

Curriculum Vita

JIANQIANG ZHAO

Natural Science Collegium
Eckerd College
St. Petersburg, FL 33711

Office Phone: (727) 864-8348
Office Fax: (727) 864-8382
E-mail: zhaoj@eckerd.edu

Employment

- Associate Professor, Eckerd College, 09/2008–present.
- Assistant Professor, Eckerd College, 09/2003–08/2008.
- Lecturer, University of Pennsylvania, 07/1999–06/2003.

Visiting Research Positions

- Taida Institute Math. Sci., National Taiwan University, May-June 2012.
- Institut des Hautes Études Scientifiques, France, Jun.-Aug. 2011.
- Max-Planck Institute for Mathematics, Bonn, Germany, Jan.-Aug. 2009.
- The Institute for Advanced Study, Princeton, NJ, Aug. 2008.
- The Morningside Center of Mathematics, Beijing, China, July-Aug. 2007.
- The Chern Institute of Mathematics, Tianjin, China, June-July 2007.

Educational Background

- Ph.D., Brown University, 1999
- M. Sc., Brown University, 1997
- M. Sc., Nankai University, 1993
- B. Sc., Nankai University, 1990

Professional Interests

- Algebraic number theory (11G, 11R)
- Algebraic geometry (14F)
- Algebraic K -theory (19E, 19F)

Awards and Honors

- Faculty Development Fund, Eckerd College, various amounts, 2005-2011.
- NSF grant DMS0348258, 2003-2005
- NSF grant DMS0139813, 2002-2003
- Good Teaching Award, Dept. of Math., University of Pennsylvania, Fall 2003
- Special NSF grant for attendance of ICM in Beijing, 2002
- George Irving Hopkins Fellowship, Brown University, 1998-99
- Teaching Fellowship, Brown University, 1997-98
- University Fellowship, Brown University, 1994-95
- University Fellowship, Nankai University, 1986-93
- Nankai School Alumni Foundation Fellowship, Nankai School Alumni Foundation, 1986-90

Teaching Experience

INSTRUCTOR AT ECKERD COLLEGE:

- Fall 2012 Pre-Calculus, Calculus I, Abstract Algebra I
- Spring 2012 Calculus I, Calculus II, Differential Equations
- Fall 2011 Calculus I, Complex Analysis, Real Analysis I
- Spring 2011 Calculus I, Discrete Mathematics, Abstract Algebra II
- Fall 2010 Calculus I, Calculus III, Abstract Algebra I
- Spring 2010 Calculus I, Calculus II, Differential Equations
- Fall 2009 Calculus I, Calculus II, Linear Algebra
- Fall 2008 Calculus II, Linear Algebra, Abstract Algebra I
- Spring 2008 Calculus I, Calculus II, Discrete Mathematics
- Fall 2007 Calculus I, Calculus II, Calculus III
- Spring 2007 Calculus I, Calculus II, Abstract Algebra II
- Fall 2006 Calculus I, Calculus II, Abstract Algebra I
- Spring 2006 Western Heritage in A Global Context, Survey of Math, Real Analysis II
- Fall 2005 Western Heritage in A Global Context, Intro. to Statistics, Real Analysis I
- Spring 2005 Calculus I, Calculus II, Abstract Algebra II
- Fall 2004 Calculus I, Calculus II, Abstract Algebra I
- Spring 2004 Calculus I, Survey of Mathematics, Partial Differential Equations
- Fall 2003 Pre-Calculus, Calculus I, Complex Analysis

INSTRUCTOR AT UNIVERSITY OF PENNSYLVANIA:

- Spring 2003 Real Analysis, Calculus Series
- Fall 2002 Complex Analysis, Calculus Series
- Spring 2002 Linear Algebra, Calculus Series
- Fall 2001 Number Theory, Calculus Series
- 2000–2001 Abstract Algebra, Calculus Series

TEACHING ASSISTANT AND TEACHING FELLOW AT BROWN UNIVERSITY:

- 1995-1999 Calculus Series

Professional Service

- Reviewer for *Mathematical Reviews*, 1997 – present
- Referee for *J. of Number Theory*, *Intl. J. of Number Theory*, *J. of Intl. Math. and Math. Science*, *Annales Sci. de l'Ecole Normale Supérieure*, *Discrete Math.*, *Aequationes Math.*, *Acta Math. Sinica*, *Compositio Math.*, *Glasgow J. Math.*, *European J. Math.*, *American Math. Society*, *London Math. Society*, *Chinese Math. Society*, *Canadian Math. Society*, and many conference proceedings, 2000 – present
- Education Assessment Committee (Eckerd College), 2006 – 2008
- Co-organizer of Putnam Mathematics Competition (Eckerd College), 2006
- Putnam Mathematics Competition Committee (UPENN), 2002 – 2003
- Graduate Admission Committee (UPENN), 2000 – 2002
- Preliminary Exam Committee (UPENN), 1999 – 2000

Mentor Service

- Research mentor of Erin Linebarger, Spring, 2012
- Research mentor of Christiaan Mantz (with \$2000 support from my NSF grant), Summer, 2005
- Research mentor of Minhdy (Zee) Tran (with \$2000 support from my NSF grant), Summer, 2005
- Academic mentor for students in Western Heritage class, 2005-2006
- Academic mentor for math majors, 2006-present

Other Services

- Member of *School Advisory Council*, Wesley Chapel Elementary School, 2007-2009
- Students' Portfolio reader, Eckerd College 2007
- Volunteer for *Great American Teach-In*, Wesley Chapel Elementary School, 2006
- Participant of College Board *Advanced Placement Program*, Louisville, Kentucky, 2007
- Participant of College Board *Advanced Placement Program*, Kansas City, Missouri, 2008
- Volunteer for *Great American Teach-In*, Wesley Chapel Elementary School, 2010
- Participant of *MET Project* (a large-scale research project to Measure the Effectiveness of Teaching involving the viewing and coding of video footage of school classroom instruction), 2011
- Students' Portfolio reader, Eckerd College, 2011
- Member of General Education Revision, Quantification Literacy Group, Eckerd College, 2012
- Mathematics Discipline Coordinator, Eckerd College, 2012-2013

Selected Invited Talks

- *Multi-Zeta and -Polylogs and Their Special Values*, Number Theory Seminar, National Center for Theoretical Sciences, Hsinchu, Taiwan, May 2012
- *Multiple Zeta Functions*, Number Theory Seminar, Taida Institute for mathematical sciences at National Taiwan University, May 2012
- *q-analog of Wolstenholme's Type Congruences*, Western Coast Number Theory Conference, December 2011
- *Drinfeld associator and generalizations*, Algebra Seminar, Department of Math., Iowa State University, October 2011
- *Non-standard relations of multiple polylog values at roots of unity*, Colloquium, Department of Math., Iowa State University, October 2011
- *Arithmetic and geometry of multiple polylogarithm values at roots of unity*, Plenary talk, International Conference of Number Theory and Its Related Fields, Univ. Sci. & Tech. China, Hefei, China, June 2011
- *Multiple harmonic sums*, 2010 Florida Suncoast Conference, University of Tampa, December 2010
- *Witten volume formulas*, Mathematical Colloquium, University of Tampa, October 2010
- *Special values of Witten multiple zeta functions*, Western Coast Number Theory Conference 2010, Monterey, California, December 2009
- *Special values of Witten multiple zeta functions associated with Lie algebras, I & II*, University of South Florida, Tampa, Florida, November 2009
- *Special values of Witten multiple zeta functions*, Integers Conference 2009, University of West Georgia, October 2009
- *Motivic fundamental group of $G_m \setminus \mu_N$ and special values of multi-polylogs*, ETH, Zurich, Switzerland, May 2009
- *Special values of Witten multiple zeta functions*, Max Planck Institute for Math., Bonn, Germany, April 2009
- *Higher cyclotomy theory*, International Conference on Partitions, q -series, and Modular Forms, University of Florida, Gainesville, Florida, March 2008
- *A family of Euler sum identities*, Suncoast Region Meeting of the Florida Section of the MAA, Eckerd College, December 2007
- *Special values of multiple polylogarithms*, AMS eastern sectional meeting, Rutgers University, Brunswick, New Jersey, October 2007
- *Special values of multiple polylogarithms*, Morningside Center, Academia Sinica, Beijing, China, July 2007
- *Multiple zeta values*, Zhejiang University, Hangzhou, China, June 2007

- *Renormalization of multiple q -zeta values*, MAA sectional meeting, Hillsborough Community College, Florida, December 2006
- *Applications of abstract algebra: multiple harmonic sums*, Annual MAA meeting, Knoxville, Texas, August 2006
- *Walks on infinite planes paved by binary tiles*, MAA sectional meeting, University of Central Florida, November 2005
- *On q -analogs of multiple zeta functions and multiple polylogarithms*, Algebra and Number Theory Seminar, Pennsylvania State University, October, 2003.
- *Analytic continuation of q -multiple zeta functions*, Analysis Seminar, University of South Florida at Tampa, March 2004.
- *Partial sums of multiple zeta value series*, AMS Spring 2003 Central Section Meeting, Louisiana State University, March 2003
- *Motivic nature of multiple zeta values*, Galois Seminar, University of Pennsylvania, April, 2002
- *Goncharov's relations in Bloch's higher Chow group $CH^3(F, 5)$* , AMS Fall 2001 Central Section Meeting, Ohio State University, September, 2001
- *Arithmetic and geometry of multiple polylogarithms*, Geometry/Topology Seminar, Duke University, April, 2001
- *Root numbers connected with special values of L -functions over $\mathbb{F}_q(T)$* , Conference on Arithmetic of Function Fields, Brown University, April 1996

Publications

- [1] Finiteness of p -divisible sets of multiple harmonic sums. In press: *Ann. Sci. Math. Québec*. Published online on December 2, 2011.
- [2] Joint with X. Zhou: Reducibility of signed cyclic sums of Mordell-Tornheim zeta and L -values. *J. Ramanujan Math. Soc.* **26** (2011), 383–414. MPIM2009-8, 2009.
- [3] Joint with X. Zhou, Witten multiple zeta values attached to $\mathfrak{sl}(4)$. *Tokyo J. Math.* **34** (2011), 135–152. MPIM2009-41, 2009.
- [4] Mod p structure of alternating and non-alternating multiple harmonic sums. *J. Théor. Nombres Bordeaux* **23** (1)(2011), 259–268.
- [5] Alternating Euler sums and special values of Witten multiple zeta function attached to $\mathfrak{so}(5)$. *J. Aust. Math. Soc.* **89** (3)(2011), 419–430.
- [6] Witten volume formulas for semi-simple Lie algebras. *Integers* **11A** (2011) #A22.
- [7] Joint with R. Tauraso, Congruences of alternating multiple harmonic sums. *J. Comb. Number Theory* **2** (2)(2010), 129–159. MPIM2009-67, 2009.

- [8] A note on colored Tornheim’s double series. *Integers*, **10** (2010) #A59, 879-882.
- [9] Multi-polylogs at twelfth roots of unity and special values of Witten multiple zeta function attached to the exceptional Lie algebra \mathfrak{g}_2 , *J. Algebra Appl.*, **9** (2)(2010), 327–337. DOI: 10.1142/S021949881000394X
- [10] Standard relations of multiple polylogarithm values at roots of unity, *Doc. Math.*, **15** (2010), 1–34.
- [11] On a conjecture of Borwein, Bradley and Broadhurst, *J. Reine Angew. Math.*, **639** (2010), 223–233.
- [12] Multiple polylogarithm values at roots of unity, *C. R. Acad. Sci. Paris, Ser. I.* **346** (2008), 1029–1032. DOI: 10.1016/j.crma.2008.09.011
- [13] An exotic shuffle relation of multiple zeta values, *Arch. Math. (Basel)*, **91** (5)(2008), 409–415.
- [14] Renormalization of multiple q -zeta values. *Acta Math. Sin. (Engl. Ser.)*, **24** (10)(2008), 1593–1616.
- [15] Wolstenholme type Theorem for multiple harmonic sums, *Int. J. of Number Theory*, **4**(1) (2008), 73–106. (MR 2387917)
- [16] Analytic continuation of multiple polylogarithms. *Anal. Math.*, **33** (2007), 301–323. (MR 2008j:11077)
- [17] Multiple q -zeta functions and multiple q -polylogarithms. *Ramanujan J.*, **14** (2)(2007), 189–221. (MR 2008h:11095)
- [18] Bernoulli numbers, Wolstenholme’s Theorem, and p^5 variations of Lucas’ Theorem. *J. Number Theory* **123** (2007), 18–26. (MR 2007m:11005 Zbl 1115.11005)
- [19] Goncharov’s relations in Bloch’s higher Chow group $CH^3(F, 5)$. *J. Number Theory*, **124** (2007), 1–25. (MR 2008f:14017 Zbl 1121.14007)
- [20] Variations of mixed Hodge structures of multiple polylogarithms. *Canad. J. Math.* **56**(6) (2004), 1308–1338. (MR 2005g:11121 Zbl 1078.14012)
- [21] Motivic cohomology of pairs of simplices, *Proc. London Math. Soc.* **88**(3)(2004), 313–354. (MR 2005h:14051 Zbl 1069.14025)
- [22] Multiple polylogarithms: analytic continuation, monodromy, and variations of mixed Hodge structures, in “Contemporary Trends in Algebraic Geometry and Algebraic Topology,” edited by S.S. Chern, L. Fu and R. Hain, *Nankai Tracts in Mathematics*, vol. **5**, pp. 167–193, World Scientific, 2002. (MR 2004b:14016 Zbl 1058.32005)
- [23] Motivic complexes of weight three and pairs of simplices in projective 3-space. *Adv. Math.* **161**(2001), 141–208. (MR 2003a:11080 Zbl 1042.19003)

- [24] Joint with F. Xu, “Euler systems” in global function fields. *Israel J. Math.* **124**(2001), 367–379. (MR 2003a:11148 Zbl 1008.11044)
- [25] Joint with A.B. Goncharov, Grassmannian trilogarithms. *Compos. Math.* **127**(2001), 83–108. (MR 2002g:33004 Zbl 1081.14506)
- [26] Remarks on a Hopf algebra for defining motivic cohomology. *Duke Math. J.* **103**(2000), 445–458. (MR 2001d:14027, Zbl 0958.14012)
- [27] Analytic continuation of multiple zeta functions. *Proc. Amer. Math. Soc.* **128**(1999), 1275–1283. (MR 2000j:11132, Zbl 0949.11042)
- [28] Joint with C. Li, Class number growth of a family of global function fields, *J. Algebra* **200**(1998), 141–154. (MR 98m:11127 Zbl 0901.11033)
- [29] Joint with C. Li, Iwasawa theory of \mathbb{Z}_p^d -extensions over global function fields, *Expo. Math.* **15**(4)(1997), 315–337. (MR 98h:11150 Zbl 0917.11058)
- [30] On root numbers connected with special values of L -functions over $\mathbb{F}_q(T)$, *J. Number Theory* **62**(2)(1997), 307–321. (MR 97k:11092, Zbl 874.11043))
- [31] with F. Xu, Maximal independent systems of units in global function fields. *Acta Arith.* **78**(1)(1996), 1–10. (MR 98e:11134, Zbl 863.11073)
- [32] Genus fields, conductors and relative integral bases for abelian function fields, *Acta Math. (Engl. Ser.)*, **16**(1)(1996), 31–37. (MR 97g:11134 Zbl 0871.11073)
- [33] Class number relation between type (l, l, \dots, l) function fields over $\mathbb{F}_q(T)$ and their subfields, *Sci. China Ser. A*, **38**(6)(1995), 674–682. (MR 96k:11140 Zbl 0841.11057)
- [34] On decomposition law in Carlitz-Kummer function fields, *Chinese Sci. Bull.* **39**(7)(1994), 538–540. (Zbl 0811.11069)

Papers under Preparation

- [1] q -Analogues of Wolstenholme type congruences for multiple harmonic sums
- [2] With M. Conrad, An integral structure of multi-polylog values at roots of unity.
- [3] Generalized Drinfeld associators and non-standard relations of multi-polylog values at roots of unity.