Edray Herber Goins

CONTACT INFORMATION

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EDUCATION

Stanford University, Stanford, California USA

Ph.D., Mathematics, September 1999
Dissertation Topic: "Elliptic Curves and Icosahedral Galois Representations"
Advisors: Daniel W. Bump, Karl C. Rubin

California Institute of Technology, Pasadena, California USA

B.S., Mathematics and Physics, June 1994
Advisors: Dinakar Ramakrishnan, Steven C. Frautschi

RESEARCH INTERESTS

Algebraic Geometry, Automorphic Forms, Class Field Theory, Commutative Algebra, Elliptic Curves, Galois Representations, Number Theory, Representation Theory

APPOINTMENTS

Purdue University, West Lafayette, Indiana USA
Associate Professor of Mathematics — **August 2010 – present**
Assistant Professor of Mathematics — **August 2004 – August 2010**
Visiting Scholar — **October 2000**

California Institute of Technology, Pasadena, California USA
Taussky-Todd Instructor of Mathematics — **September 2003 – August 2004**
Irvine Foundation Instructor of Mathematics — **August 2001 – August 2003**

Harvard University, Cambridge, Massachusetts USA
Visiting Scholar — **November 2007 – December 2007**
Visiting Scholar — **September 2001 – June 2002**
Visiting Scholar — **April 2000**

Max Planck Institut für Mathematik, Bonn, Germany
Postdoctoral Fellow — **January 2001 – June 2001**

Mathematical Sciences Research Institute, Berkeley, California USA
Postdoctoral Fellow — **August 2000 – December 2000**
Postdoctoral Fellow — **August 1999 – September 1999**

Institute for Advanced Study, Princeton, New Jersey USA
Member, School of Mathematics — **September 1999 – August 2000**

National Security Agency, Ft. George Meade, Maryland USA
Summer Internship — **June 1996 – August 1996**
Summer Internship — **June 1995 – August 1995**

Grants

Underrepresented Students in Topology and Algebra Research Symposium (USTARS)
Principal Investigator
Alejandra Alvarado, Syvillia Averett, Pamela Harris, Candice Price, and Shannon Talbott, CO-PIs **February 2013 – February 2014**

The $25 000.00 National Science Foundation grant (DMS-1317928) provided funding for a conference to be held at Purdue University from April 19–21, 2013. This was the third such meeting; the first two were held in April 2011 and 2012. The program consisted of a 18 research talks by underrepresented speakers, 75% given by graduate students, in addition to a keynote faculty speaker and two distinguished graduate student speakers. The meeting also included a research poster session for undergraduate students. A goal of the conference was to bring together young researchers in algebra and topology from diverse backgrounds and to expose undergraduate students to research opportunities.

Purdue Research in Mathematics Experience (PRiME) through the ADVANCE at Purdue University
Principal Investigator **June 2012 – August 2012**

The $10 000.00 grant was funded by an NSF grant awarded to ADVANCE Center for Faculty Success at Purdue University. The PI organized an eight-week summer program called "ADVANCE PRiME" which sought to form a community of mathematical research during the summer of 2011. The PI brought in five outside speakers, women of color in the mathematical sciences, to discuss their professional journey from being an undergraduate student to being a member of the professoriate.

Squares and Cubes in Arithmetic Progressions through the Purdue Summer Research Opportunity Program (SROP)
Co-Principal Investigator
Sergio García Currás, Co-PI **June 2012 – July 2012**

The $1 000.00 grant was funded by the Purdue Summer Research Opportunities Program (SROP) as hosted by the Graduate School. The PI conducted research with Sergio García Currás, an undergraduate student at the University of Puerto Rico – Rio Piedras involved with SROP, on a project entitled "Squares and Cubes in Arithmetic Progressions."

Purdue Research in Mathematics Experience (PRiME) through the Midwest Crossroads Alliance for Graduate Education and the Professoriate (AGEP) at Purdue University
Principal Investigator **June 2011 – August 2011**

The $45 067.00 grant was funded by an NSF grant awarded to the Midwest Crossroads AGEP at Purdue University. The PI organized an eight-week summer program called "AGEP PRiME" which sought to form a community of mathematical research during the summer of 2011. The PI brought in five outside speakers to discuss their professional journey from being an undergraduate student to being a member of the professoriate.

Rational Distance Sets on Conic Sections through the Louis Stokes Alliance for Minority Participation (LSAMP) in Indiana
Co-Principal Investigator
Jonathan Blair, Co-PI **June 2011 – July 2011**

The $816.00 grant was funded by an NSF grant awarded to LSAMP Indiana at Purdue University. The PI conducted research with Jonathan D. Blair, an undergraduate student involved with LSAMP, on a project entitled "Rational Distance Sets on Conic Sections."

Summer Support through the Center for Faculty Success
Principal Investigator **June 2010 – August 2010**

The internal grant was for designing a course entitled "Great Issues in Mathematics."

Summer Faculty Grant through the Purdue Research Foundation
Principal Investigator **June 2006 – August 2006**

The internal grant was summer support for the PI. This grant was declined.

Awards and Honors

2011	Ruth and Joel Spira Teaching Award, Purdue University
2011	Claytor-Woodard Lecture, AMS-MAA Joint Mathematics Meetings
2009	David Blackwell Lecture, Mathematical Association of America (MAA) MathFest
2006	Bharucha-Reid Lecture, NAM Faculty Conference on Research and Teaching
2004	Emerging Scholar of the Year, Black Issues in Higher Education
2003	ASCIT Teaching Award Nomination, California Institute of Technology
1999	James W. Lyons Award for Service, Stanford University
1999	Graduate Service Award, Graduate Student Council, Stanford University
1999	Outstanding Graduate Student, Chicano/Latino Graduate Student Association, Stanford University
1996	Outstanding Graduate Student, Black Community Services Center, Stanford University
1994	Rodman W. Paul History Prize, California Institute of Technology
1993	Doris S. Perpall Speaking Award for best presentation in the Humanities, Summer Undergraduate Research Fellowship, California Institute of Technology
1993	Dean's Cup for Service, California Institute of Technology
1989	Bronze Medal in Mathematics, Los Angeles Academic Decathlon

Fellowships and Scholarships

2008	Teaching for Tomorrow Fellowship Award, Purdue University
1994 – 1999	National Physical Science Consortium Graduate Fellowship
1994	National Science Foundation Graduate Research Fellowship (Honorable Mention)
1993	Los Angeles Philanthropic Foundation Scholarship
1992, 1993	American Physical Society Scholarship
1991, 1992	Morgan Ward Mathematics Prize, California Institute of Technology
1990	Robert A. Millikan Physics Scholarship, California Institute of Technology
1990	Sigma Pi Phi Scholarship
1990	NAACP Roy A. Wilkins Scholarship
1990	National Achievement Scholarship
1989	National Merit Scholarship Honorable Mention

Refereed Publications

1. With Talitha Washington, The Area of the Surface Generated by Revolving a Graph About Any Line. PRIMUS: Problems, Resources, and Issues in Mathematics Undergraduate Studies, Vol. 23, Issue 2 (2013), pgs. 121-132.
2. With Kevin Mugo, Points on Hyperbolas at Rational Distance. International Journal of Number Theory, Vol. 8, No. 4 (2012), pgs. 911-922.
3. Semi-Magic Squares and Elliptic Curves. Missouri Journal of Mathematical Sciences, Vol. 22 (2010), no. 2, pgs. 102 - 107.
4. With Talitha Washington, Sphere-of-Influence Graphs. Wolfram Demonstrations Project. (February 4, 2010) `http://demonstrations.wolfram.com/SphereOfInfluenceGraphs/`
5. With Talitha Washington, A Tasty Combination: Multivariable Calculus and Differential Forms. The Pentagon: The Journal of Kappa Mu Epsilon, Fall 2009, pgs. 11-28.
6. Palindromes in Different Bases: A Conjecture of J. Ernest Wilkins. INTEGERS: The Electronic Journal of Combinatorial Number Theory, Vol. 9 (2009), pgs. 725-734.
7. With Florian Luca and Alain Togbe, On the Diophantine Equation $x^2 + 2^\alpha 5^\beta 13^\gamma = y^n$. Algorithmic Number Theory Seminar (ANTS-VIII); LCNS 5011 (2008), pgs. 430-442.

8. With Alain Togbe, Pythagorean Quadruplets. International Journal of Pure and Applied Mathematics, Vol. 35 (2007), no. 3, pgs. 363 - 372.
9. With Davin Maddox, Heron Triangles via Elliptic Curves. Rocky Mountain Journal of Mathematics, Vol. 36; (2005), no. 5, pgs. 1511 - 1526.
10. Icosahedral $\mathbb{Q}$-curve Extensions. Math Res. Lett. 10 (2003), no. 2-3, pgs. 205-217.
11. A Ternary Algebra with Applications to Binary Quadratic Forms. Council for African-American Researchers in the Mathematical Sciences, Vol. IV; Contemp. Math. 284 (2001), pgs. 7 - 12.
12. Artin's Conjecture and Elliptic Curves. Council for African-American Researchers in the Mathematical Sciences, Vol. III; Contemp. Math. 275 (2001), pgs. 39 - 51.
13. With Mel Currie, The Fractional Parts of $\frac{n}{k}$. Council for African-American Researchers in the Mathematical Sciences, Vol. III; Contemp. Math. 275 (2001), pgs. 13 - 31.
14. With Mel Currie, On the Distribution of Fractional Parts. Internal publication of the National Security Agency. (1997).

Publications In Press

15. With Alejandra Alvarado, Arithmetic Progressions on Conic Sections, 17 pp. International Journal of Number Theory. Accepted February 15, 2013.
16. With Jing Ma, Susan Margulies, and Illya V. Hicks, Branch Decomposition Heuristics for Linear Matroids, 29 pp. Journal of Discrete Optimization. Accepted November 27, 2012.
17. With Talitha Washington, On the Generalized Climbing Stairs Problem, 8 pp. Ars Combinatoria. Accepted July 24, 2009.

Publications Submitted

18. With Asamoah Nkwanta, Riordan Matrix Representations of Euler's Constant γ and Euler's Number e, 16 pp. Submitted August 19, 2011.
19. Which Ellipses Go Through Four Points? Wolfram Demonstrations Project. Submitted April 7, 2011. `http://demonstrations.wolfram.com/preview.html?draft/26744/000012/WhichEllipsesGoThroughFourPoints`

Publications In Progress

20. Explicit Descent via 4-Isogeny on an Elliptic Curve, 20 pp.
21. Extending the Serre-Faltings Method for $\mathbb{Q}$-Curves, 15 pp.
22. Heptaoctahedral Galois Representations.
23. On the Modularity of Wildly Ramified Galois Representations, I.
24. On the Modularity of Wildly Ramified Galois Representations, II.
25. Rational Distance Sets on Conic Sections.
26. There exist infinitely many rational Diophantine 6-tuples – almost.
27. Why should I care about elliptic curves?
28. With Garikai Campbell, Heron Triangles, Diophantine Problems, and Elliptic Curves, 15 pp.
29. With Lloyd Kilford, Counting Mod ℓ Solutions via Modular Forms.
30. With Yu Tsumura, Lutz-Nagell Theorem. Wolfram Demonstrations Project.

Books and Monographs

1. Editor with Donald King, Gaston N'Guérékata, and Alfred Noël. Council for African American Researchers in the Mathematical Sciences, Vol. V; Contemp. Math. 467 (2008), 152 pgs.
2. With Talitha Washington. Ordinary Differential Equations. In progress.
3. With Talitha Washington. Ordinary Differential Equations: Worked Examples with Solutions. In progress.
4. $y^2 = (1 - x^2)\,(1 - k^2\,x^2)$. In progress.
5. Selmer Groups and Galois Representations. In progress.

Invited Talks

1. An Introduction to *Dessins d'Enfants*:
   The Intersection of Graph Theory, Group Theory, and Differential Geometry
   Pacific Undergraduate Research Experience in Mathematics (PURE Math)
   University of Hawai'i, Hilo, Hawai'i TBA
2. An Introduction to *Dessins d'Enfants*:
   The Intersection of Graph Theory, Group Theory, and Differential Geometry
   PI Mathematics Club
   Indiana University – Purdue at Fort Wayne, Fort Wayne, Indiana TBA
3. From Klein's Platonic Solids to Kepler's Archimedean Solids:
   Elliptic Curves and *Dessins d'Enfants*
   The Oliver Club Seminar
   Cornell University, Ithaca, New York February 28, 2013
4. From Klein's Platonic Solids to Kepler's Archimedean Solids:
   Elliptic Curves and *Dessins d'Enfants*
   Automorphic Forms, Representations, and Combinatorics:
   A Conference in Honor of Daniel Bump
   Stanford University, Palo Alto, California August 14, 2012
5. An Introduction to *Dessins d'Enfants*:
   The Intersection of Graph Theory, Group Theory, and Differential Geometry
   REU: Computational Algebraic Geometry, Combinatorics and Number Theory
   Clemson University, Clemson, South Carolina June 26, 2012
6. An Introduction to the Sato-Tate Conjecture
   REU: Computational Algebraic Geometry, Combinatorics and Number Theory
   Clemson University, Clemson, South Carolina June 25, 2012
7. Ellipses and Pendulums and Groups, Oh My! From Elliptic Integrals to Elliptic Curves
   REU: Computational Algebraic Geometry, Combinatorics and Number Theory
   Clemson University, Clemson, South Carolina June 25, 2012
8. Does There Exist an Elliptic Curve $E/\mathbb{Q}$ with Mordell-Weil Group $Z_2 \times Z_8 \times \mathbb{Z}^4$?
   Atkin Memorial Lecture and Workshop Elliptic Curves over $\mathbb{Q}(\sqrt{5})$
   University of Illinois at Chicago, Chicago, Illinois April 28, 2012
9. Riordan Matrix Representations of Euler's Constant γ and Euler's Number e
   National Association of Mathematicians (NAM) Faculty Research Conference
   Morgan State University, Baltimore, Maryland April 21, 2012
10. Riordan Matrix Representations of Euler's Constant γ and Euler's Number e
    Underrepresented Students in Topology and Algebra Research Symposium (USTARS)
    University of Iowa, Iowa City, Iowa April 14, 2012
11. Arithmetic Progressions on Curves
    Algebra/Combinatorics Seminar
    Texas A&M University, College Station, Texas March 22, 2012

12. Ellipses and Pendulums and Groups, Oh My! From Elliptic Integrals to Elliptic Curves
    Mathematics Graduate Student Organization
    Texas A&M University, College Station, Texas — March 21, 2012
13. An Introduction to *Dessins d'Enfants*:
    The Intersection of Graph Theory, Group Theory, and Differential Geometry
    Mathematics Club
    Texas A&M University, College Station, Texas — March 20, 2012
14. An Introduction to *Dessins d'Enfants*:
    The Intersection of Graph Theory, Group Theory, and Differential Geometry
    Mathematics Colloquium
    Howard University, Washington, District of Columbia — January 13, 2012
15. Themes on the Undergraduate Preparation of Contemporary Mathematics Graduate Students
    NAM Panel Discussion
    Joint Mathematics Meetings, Boston, Massachusetts — January 7, 2012
16. Graduate School Panel
    National Association of Mathematicians (NAM) MATHFest XXI
    Dillard University, New Orleans, Louisiana — November 4, 2011
17. An Introduction to *Dessins d'Enfants*:
    The Intersection of Graph Theory, Group Theory, and Differential Geometry
    SACNAS National Conference
    San Jose, California — October 30, 2011
18. Graduate School Panel
    Young Mathematicians Conference
    Ohio State University, Columbus, Ohio — August 21, 2011
19. Transforming Undergraduates into Researchers:
    Best Practices from an Afrocentric Perspective
    Cultural and Philosophic Underpinnings of Western Science, MAA MathFest
    Lexington, Kentucky — August 6, 2011
20. Graduate School Panel
    Summer Undergraduate Mathematical Sciences Research Institute (SUMSRI)
    Miami University, Oxford, Ohio — July 13, 2011
21. *ABC* Triples in Families
    Underrepresented Students in Topology and Algebra Research Symposium (USTARS)
    University of Iowa, Iowa City, Iowa — April 2, 2011
22. *ABC* Triples in Families
    Purdue Mathematics Club
    Purdue University, West Lafayette, Indiana — February 8, 2011
23. Galois Representations and L-Series: A Tour Through Mathematics
    NAM Claytor-Woodard Lecture
    Joint Mathematics Meetings, New Orleans, Louisiana — January 9, 2011
24. Yes, Even You Can Bend It Like Beckham
    Blackwell-Tapia Conference
    Mathematical Biosciences Institute (MBI), Columbus, Ohio — November 5, 2010
25. *ABC* Triples in Families
    Center for Communications Research, La Jolla, California — September 30, 2010
26. Why Should I Care About Elliptic Curves?
    David Blackwell Lecture, Mathematical Association of America (MAA) MathFest
    Portland, Oregon — August 7, 2009

27. Graduate School Panel
Summer Undergraduate Mathematical Sciences Research Institute (SUMSRI)
Miami University, Oxford, Ohio — July 1, 2009

28. Four-Covering Maps for Elliptic Curves
Conference for African-American Researchers in the Mathematical Sciences (CAARMS) 15
Rice University, Houston, Texas — June 25, 2009

29. Why Should I Care About Elliptic Curves?
National Security Agency (NSA) 5th Invitational Mathematics Meeting
Baltimore, Maryland — November 23, 2008

30. Using Parallel Computing to Search for High Rank Elliptic Curves
Blackwell-Tapia Conference
SAMSI, Research Triangle Park, North Carolina — November 14, 2008

31. Does There Exist an Elliptic Curve $E/\mathbb{Q}$ with Mordell-Weil Group $Z_2 \times Z_8 \times \mathbb{Z}^4$?
Mathematics Colloquium
Morehouse College, Atlanta, Georgia — November 11, 2008

32. Panelist for "A Tale of Two Cultures"
Promoting Diversity at the Graduate Level in Mathematics: A National Forum
Mathematical Sciences Research Institute (MSRI), Berkeley, California — October 17, 2008

33. Does There Exist an Elliptic Curve $E/\mathbb{Q}$ with Mordell-Weil Group $Z_2 \times Z_8 \times \mathbb{Z}^4$?
Mathematics and Statistics Colloquium
Swarthmore College, Swarthmore, Pennsylvania — September 30, 2008

34. On Finding Large Rational Solutions to $u^3 - d\,v^3 = 1$
Summer Mathematics Institute (SMI) Seminar
Cornell University, Ithaca, New York — June 27, 2008

35. Does There Exist an Elliptic Curve $E/\mathbb{Q}$ with Mordell-Weil Group $Z_2 \times Z_8 \times \mathbb{Z}^4$?
Algebraic Geometry Seminar
University of Bristol, England, United Kingdom — May 14, 2008

36. What Good is Mathematics Anyway?
High School Mathematics Achievement Banquet
University of Evansville, Evansville, Indiana — April 23, 2008

37. Fermat's Last Theorem: The E! True Hollywood Story
Mathematics Colloquium
University of Evansville, Evansville, Indiana — April 23, 2008

38. Does There Exist an Elliptic Curve $E/\mathbb{Q}$ with Mordell-Weil Group $Z_2 \times Z_8 \times \mathbb{Z}^4$?
Number Theory Seminar
University of Illinois, Urbana-Champaign, Illinois — January 15, 2008

39. Introduction to Collaborative Learning
Upward Bound Math and Science Training
Simmons College, Boston, Massachusetts — June 19, 2007

40. There exist infinitely many rational Diophantine 6-tuples – almost
Session on Arithmetic Geometry
Joint Meeting of the AMS, New Orleans, Louisiana — January 8, 2007

41. Why Should I Care About Lie Groups?
Mathematics Colloquium
Howard University, Washington, District of Columbia — November 9, 2006

42. Why Should I Care About Lie Groups?
Blackwell-Tapia Conference
Institute for Math and its Applications (IMA), Minneapolis, Minnesota — November 4, 2006

43. A Year in the Life of a Number Theorist
Summer Mathematics Institute (SMI) Seminar
Cornell University, Ithaca, New York — July 7, 2006

44. A Year in the Life of a Number Theorist
Summer Program in Research and Learning (SPIRAL) Seminar
University of Maryland, College Park, Maryland — July 5, 2006

45. Extending the Serre-Faltings Method for $\mathbb{Q}$-Curves
Number Theory Seminar
University of Wisconsin, Madison, Wisconsin — April 11, 2006

46. A Year in the Life of a Number Theorist
Bharucha-Reid Lecture, Nat'l Assoc. of Mathematicians (NAM) Faculty Research Conference
Albany State University, Albany, Georgia — March 11, 2006

47. Prime Numbers, L-Series, and Representations of Galois Groups
REU Seminar
Clemson University, Clemson, South Carolina — July 8, 2005

48. On the Modularity of Wildly Ramified Galois Representations
Regional Meeting of the AMS
Western Kentucky University, Bowling Green, Kentucky — March 19, 2005

49. On Finding Large Rational Solutions to $u^3 - d\,v^3 = 1$
Automorphic Forms Workshop
University of North Texas, Denton, Texas — March 17, 2005

50. On Finding Large Rational Solutions to $u^3 - d\,v^3 = 1$
Mathematics Colloquium
SUNY Buffalo, Buffalo, New York — February 24, 2005

51. On the Modularity of Wildly Ramified Galois Representations
Number Theory Seminar
University of Illinois, Urbana-Champaign, Illinois — September 28, 2004

52. On the Modularity of Wildly Ramified Galois Representations
Automorphic Forms Seminar
Purdue University, West Lafayette, Indiana — September 9, 2004

53. On the Modularity of Wildly Ramified Galois Representations
Number Theory Seminar
University of California, Santa Barbara, California — May 25, 2004

54. Congruent Numbers, Rational Triangles, and Elliptic Curves
Illinois Number Theory Conference
University of Illinois, Urbana-Champaign, Illinois — May 22, 2004

55. Congruent Numbers, Rational Triangles, and Elliptic Curves
Mathematics Colloquium
Center for Communications Research, La Jolla, California — May 18, 2004

56. On the Modularity of Wildly Ramified Galois Representations
Number Theory Seminar
University of California, San Diego, California — April 22, 2004

57. On the Modularity of Wildly Ramified Galois Representations
Regional Meeting of the AMS
University of Southern California, Los Angeles, California — April 3, 2004

58. On the Modularity of Wildly Ramified Galois Representations
Automorphic Forms Workshop
University of California, Santa Barbara, California — March 21, 2004

59. Application of Mathematics to Chemistry: A History of Quantum Mechanics
Honors Chemistry Class
Washington Preparatory High School, Los Angeles, California — March 8, 2004

60. On the Modularity of Wildly Ramified Galois Representations
Mathematics Colloquium
Rice University, Houston, Texas — February 16, 2004

61. On the Modularity of Wildly Ramified Galois Representations
Mathematics Colloquium
Purdue University, West Lafayette, Indiana — January 27, 2004

62. On the Modularity of Wildly Ramified Galois Representations
Mathematics Colloquium
University of Massachusetts, Boston, Massachusetts — November 24, 2003

63. On the Modularity of Wildly Ramified Galois Representations
Number Theory Seminar
University of California, Los Angeles, California — November 10, 2003

64. Congruent Numbers, Rational Triangles, and Elliptic Curves
Mathematics Colloquium
Occidental College, Los Angeles, California — October 23, 2003

65. Congruent Numbers, Rational Triangles, and Elliptic Curves
Louis Stokes Alliance for Minority Participation (LSAMP) Regional Conference
Drexel University, Philadelphia, Pennsylvania — March 29, 2003

66. Congruent Numbers, Rational Triangles, and Elliptic Curves
Mathematics Colloquium
Wesleyan University, Middletown, Connecticut — January 24, 2003

67. Deformations of Galois Representations: An Adventure in Galois Cohomology
Modular Curves Seminar
Harvard University, Cambridge, Massachusetts — January 21, 2003

68. Elliptic Curves and Icosahedral Galois Representations, Part II
Beginning Research in Number Theory Seminar
University of California, Los Angeles, California — December 3, 2002

69. Elliptic Curves and Icosahedral Galois Representations, Part I
Beginning Research in Number Theory Seminar
University of California, Los Angeles, California — November 26, 2002

70. Icosahedral $\mathbb{Q}$-Curve Extensions
Mathematics Colloquium
California State University, Long Beach, California — October 18, 2002

71. Congruent Numbers, Rational Triangles, and Elliptic Curves
Mathematics Colloquium
Claremont Colleges, Pomona, California — September 25, 2002

72. Klein's Galois Theory of the Icosahedral Group via Elliptic Curves
Regional Meeting of the AMS
Portland State University, Portland, Oregon — June 22, 2002

73. Icosahedral $\mathbb{Q}$-Curve Extensions
Number Theory Seminar
University of California, Irvine, California — April 2, 2002

74. Icosahedral $\mathbb{Q}$-Curve Extensions
Number Theory Seminar
University of California, Santa Barbara, California — March 15, 2002

75. Icosahedral $\mathbb{Q}$-Curve Extensions
Number Theory Seminar
California Institute of Technology, Pasadena, California — February 14, 2002

76. Icosahedral $\mathbb{Q}$-Curve Extensions
Number Theory Seminar
Boston University, Boston, Massachusetts — December 10, 2001

77. Galois Representations of $PSL(2,7)$
Number Theory Seminar
University of California, San Diego, California — December 7, 2000

78. Galois Representations of $PSL(2,7)$
Number Theory Seminar
Stanford University, Stanford, California — November 28, 2000

79. An Icosahedral Representation Attached at a $\mathbb{Q}$-Curve
Number Theory Seminar
University of California, Berkeley, California — November 17, 2000

80. Moving in Academic Circles Outside the University
Minority Alumni Lecture Series
Stanford University, Stanford, California — October 30, 2000

81. Introduction to Fourier Analysis
National l Council for Minorities in Engineering (NACME) Forum
Convention Center, Long Beach, California — October 28, 2000

82. An Icosahedral Representation Attached at a $\mathbb{Q}$-Curve
Automorphic Forms Seminar
Purdue University, West Lafayette, Indiana — October 12, 2000

83. On the Multiplicative Properties of the Sums of Squares
Mathematics Colloquium
Vanderbilt University, Nashville, Tennessee — July 27, 2000

84. An Icosahedral Representation Attached at a $\mathbb{Q}$-Curve
Conference for African-American Researchers in the Mathematical Sciences (CAARMS) 6
Morgan State University, Baltimore, Maryland — June 30, 2000

85. An Icosahedral Representation Attached at a $\mathbb{Q}$-Curve
Number Theory Seminar
Harvard University, Cambridge, Massachusetts — April 26, 2000

86. An Icosahedral Representation Attached at a $\mathbb{Q}$-Curve
NAM New Ph.D. Session – Joint Meetings of the AMS
Convention Center, Washington, District of Columbia — January 21, 2000

87. An Icosahedral Representation Attached at a $\mathbb{Q}$-Curve
Mathematics Seminar
Brigham Young University, Salt Lake City, Utah — December 2, 1999

88. On the Distribution of Fractional Parts
National Physical Science Consortium (NPSC) Conference
NPSC, La Jolla, California — May 14, 1998

Local Talks

1. Why Should I Care About Lie Groups?
Basic Notions Seminar
Purdue University, West Lafayette, Indiana — April 12, 2013

2. Ranks of Elliptic Curves via Class Groups of Number Fields
Number Theory Seminar
Purdue University, West Lafayette, Indiana — November 16, 2012

3. So You Want to Break Codes: Careers in Government for Mathematicians
   MA 10800: Mathematics as a Profession
   Purdue University, West Lafayette, Indiana — October 31, 2012
4. LaTeX Demystified: Typesetting Mathematics as a Professional
   Association for Women in Mathematics (AWM) Purdue Chapter Workshop
   Purdue University, West Lafayette, Indiana — October 16, 2012
5. Indiana Pols Forced to Eat Humble Pi: The Curious History of an Irrational Number
   Basic Notions Seminar
   Purdue University, West Lafayette, Indiana — September 21, 2012
6. From Klein's Platonic Solids to Kepler's Archimedean Solids:
   Elliptic Curves and *Dessins d'Enfants*, Part II
   Number Theory Seminar
   Purdue University, West Lafayette, Indiana — September 7, 2012
7. From Klein's Platonic Solids to Kepler's Archimedean Solids:
   Elliptic Curves and *Dessins d'Enfants*, Part I
   Number Theory Seminar
   Purdue University, West Lafayette, Indiana — August 31, 2012
8. *ABC* Triples in Families
   Bridge to Research Seminar
   Purdue University, West Lafayette, Indiana — August 20, 2012
9. The Control Theorem, Part III
   Number Theory Seminar
   Purdue University, West Lafayette, Indiana — October 6, 2011
10. The Control Theorem, Part II
    Number Theory Seminar
    Purdue University, West Lafayette, Indiana — September 29, 2011
11. Ellipses and Pendulums and Groups, Oh My!: From Elliptic Integrals to Elliptic Curves
    Bridge to Research Seminar
    Purdue University, West Lafayette, Indiana — September 26, 2011
12. The Control Theorem, Part I
    Number Theory Seminar
    Purdue University, West Lafayette, Indiana — September 22, 2011
13. So You Want to Break Codes: Careers in Government for Mathematicians
    MA 10800: Mathematics as a Profession
    Purdue University, West Lafayette, Indiana — September 22, 2011
14. An Introduction to Iwasawa Theory for Elliptic Curves, Part II
    Number Theory Seminar
    Purdue University, West Lafayette, Indiana — September 1, 2011
15. An Introduction to Iwasawa Theory for Elliptic Curves, Part I
    Number Theory Seminar
    Purdue University, West Lafayette, Indiana — August 25, 2011
16. An Introduction to *Dessins d'Enfants*:
    The Intersection of Graph Theory, Group Theory, and Differential Geometry
    Purdue Mathematics Club
    Purdue University, West Lafayette, Indiana — September 8, 2011
17. Representations of $\mathfrak{S}_3 \simeq GL_2(\mathbb{F}_2)$
    Number Theory Seminar
    Purdue University, West Lafayette, Indiana — November 30, 2010

18. So You Want to Break Codes: Careers in Government for Mathematicians
MA 10800: Mathematics as a Profession
Purdue University, West Lafayette, Indiana — October 28, 2010

19. Fundamental Characters of Level n, Part II
Number Theory Seminar
Purdue University, West Lafayette, Indiana — October 26, 2010

20. Fundamental Characters of Level n, Part I
Number Theory Seminar
Purdue University, West Lafayette, Indiana — October 19, 2010

21. Galois Groups of Local Fields
Number Theory Seminar
Purdue University, West Lafayette, Indiana — May 3, 2010

22. Orders in Number Fields, Part II
Number Theory Seminar
Purdue University, West Lafayette, Indiana — April 22, 2010

23. Orders in Number Fields, Part I
Number Theory Seminar
Purdue University, West Lafayette, Indiana — April 15, 2010

24. Computing with Elliptic Curves over Number Fields
Joint Logic / Number Theory Seminar
Purdue University, West Lafayette, Indiana — April 15, 2010

25. Introduction to Ample Line Bundles
Number Theory Seminar
Purdue University, West Lafayette, Indiana — March 2, 2010

26. Manipulating Algebraic Integers Using `SAGE`: A Tutorial, Part II
Number Theory Seminar
Purdue University, West Lafayette, Indiana — February 4, 2010

27. Elliptic Curves and Equidistributions: From Gauss and Kummer to Sato and Tate
Purdue Mathematics Club
Purdue University, West Lafayette, Indiana — January 28, 2010

28. Manipulating Algebraic Integers Using `SAGE`: A Tutorial, Part I
Number Theory Seminar
Purdue University, West Lafayette, Indiana — January 28, 2010

29. Schemes: The Gluing Construction
Number Theory Seminar
Purdue University, West Lafayette, Indiana — December 3, 2009

30. An Introduction to the Sato-Tate Conjecture, Part II
Automorphic Forms Seminar
Purdue University, West Lafayette, Indiana — December 3, 2009

31. An Introduction to the Sato-Tate Conjecture, Part I
Automorphic Forms Seminar
Purdue University, West Lafayette, Indiana — November 19, 2009

32. Why Should I Care About Elliptic Curves?
Purdue Mathematics Club
Purdue University, West Lafayette, Indiana — April 16, 2009

33. The Comet thro' the long Elliptic Curve: Why I Love Curves of Genus 1
Bridge to Research Seminar
Purdue University, West Lafayette, Indiana — February 9, 2009

34. Graduate School Panel
Summer Undergraduate Mathematical Sciences Research Institute (SUMSRI)
Miami University, Oxford, Ohio — July 2, 2008

35. Distributions of 2-Selmer Ranks for Elliptic Curves, Part III
Automorphic Forms Seminar
Purdue University, West Lafayette, Indiana — January 31, 2008

36. Distributions of 2-Selmer Ranks for Elliptic Curves, Part II
Automorphic Forms Seminar
Purdue University, West Lafayette, Indiana — January 24, 2008

37. Distributions of 2-Selmer Ranks for Elliptic Curves, Part I
Automorphic Forms Seminar
Purdue University, West Lafayette, Indiana — January 17, 2008

38. Graduate School Panel
Summer Undergraduate Mathematical Sciences Research Institute (SUMSRI)
Miami University, Oxford, Ohio — July 11, 2007

39. A Year in the Life of a Number Theorist
MA 108: Mathematics as a Profession
Purdue University, West Lafayette, Indiana — November 2, 2006

40. Ellipses and Pendulums and Groups, Oh My!: From Elliptic Integrals to Elliptic Curves
SCI 110: Honors Science
Purdue University, West Lafayette, Indiana — October 30, 2006

41. Does There Exist an Elliptic Curve $E/\mathbb{Q}$ with Mordell-Weil Group $Z_2 \times Z_8 \times \mathbb{Z}^4$?
Automorphic Forms Seminar
Purdue University, West Lafayette, Indiana — September 28, 2006

42. From Diophantine Equations to Representations of Galois Groups
Bridge to Research Seminar
Purdue University, West Lafayette, Indiana — April 24, 2006

43. Towards Artin's Conjecture for Three-Dimensional Galois Representations, Part II
Automorphic Forms Seminar
Purdue University, West Lafayette, Indiana — November 3, 2005

44. Towards Artin's Conjecture for Three-Dimensional Galois Representations, Part I
Automorphic Forms Seminar
Purdue University, West Lafayette, Indiana — October 26, 2005

45. Prime Numbers, L-Series, and Representations of Galois Groups
Summer Undergraduate Mathematical Sciences Institute (SUMSRI) Seminar
Miami University; Oxford, Ohio — June 16, 2005

46. From Moduli Spaces to Modular Curves, Part II
Working Algebraic Geometry Seminar
Purdue University, West Lafayette, Indiana — September 29, 2004

47. From Moduli Spaces to Modular Curves, Part I
Working Algebraic Geometry Seminar
Purdue University, West Lafayette, Indiana — September 22, 2004

48. Congruent Numbers, Rational Triangles, and Elliptic Curves
Summer Undergraduate Mathematical Sciences Research Institute (SUMSRI) Seminar
Miami University, Oxford, Ohio — June 10, 2004

49. On the Modularity of Wildly Ramified Galois Representations
Number Theory Seminar
California Institute of Technology, Pasadena, California — October 30, 2003

50. Extending the Serre-Faltings Method for $\mathbb{Q}$-Curves
Number Theory Seminar
California Institute of Technology, Pasadena, California — March 6, 2003

51. Where Have the Black Students Gone?
Office of Minority Student Education
California Institute of Technology, Pasadena, California — February 26, 2003

52. Are the Students Learning?
Teaching Assistant Preparation Keynote Address
California Institute of Technology, Pasadena, California — September 26, 2002

53. Icosahedral $\mathbb{Q}$-Curve Extensions
Number Theory Seminar
Harvard University, Cambridge, Massachusetts — December 5, 2001

54. Finding a Modular Form Associated to a $PSL(2,7)$-Extension
Modular Curves Seminar
Harvard University, Cambridge, Massachusetts — October 29, 2001

55. Galois Representations of $PSL(2,7)$
Number Theory Seminar
Max Planck Institute, Bonn, Germany — May 16, 2001

56. An Icosahedral Representation Attached at a $\mathbb{Q}$-Curve
Number Theory Seminar
Max Planck Institute, Bonn, Germany — January 24, 2001

57. Galois Representations of $PSL(2,7)$
Number Theory Seminar
Mathematical Sciences Research Institute (MSRI), Berkeley, California — November 27, 2000

58. Elliptic Curves and Polynomials of Degree 5
Postdoctoral Fellows Seminar
Mathematical Sciences Research Institute (MSRI), Berkeley, California — November 3, 2000

59. An Icosahedral Representation Attached at a $\mathbb{Q}$-Curve
Automorphic Forms Seminar
Institute for Advanced Study (IAS), Princeton, New Jersey — April 4, 2000

60. An Icosahedral Representation Attached at a $\mathbb{Q}$-Curve
New Postdocs Seminar
Institute for Advanced Study (IAS), Princeton, New Jersey — September 23, 1999

Academic Experience

American Institute of Mathematics / Institute for Computational and Experimental Research in Mathematics, Providence, Rhode Island USA
Workshop Leader, REUF — **June 2012**

Directed a workshop for 5 faculty to conduct research at their home institutions. The Research Experiences for Undergraduate Faculty (REUF) is designed to introduce undergraduate faculty to research opportunities in several fields of mathematics that will equip them with the tools to mentor students in undergraduate research in mathematics.
`http://www.aimath.org/ARCC/workshops/reuf4.html`

Purdue University, West Lafayette, Indiana USA
Research Mentor, PRiME — **June 2012 – August 2012**

Designed and advised a 8-week research program for 5 undergraduate students. The program focused on determining when there are four squares or three cubes in an arithmetic progression over $\mathbb{Q}(\sqrt{D})$ by determining the ranks of quadratic twists of the elliptic curves $y^2 = x^3 + 5\,x^2 + 4\,x$ and $y^2 = x^3 - 27$.

http://bit.ly/MzvSs7

Mathematical Sciences Research Institute, Berkeley, California USA
Academic Director, MSRI-UP **June 2010 – July 2010**

Designed and advised a 6-week research program for 18 undergraduate students. The program focused six projects: "Searching for Elliptic Curves with Rank 9", "Squares in Arithmetic Progressions", "ABC-Triples in Families", "Rational Distance Sets on Conic Sections", "Encrypting Text Messages via Elliptic Curve Cryptography", and "Decrypting Text Messages via Elliptic Curve Factorization."
http://www.msri.org/web/msri/static-pages/-/node/137

Miami University, Oxford, Ohio USA
Research Mentor, SUMSRI **June 2008 – July 2008**

Designed and advised a 7-week research program for 6 undergraduate students. The program focused on finding elliptic curves of large rank having torsion subgroup $Z_2 \times Z_8$ by using a large-scale computing array.
http://www.users.muohio.edu/porterbm/sumj/2008/NT08.pdf

Research Mentor, SUMSRI **June 2007 – July 2007**

Designed and advised a 7-week research program for 4 undergraduate students. The program focused on finding elliptic curves of large rank having torsion subgroup $Z_2 \times Z_8$ by using a large-scale computing array.
http://www.units.muohio.edu/sumsri/sumj/2007/SelmerStats07.pdf

Research Mentor, SUMSRI **June 2006 – July 2006**

Designed and advised a 7-week research program for 5 undergraduate students. The program focused on finding elliptic curves of large rank having torsion subgroup $Z_2 \times Z_8$ by using a large-scale computing array.
http://www.units.muohio.edu/sumsri/sumj/2006/NTpaper06.pdf

Research Mentor, SUMSRI **June 2005 – July 2005**

Designed and advised a 7-week research program for 5 undergraduate students. The program focused on finding elliptic curves of large rank having torsion subgroup $Z_2 \times Z_4$ by modifying an algorithm due to Nick Rogers.
http://www.users.muohio.edu/porterbm/sumj/2005/NTpaper.pdf

Research Mentor, SUMSRI **June 2004 – July 2004**

Designed and advised a 7-week research program for 5 undergraduate students. The program focused on finding large rational points on Thue equations by using continued fractions of elliptic integrals.
http://www.rose-hulman.edu/mathjournal/archives/2006/vol7-n2/paper6/v7n2-6pd.pdf

California Institute of Technology, Pasadena, California USA
Director, Freshman Summer Institute **August 2007**

Directed a 4-week program for 8 students entering their first year of college. Responsibilities included coordinating a staff of ten members, assisting two counselors, organizing four field trips, overseeing daily activities, and writing final program report in order to renew funding.

Mathematics Instructor, Freshman Summer Institute **August 2005**

Lectured during a 4-week program for 15 students entering their first year of college. Responsibilities included designing the course content, giving five lectures, creating worksheets, creating

daily homework assignments, and leading a staff of two workshop leaders. Also gave a series of short lectures on current research in the mathematical sciences.

Mathematics Instructor, Freshman Summer Institute **August 2004**

Lectured during a 4-week program for 15 students entering their first year of college. Responsibilities included designing the course content, giving five lectures, creating worksheets, creating daily homework assignments, and leading a staff of two workshop leaders.

Physics Instructor, Freshman Summer Institute **August 2003**

Lectured during a 4-week program for 11 students entering their first year of college. Responsibilities included designing the course content, giving five lectures, creating worksheets, creating daily homework assignments, and leading a staff of two workshop leaders.

Lecturer, Sophomore Mathematics Workshop **August 2003**

Organized and taught a three-day residential program for 8 students entering their second year of college. Responsibilities included organizing activities for the weekend, securing a location, and lecturing on differential equations, probability theory, and quantum mechanics.

Mathematics Instructor, Freshman Summer Institute **August 2002**

Lectured during a 5-day program for 24 students entering their first year of college. Responsibilities included designing the course content, giving daily lectures, creating daily worksheets, creating daily homework assignments, and leading a staff of three workshop leaders.

Lecturer, Sophomore Mathematics Workshop **September 2001**

Mathematics / Physics Workshop Leader, Freshman Summer Institute **August 2001**

Ran daily workshops in differential calculus and Newtonian mechanics during a ten-day program for 20 students entering their first year of college.

Mathematics Instructor, Freshman Summer Institute **August 2000**

Taught a five-day course on logic and mathematical proofs for 15 students entering their first year of college.

Mathematics Instructor, Bridge Program **August 1994 – September 1994**

Mathematics Instructor, Bridge Program **August 1993 – September 1993**

Art, Research, and Curriculum Associates, Whittier, California USA
Leader, GED Mathematics Workshop **September 2002**

Presented a one-day workshop for 10 bilingual tutors preparing adults to take the General Education Development (GED) test.

Leader, GED Mathematics Workshop **April 2002**

National Action Council for Minorities in Engineering, Nashville, Tennessee USA
Workshop Leader / Physics Instructor, Summer Immersion Program **July 2000**

Taught in a twelve-day residential program for 86 students entering their first year of college. Responsibilities included leading workshops in both math and physics to assist with homework assignments, presenting supplemental material in both math and physics, creating worksheets and solution manuals for the discrete math course, designing the curriculum for the physics course,

and giving physics lectures.

Eastside College Preparatory High School, East Palo Alto, California USA
Pre-Calculus Teacher / Calculus Teacher **August 1998 – June 1999**

Stanford University, Palo Alto, California USA
Director, Carlmont-Stanford Tutoring Program **January 1996 – June 1998**

National Security Agency (NSA), Ft. Meade, Maryland USA
Leader, Analytic Number Theory Problem Solving Group **June 1996 – August 1996**

Lectured five hours a week for an introductory seminar on number theory.

Courses Taught

Purdue University, West Lafayette, Indiana USA

MA 265: Linear Algebra	January 2012 – May 2012
	August 2011 – December 2011
	January 2008 – May 2008
MA 266: Ordinary Differential Equations	January 2011 – May 2011
MA 303: Differential Equations and Partial Differential Equations for Engineering and the Sciences	January 2013 – May 2013
	August 2012 – December 2012
	August 2010 – December 2010
MA 351: Elementary Linear Algebra	January 2010 – May 2010
	January 2006 – May 2006
	January 2005 – May 2005
MA 366: Ordinary Differential Equations	January 2009 – May 2009
	August 2008 – December 2008
	January 2007 – May 2007
	August 2004 – December 2004
MA 390: Great Issues in Mathematics	January 2012 – May 2012
MA 490: Foundations of Analysis	August 2011 – December 2011
MA 490: Zeroes of Polynomials	August 2011 – December 2011
MA 490: Honors Thesis	January 2012 – May 2012
	January 2008 – May 2008
MA 490: Modular Forms	August 2005 – December 2005
MA 490: *Dessins d'Enfants*	August 2009 – December 2009
MA 510: Vector Calculus	August 2008 – December 2008
MA 553: Introduction to Abstract Algebra	January 2008 – May 2008
	August 2006 – December 2006
MA 584: Algebraic Number Theory	January 2013 – May 2013
MA 598: Introduction to Sheaves	June 2009 – July 2009
MA 598: Riemann-Roch Theorem	January 2009 – May 2009
MA 598: Algebraic Geometry	January 2008 – May 2008
	August 2005 – December 2005
	August 2012 – December 2012
MA 598: Elliptic Curves	August 2006 – December 2006
	January 2005 – May 2005
MA 598: Elliptic Curves and Cryptography	August 2011 – December 2011
MA 598: Modularity of Elliptic Curves	August 2011 – December 2011
MA 598: Selmer Groups and Galois Representations	August 2009 – December 2009

California Institute of Technology, Pasadena, California USA

Ma 5a: Introduction to Abstract Algebra	September 2002 – December 2002
Ma 7: Introduction to Number Theory	April 2004 – June 2004
Ma 105: Elliptic Curves	September 2002 – December 2002
Ma 160b: Algebraic Number Theory	January 2002 – March 2002
Ma 160c: Class Field Theory	April 2003 – June 2003
	April 2002 – June 2002
Ma 162b: Galois Representations	January 2004 – March 2004
Reading Course on Arithmetic of Elliptic Curves	April 2004 – June 2004
	September 2003 – December 2003

Service

Conferences Organized:

- Underrepresented Students in Topology and Algebra Research Symposium (USTARS)
  Purdue University — April 19 – 21, 2013
- Blackwell-Tapia Conference
  Institute for Computational and Experimental Research in Mathematics
  Brown University — November 9 – 10, 2012
- Blackwell Memorial Conference
  Howard University — April 19 – 20, 2012
- Interactive Parallel Computation
  in Support of Research in Algebra, Geometry and Number Theory
  Mathematical Sciences Research Institute — January 29 – February 2, 2007
- Undergraduate Mathematical Sciences Symposium
  California Institute of Technology — August 21, 2003

Conference Sessions Organized:

- Sage Software Mini-Course (with Alejandra Alvarado and William Stein)
  Modern Math Workshop at SACNAS National Conference — October 10, 2012
- Problems in Number Theory (with Alejandra Alvarado)
  SACNAS National Conference — October 12, 2012

Seminars Organized:

- AGEP PRiME Seminar, Purdue University — July 2011 – August 2011
- ADVANCE PRiME Seminar, Purdue University — June 2012 – August 2012
- Automorphic Forms Seminar, Purdue University — August 2011 – present
  `http://bit.ly/tBb286`
- Number Theory Seminar, Purdue University — March 2006 – present
  `http://www.math.purdue.edu/~egoins/seminar/index.html`
- Number Theory Seminar, Caltech — September 2001 – August 2004

Grant Proposals Reviewed:

- American Mathematical Society (AMS) – National Security Agency (NSA) — 2008
- National Science Foundation (NSF) Algebra and Number Theory Panel — 2011, 2012
- National Science Foundation (NSF) Graduate Research Fellowship Program Panel — 2013

Journals Refereed:

- Commentarii Mathematici Helvetici — 2011
- American Mathematical Monthly — 2012, 2010
- American Journal of Mathematics — 2004
- Contemporary Mathematics Series — 2007
- Glasgow Mathematical Journal — 2009, 2008
- International Journal of Number Theory — 2011
- Journal of Integer Sequences — 2013
- Journal of Number Theory — 2012
- Journal of the London Mathematical Society (LMS) — 2006

- Mathematical and Computer Modelling 2007
- Mathematics of Computation 2008
- Monatshefte für Mathematik 2008
- Proceedings of the American Mathematical Society (AMS) 2006
- Rose-Hulman Undergraduate Mathematics Journal 2012
- Transactions of the American Mathematical Society (AMS) 2012

Committees Served:

- Mathematicians of the African Diaspora (MAD) Editorial Board 2011 – present
- Mathematical Sciences Research Institute (MSRI)
  Human Resources Advisory Committee (HRAC) 2013
- Park City Mathematics Institute (PCMI) Diversity Sub-Committee 2010 – present
- Purdue Department of Mathematics Computer Committee 2012 – present
- Purdue Department of Mathematics Recruitment Committee 2010 – present
- Purdue Department of Mathematics Graduate Committee 2012 – present

Student Organizations Advised:

- Caltech Undergraduate Mathematics Club 2001 – 2004
- Purdue Mathematics Society 2011 – present

Postdoctoral Fellows Advised

Alejandra Alvarado 2011 – present
Rachel Davis 2013 – present

Graduate Students Advised

Alexander J. Barrios 2012 – present
Amitava Ghosh 2012 – present
Jeremy T. Fuller 2009 – present
Jamie E. Weigandt 2008 – present
Kevin M. Mugo 2007 – present

PhD Defense Committees Served

Dustin Belt
- On the Holomorphy of Exterior-Square L-functions
  Purdue University 2012

Kwangho Choiy
- Transfer of Plancherel Measures between p-adic Inner Forms
  Purdue University 2012

Tung-Lin Tsai
- Stability of Gamma Factors for $GL(r) \times GL(r)$
  Purdue University 2011

Sangil Nahm
- Several Problems in Number Theory
  Purdue University 2011

Bogume Jang
- Transfer from $GSO(4)$ to $GL(4)$ and L-Functions
  Purdue University 2010

Lance Bryant
- Filtered numerical semigroups and applications to one-dimensional rings
  Purdue University 2009

Ning Shang
- Low Genus Algebraic Curves in Cryptography
  Purdue University 2009

Vadakkumkoor Sandeep Varma
- Descent and the Generic Packet Conjecture
  Purdue University 2009

Yu Xie
- Formulas for the Multiplicity of Graded Algebras
  Purdue University 2009

Qingwu Yu
- Image of Transfer from $GL(2) \times GL(3)$ to $GL(6)$
  Purdue University 2008

Luis A. Lomelí
- Functoriality for the classical groups over function fields
  Purdue University 2007

Wook Kim
- Standard module conjecture for $GSpin$ groups
  Purdue University 2005

Kimball Martin
- Four-dimensional Galois representations of solvable type and automorphic forms
  California Institute of Technology 2004

Jason Colwell
- The Conjecture of Birch and Swinnerton-Dyer for elliptic curves with complex multiplication by a nonmaximal order
  California Institute of Technology 2003

Qiang Lin
- Bloch-Kato conjecture for the adjoint of $H_1\big(X_0(N)\big)$ with integral Hecke algebra
  California Institute of Technology 2003

Song Wang
- An effective version of the Grunwald-Wang theorem"
  California Institute of Technology 2001

Undergraduate Projects Advised

Yao Qiu
- Dessins d'Enfants on the Torus
  Purdue University 2013

Sergio García Currás
- The Fermat Equation of Exponent Three over Quadratic Extensions
  Joint advisee with Jamie Weigandt
  Summer Research Opportunity Program (SROP) / Purdue University 2012

Anika A. Rounds
- Topics in Real Analysis
  Senior Thesis, Purdue University 2012
- *Dessins d'Enfants*
  Purdue University 2011
- 3rd Place, NAM MATHFest XXI Speaking Competition 2011

Kaibo Gong
- Zeroes of Iterated Polynomials
  Purdue University 2011

Jonathan D. Blair
- Rational Distance Sets on Conic Sections
  Louis Stokes Alliance for Minority Participation (LSAMP) / Purdue University 2011

Hongshan Li
- Rings of Invariants inside $\mathbb{Q}[x_1, \ldots, x_7]$ Corresponding to Subgroups of S_7
  with David Goldberg, Purdue University 2011

Tanya Singh
- Finding High Rank Elliptic Curves with Torsion Subgroup $Z_2 \times Z_8$
  Personal Research Project, Purdue University 2011

Alex Barrios
- MAA Undergraduate Poster Session Awardee 2011
- ABC-Triples in Families

MSRI-UP, Mathematical Sciences Research Institute 2010
- SACNAS National Conference Undergraduate Poster Awardee 2010

Shweta Gupte
- Using Parallel Computing to Search for High Rank Elliptic Curves
  Purdue University 2008
- Presented at the Grace Hopper Celebration for Women in Computing 2008

Jamie E. Weigandt
- National Science Foundation (NSF) Graduate Fellowship Awardee 2009
- 2-Selmer Groups of Elliptic Curves
  Senior Thesis, Purdue University 2008

Brad Rodgers
- Ramanujan-Type Identities
  Personal Research Project, Purdue University 2005

Alan Stephenson
- Computing the number of 6×6 magic squares
  Personal Research Project, Purdue University 2005

Harlan M. Kadish
- On the Torsion Subgroups of $\mathbb{Q}$-Curves
  Summer Undergraduate Research Fellowship (SURF), Caltech 2004
- A Generalization of a Theorem of Gauss for Fermat Curves of Exponent 7
  Summer Undergraduate Research Fellowship (SURF), Caltech 2003

Charles McBrearty
- Representations of $GL_3(\mathbb{F}_2)$
  Summer Undergraduate Research Fellowship (SURF), Caltech 2004

Andrew Yang
- Determining the Isogeny Class of Elliptic Curves from mod ℓ Representations
  Senior Thesis, California Institute of Technology 2004

Davin B. Maddox
- On the Ranks of Elliptic Curves
  Summer Undergraduate Research Fellowship (SURF), Caltech 2003
- Heron Triangles and Elliptic Curves
  Summer Undergraduate Research Fellowship (SURF), Caltech 2002

Affiliations

American Mathematical Society (AMS)

Association for Women in Mathematics (AWM)

Black Graduate Students Association (BGSA), California Institute of Technology
- Secretary 2002 – 2004

Black Graduate Students Association (BGSA), Stanford University
- Vice-President 1998 – 1999
- President 1996 – 1997
- Treasurer 1995 – 1996

Chicano/Latino Graduate Students Association (CLGSA), Stanford University
- Co-Chair 1998 – 1999
- Treasurer 1997 – 1998

Conference of African-American Researchers in the Mathematical Sciences (CAARMS)

E-Mentoring Network in the Mathematical Sciences
- Editor/Contributor 2013 – present

Graduate Student Mathematics Association, Stanford University
- President 1995 – 1996

Mathematical Association of America (MAA)

Mathematics Society, Purdue University
- Advisor 2011 – present

National Alliance for Doctoral Studies in the Mathematical Sciences
- Mentor 2009 – present

• http://www.pathwaystoscience.org/Profiles.asp?student=FAC-GoinsEdray

National Association for the Advancement of Colored People (NAACP)

National Association of Mathematicians (NAM)

• Lifetime Member 2011 – present

National Conference of Black Physics Students (NCBPS)

Wolfram Faculty Program

• Username: edraygoins 2010 – present

Society for the Advancement of Chicanos and Native Americans in the Sciences (SACNAS)

• Lifetime Member 2005 – present

Undergraduate Mathematics Club, California Institute of Technology

• Advisor 2002 – 2004

References

Daniel W. Bump, Professor of Mathematics
Stanford University http://math.stanford.edu/~bump/

Dinakar Ramakrishnan, Professor of Mathematics
California Institute of Technology http://www.math.caltech.edu/people/dinakar.html

William A. Stein, Professor of Mathematics
University of Washington http://wstein.org/

Richard Taylor, Professor of Mathematics
Institute for Advanced Study http://www.math.ias.edu/~rtaylor/

Citizenship

Born on June 29, 1972 in Los Angeles, California, United States

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