
| 2009 | <i>Distribution of powers of the partition function modulo ℓ^j</i> with Yingkun Li (J. Number Theory, 129, 2557-2568.) |
| 2008 | <i>Residually reducible representations of algebras over local Artinian rings</i> (Proc. Amer. Math. Soc., 136, 3409-3414.) |
| 2007 | <i>Saito-Kurokawa lifts and applications to arithmetic</i> (Conference Proceedings of the 9th Autumn Workshop on Number Theory, Hakuba, Japan, 1-11.) |
| 2007 | <i>An inner product relation on Saito-Kurokawa lifts</i> (The Ramanujan Journal, 14 no. 1, 89-105.) |
| 2007 | <i>Saito-Kurokawa lifts and applications to the Bloch-Kato conjecture</i> (Compositio Mathematica, 143 part 2, 290-322.) |
| 2005 | <i>Saito-Kurokawa lifts, L-values for GL_2, and congruences between Siegel modular forms</i> , (Ph.D. thesis, University of Michigan, 131 pages) |
| 2002 | <i>Variation of Hodge Structure</i> with K. Eistentrager, K. Klosin, J. Pineiro, M. Trifkovic, and O. Watson. |

GRANTS	
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| 2009-10 | <i>Palmetto Number Theory Series</i> , National Security Agency, PI, \$13,507. |
| 2009-10 | <i>Palmetto Number Theory Series</i> , National Science Foundation, Co-PI, \$11,096. |

EXPOSITORY WRITING	
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| 2008 | Local class field theory (97 pages) |
| 2007 | Alex, I will take congruent numbers for one million dollars please (14 pages) |
| 2007 | Congruent numbers and elliptic curves (26 pages) |
| 2006 | An introduction to Iwasawa theory (102 pages) |
| 2005 | Abel and the insolvability of the quintic (13 pages) |
| 2004 | Complex theory of abelian varieties (16 pages) |
| 2001 | An introduction to algebraic number theory (120 pages) |

STUDENTS	
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Current	Rodney Keaton (Clemson '11). Masters student co-advising with Kevin James. Vincent Rusnell (Clemson '12). Masters student.
Summer 2008	Yingkun Li (Caltech '09) Summer undergraduate research fellowship.

INVITED TALKS	
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November 11, 2008	<i>The Eisenstein ideal and generalizations.</i> Number Theory Seminar, University of South Carolina, Columbia, SC.
March 10, 2008	<i>Saito-Kurokawa lifts and lower bounds on Selmer groups.</i> Number Theory Seminar, UCLA, Los Angeles, CA.
February 21, 2008	<i>Dirichlet's class number formula and generalizations.</i> Colloquium, Clemson University, Clemson, SC.
January 18, 2008	<i>Dirichlet's class number formula and generalizations.</i> Colloquium, Florida State University, Tallahassee, FL.
January 17, 2008	<i>Congruences between automorphic forms and applications to arithmetic.</i> Algebra Seminar, Florida State University, Tallahassee, FL.
November 16, 2007	<i>Dirichlet's class number formula and generalizations.</i> Colloquium, Oregon State University, Corvallis, OR.
February 5, 2007	<i>The congruent number problem and elliptic curves.</i> Math Coffees, Davidson College, Davidson, NC.
January 25, 2007	<i>Automorphy, L-functions, and problems in arithmetic.</i> Colloquium, Bucknell University, Lewisburg, PA.
November 6, 2006	<i>Applications of Saito-Kurokawa lifts to arithmetic.</i> 9th Autumn Workshop on Number Theory (focusing on $GSp(4)$), Hakuba, Japan.
May 5, 2006	<i>Mathematics and internet security.</i> Mathematics Undergraduate Awards Ceremony, The Ohio State University, Columbus, OH.
April 5, 2006	<i>L-functions and arithmetic.</i> Colloquium, Arizona State University, Phoenix, AZ.
November 4, 2005	<i>Saito-Kurokawa lifts and the Bloch-Kato conjecture.</i> Midwest Number Theory Day, University of Wisconsin, Madison, WI.
February 7, 2005	<i>Saito-Kurokawa lifts, L-values for GL_2, and congruences between Siegel modular forms.</i> Algebra Seminar, Boston University, Boston, MA.
February 2, 2005	<i>L-functions and arithmetic.</i> Colloquium, Armstrong Atlantic State University, Savannah, GA.
January 26, 2005	<i>L-functions and arithmetic.</i> Colloquium, Stephen F. Austin University, Nacogdoches, TX.

TALKS AND PRESENTATIONS

- September 20, 2009** *Some background on elliptic curves and Galois cohomology,*
PANTS X, Armstrong Atlantic State University, Savannah, GA.
- June 6, 2009** *A survey of the Hodge conjecture,*
Clemson REU, Clemson University, Clemson, SC.
- May 28, 2009** *A survey of the Birch and Swinnerton-Dyer conjecture,*
Clemson REU, Clemson University, Clemson, SC.
- February 8, 2009** *An introduction to p -adic L -functions,*
PANTS IX, Clemson University, Clemson, SC.
- February 3, 2009** *Number Theory at Clemson,*
1st Year Graduate Student Seminar, Clemson University, Clemson, SC.
- January 13, 20, 27, 2009** *An introduction to Iwasawa theory,*
Informal Number Theory Seminar, Clemson University, Clemson, SC.
- October 3, 2008** *Modular forms and partitions,*
Algebra, Discrete Mathematics, and Number Theory Seminar, Clemson
University, Clemson, SC.
- April 3, 2008** *Saito-Kurokawa lifts and lower bounds on Selmer groups,*
Number Theory Seminar, Caltech, Pasadena, CA.
- April 25, May 2, 2007** *Attaching Galois representations to modular forms,*
Graduate student number theory seminar, The Ohio State University,
Columbus, OH.
- July 12, 2006** *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.
- March 30, 2006** *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.
- February 1, 2006** *The congruent number problem and elliptic curves,* Radical Pi (undergrad-
uate math club) The Ohio State University, Columbus, OH.
- January 23,30, 2006** *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.
- November 1, 2005** *Abel and the insolvability of the quintic.*
VIGRE Reading Classics Working Group, The Ohio State University,
Columbus, OH.
- October 3,10, 2005** *Saito-Kurokawa lifts and applications to the Bloch-Kato conjecture.*
Number Theory Seminar, The Ohio State University, Columbus, OH.
- March 20, 2005** *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.

TALKS AND PRESENTATIONS (CONTINUED)

- January 06, 2005** *Saito-Kurokawa lifts, L -values for GL_2 , and congruences between Siegel modular forms.*
AMS-MAA Joint Meeting, Atlanta, GA.
- December 18, 2004** *Saito-Kurokawa lifts, L -values for GL_2 , and congruences between Siegel modular forms.*
West Coast Number Theory Conference, UNLV, Las Vegas, NV.
- October 25, 2003** *Saito-Kurokawa Lifts and Congruences Among Siegel Modular Forms.*
Midwest Number Theory Conference for Graduate Students and Recent PhDs, University of Wisconsin, Madison, WI.
- March 18, 2002** *Variation of Hodge Structures: Some Examples.*
Arizona Winter School, Southwestern Center for Arithmetic Algebraic Geometry. University of Arizona, Tucson, AZ.
This was done as a group projection under the direction of Johan de Jong.

CONFERENCES AND WORKSHOPS

- September 19-20, 2009** PANTS X, Armstrong Atlantic State University, Savannah, GA.
- June 28 - July 18, 2009,** Park City Mathematics Institute Program on Arithmetic of L -functions
(Research program), Park City, UT.
- February 7-8, 2009** PANTS IX, Clemson University, Clemson, SC.
- December 13-14, 2008** PANTS VIII, University of South Carolina, Columbia, SC.
- October 11-12, 2008** PANTS VII, College of Charleston, Charleston, SC.
- June 28 - July 2, 2008** Modular Forms and Arithmetic, MSRI, Berkeley, CA.
- May 21-25, 2008** The Hawaii workshop on the arithmetic of modular forms, U. of Hawaii,
Honolulu, HI.
- March 24-29, 2008** Selmer Groups, L -functions, and Galois Deformations, Los Angeles, CA.
- January 6-8, 2008** Joint Mathematics Meetings, San Diego, CA.
- October 27, 2007** Southern California Number Theory Day, UC Irvine, CA.
- August 9-13, 2007** Summer School in Iwasawa Theory, McMaster University, Hamilton, ON,
Canada.
- January 5-8, 2007** Joint Mathematics Meetings, New Orleans, LA.
- November 6-10, 2006** 9th Autumn Workshop on Number Theory (focusing on $GSp(4)$), Hakuba,
Japan.
- July 9-14, 2006** The Canadian Number Theory Association IX Meeting, University of
British Columbia, Vancouver, BC, Canada.
- June 17-22, 2006** Instructional Workshop: Automorphic Galois Representations, L -functions
and Arithmetic, Columbia University, New York, New York.

CONFERENCES AND WORKSHOPS (CONTINUED)	
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| March 29 - April 2, 2006 | 20th Annual Workshop on Automorphic Forms and Related Topics, University of Colorado, Boulder, CO. |
| November 4, 2005 | Midwest Number Theory Day, University of Wisconsin, Madison, WI. |
| Fall 2005 | VIGRE Reading Classics Group, The Ohio State University, Columbus, OH. The group comprised of undergraduates, graduate students, and faculty focused on reading works of Abel and Galois. |
| March 17-20, 2005 | The 19th Annual Workshop on Automorphic Forms and Related Topics, University of North Texas, Denton, TX. |
| January 5-8, 2005 | Joint Mathematics Meetings, Atlanta, GA. |
| December 16-20, 2004 | West Coast Number Theory Conference, University of Nevada Las Vegas, Las Vegas, NV. |
| 2004-2005 | VIGRE Number Theory Working Group Participant, University of Michigan, Ann Arbor, MI. The group worked on understanding aspects of complex multiplication. |
| Summer 2004 | Iwasawa Theory Seminar, University of Michigan, Ann Arbor, MI. |
| June 20-25, 2004 | Canadian Number Theory Association VIII Meeting, Fields Institute, Toronto, ON, Canada. |
| November 5-8, 2003 | AIM Workshop on the Birch-Swinnerton-Dyer Conjecture, Princeton University, Princeton, NJ. |
| October 25-26, 2003 | Midwest Number Theory Conference for Graduate Students and Recent PhDs, University of Wisconsin, Madison, WI. |
| 2001-2005 | Arizona Winter School, Southwestern Center for Arithmetic Algebraic Geometry, University of Arizona, Tucson AZ. |
| 2002-2003 | VIGRE Number Theory Working Group Participant, University of Michigan, Ann Arbor, MI. The working group read <i>Travaux de Shimura</i> by Deligne. |
| 2001-2002 | VIGRE Number Theory Working Group Participant, University of Michigan, Ann Arbor, MI. The working group read <i>Heegner Points and Derivatives of L-Series</i> by Gross and Zagier. |
| April 2001 | Workshop on Automorphic Forms, Institute for Advanced Study, Princeton, NJ. |
| 2000-2001 | VIGRE Number Theory Working Group Participant, University of Michigan, Ann Arbor, MI. The working group read <i>The Beilinson Conjecture for Algebraic Number Fields</i> by Neukirch. |

SERVICES	
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September 19-20, 2009	Conference co-organizer , PANTS X Armstrong Atlantic State University, Savannah, GA.
February 7-8, 2009	Conference co-organizer , PANTS IX Clemson University, Clemson, SC.
Fall 2008 - present	Member , Clemson Research Committee Clemson University, Clemson, SC.
Spring 2008 - present	Referee , Mathematical Research Letters.
Fall 2007 - present	Reviewer , Mathematical Reviews (6 reviews).
February 7-8, 2009	Conference co-organizer , PANTS IV Clemson University, Clemson, SC.
March 8, 2008	Conference co-organizer , Southern California Number Theory Day Caltech, Pasadena, CA.
Summer 2006	Reading Course Instructor Supervised a student in a reading course of algebraic number theory at The Ohio State University.
2006-2007	Seminar Organizer Number Theory Seminar, The Ohio State University, Columbus, OH.
November 5, 2005	Panel Member for "Giving an effective talk." Midwest Number Theory Conference for Graduate Students III.
January 6, 2005	Chair Number Theory Session III AMS-MAA Joint Meetings, Atlanta, GA.
2004-2005	Freshmen/Sophomore Mathematics Program Committee Mathematics Department, University of Michigan, Ann Arbor, MI.
November 13, 2003	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.
2000-2001, 2002-2003	Seminar Organizer Student Number Theory Seminar, University of Michigan, Ann Arbor, MI.
Summer 2003	Academic Advising Mathematics Advisor for Engineering and Literature, Sciences, and Arts Colleges. Advised incoming freshmen about appropriate mathematics courses.

EDUCATION SEMINARS AND WORKSHOPS

- January, 2005** MAA Minicourse on Java Applets in Mathematics Participant and MAA Minicourse on Teaching Galois Theory to Undergraduates, AMS-MAA Joint Meetings, Atlanta, GA.
- 2001-2004** VIGRE Mathematics Education Seminar Participant, University of Michigan, Ann Arbor, MI.
- Fall 2003** 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** *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.

TEACHING

- Fall 2008 - present** **Primary lecturer for the following courses:**
Spring 2010: Math 986 Algebraic Topology
Fall 2009: Math 106H Honors calculus I and Math 986 Topology
Spring 2009: Math 206 Multivariable calculus
Fall 2008: Math 206 Multivariable calculus
Clemson University, Clemson SC
- Winter-Spring 2008** **Primary lecturer for the following courses:**
Winter 2008: Math 160b Local class field theory
Spring 2008: Math 160c Global class field theory
California Institute of Technology, Pasadena, CA
- Fall 2005-Spring 2007** **Primary lecturer for the following courses:**
Spring 2007: Math 573 Introductory number theory
Winter 2007: Math 566 Discrete mathematical structures II
Fall 2006: Math 983 Introduction to Iwasawa theory
Spring 2006: Math 581 Abstract algebra II
Winter 2006: Math 580 Abstract algebra I
Fall 2005: Math 153 Calculus III
The Ohio State University, Columbus, OH.
- Summer 2006, 2007** **Seminar Instructor**, The Ross Program,
A program for gifted middle/high school students to explore basic number theory through exploration.
The Ohio State University, Columbus, OH.
- Winter 2004, Fall 2004** **Assistant Course Coordinator**, Math 115 Calculus I, University of Michigan, Ann Arbor, MI. (with Karen Rhea)
- Fall 2001, Fall 2003** **Assistant Course Coordinator**, Math 116 Calculus II, University of Michigan, Ann Arbor, MI. (2001 with Bob Megginson, 2003 with Al Taylor)
- Summer 2000, 2001, 2002** **Mentor**, Michigan Mentorship Program, Ann Arbor, MI. Worked with a gifted high school student teaching him abstract algebra and number theory.
- Fall 1999 - Summer 2002** **Graduate Student Instructor**, University of Michigan, Ann Arbor, MI. Primary lecturer sections of Math 105 Data, Functions and Graphs and Calculus II.

TEACHING CONTINUED	
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Fall 2000	Graduate Student Supervisor Mathematics Lab , University of Michigan, Ann Arbor, MI.
Spring 1999	Graduate Student Instructor , Michigan State University, East Lansing, MI. Primary lecturer for a section of College Algebra.
Summer 1998, 1999	Instructor for Internet-based Intermediate Algebra , Michigan State University, East Lansing, MI.
1997 - 1998	Teaching Assistant , Michigan State University, East Lansing, MI. Undergraduate teaching assistant for Calculus II, III.