

Mark R. Budden

CURRICULUM VITAE - DECEMBER 2009

DEPARTMENT OF MATHEMATICS, ARMSTRONG ATLANTIC STATE UNIVERSITY
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Academic Appointments

- 1997-2003 Graduate Teaching Assistant at University of Missouri-Columbia.
- 2003-2009 Assistant Professor of Mathematics at Armstrong Atlantic State University.
- 2007-2008 Interim Mathematics Department Head at Armstrong Atlantic State University for month of July 2007 and for two weeks during July 2008.
- 2009-present Associate Professor of Mathematics at Armstrong Atlantic State University.

Education

- 1994-1997 B.S. in Mathematics from Louisiana State University.
- 1997-1999 M.A. in Mathematics from University of Missouri-Columbia.
Title: "Fourier Coefficients of Certain $GL(2)$ Eisenstein Series"
Advisor: Daniel Lieman
- 1999-2003 Ph.D. in Mathematics from University of Missouri-Columbia.
Title: "On the Local Coefficients of Principal Series Representations of Metaplectic Groups"
Advisor: William Banks

Research Interests

- Algebraic Number Theory
- Representation Theory
- Automorphic Forms

Memberships

- American Mathematical Society (AMS)
- Mathematical Association of America (MAA)
- Council on Undergraduate Research (CUR)
 - Elected CUR Councilor for 2009-2010 academic year

Publications (* indicates student coauthor)

- (1) M. Budden, *Local Coefficient Matrices of Metaplectic Groups*, *J. Lie Theory* **16** (2006), 239-249.
- (2) M. Budden, P. Hadavas, L. Hoffman, and C. Pretz, *Generating Valid 4×4 Correlation Matrices*, *Appl. Math. E-Notes* **7** (2007), 53-59.
- (3) M. Budden, R.J. Eisenmenger*, and J. Kish*, *A Generalization of Scholz's Reciprocity Law*, *J. Théor. Nombres Bordeaux* **19** (2007), 583-594.
- (4) M. Budden, P. Hadavas, and L. Hoffman, *On the Generation of Correlation Matrices*, *Appl. Math. E-Notes* **8** (2008), 279-282.
- (5) B. Bailey, M. Budden, and U. Ghosh-Dastidar, *Practical Tips for Managing Challenging Scenarios in Undergraduate Research*, *Resources for Undergrad. Research in Math.* **3** (2008).
- (6) B. Bailey, M. Budden, M. Dorff, and U. Ghosh-Dastidar, *Undergraduate Research: How Do We Begin?*, *MAA Focus* **29**, No. 1 (2009), 14-16.
- (7) M. Budden, A. Collins*, K. Ellis*, and S. Savioli*, *Rational Residuacity of Primes*, (2009) submitted.
- (8) M. Budden, S. Eastman, S. King*, and A. Moisant*, *Permutations of Rational Residues*, (2009) submitted.
- (9) B. Budden, M. Budden, G. Case, and M. Cherry, *Advanced Instrument Response Formula for a Rotational Modulator*, in preparation.
- (10) M. Budden and S. Eastman, *Local Coefficient Matrices and the Metaplectic Correspondence*, in preparation.

Awards and Grants

- 2001-2002 Mathematics Distinguished Teaching Award, University of Missouri-Columbia.
- 2002-2003 Superior Graduate Student Achievement Award, University of Missouri-Columbia.
- 2005 Research and Scholarship Grant for \$2500 from Armstrong Atlantic State University in support of research on metaplectic groups.
- 2006 Student-Faculty Summer Research Grant for \$3800 from Armstrong Atlantic State University in support of work with R. Jeremiah Eisenmenger on cyclotomic fields and reciprocity.
- 2007 Gignilliat Research Fellowship for \$5000 from Armstrong Atlantic State University in support of research on rational reciprocity laws.
- 2008 Research and Scholarship Grant for \$2000 from Armstrong Atlantic State University in support of research on rational reciprocity laws.
- 2008-2009 Grant from CURM (Center for Undergraduate Research in Mathematics at BYU) for \$13,150 in support of research on rational reciprocity laws with students Kristin Ellis and Stephen Savioli.
- Award of tenure and promotion to Associate Professor at Armstrong Atlantic State University, effective August 2009.
- 2009 College of Science and Technology Summer Research Grant for \$14,800 from Armstrong Atlantic State University in support of research on reciprocity within finite groups with students Scott King and Alex Moisant.
- 2010 Research and Scholarship Grant for \$2000 from Armstrong Atlantic State University in support of research on rational reciprocity laws.

Teaching Experience

- University of Missouri-Columbia (1997-2003)
 - College Algebra
 - College Algebra (for non-Calculus-bound students)
 - Finite Mathematics
 - Analytic Geometry and Calculus I
 - Calculus for Social and Natural Sciences I
 - Trigonometry
 - Geometric Concepts
- Armstrong Atlantic State University (2003-present)
 - College Algebra
 - Calculus I
 - Calculus II
 - Calculus III
 - Foundations of Numbers and Operations
 - Spirit and Structure of Mathematics
 - Linear Algebra
 - Abstract Algebra
 - Advanced Linear Algebra
 - Functions of Complex Variables
 - Theory of Numbers
 - An Introduction to Galois Theory (Special Topics in Mathematics)
 - Cyclotomic Field Extensions and Reciprocity (Special Topics in Mathematics)
 - Algebraic Extensions of Fields (Special Topics in Mathematics)
 - An Introduction to Algebraic Number Theory (Special Topics in Mathematics)

Presentations

- *Introduction to Ramsey Theory*, University of Missouri-Columbia, Graduate Seminar, Spring 1998.
- *Fourier Coefficients of Certain $GL(2)$ Eisenstein Series*, 13th Annual Workshop on Automorphic Forms and Related Topics, University of California-Santa Barbara, Spring 1999.
- *Introduction to Metaplectic Groups and Their Representations*, University of Missouri-Columbia, Graduate Seminar, Spring 2002.
- *Special Values of the Riemann Zeta-Function*, University of Missouri-Columbia, Number Theory Seminar, Fall 2002.
- *The Fundamental Theorem of Galois Theory*, University of Missouri-Columbia, Seminar on Valuation Theory, Spring 2003.
- *Integrally Closed Rings*, University of Missouri-Columbia, Seminar on Valuation Theory, Spring 2003.
- *Structure of Nonarchimedean Local Fields*, University of Missouri-Columbia, Langlands Program Seminar, Spring 2003.
- *Norms in Algebraic Number Theory and the Hilbert Symbol*, Armstrong Atlantic State University, Spring 2003 (invited presentation).

- *p-adic Fields and Their Rise in Number Theory*, Armstrong Atlantic State University, Hudson Luncheon Colloquium, Spring 2004.
- *A Brief History of Reciprocity*, Armstrong Atlantic State University, Hudson Luncheon Colloquium, Fall 2004.
- *Automorphic Forms and Metaplectic Groups*, Armstrong Atlantic State University, Mathematics Research Seminar, Spring 2005.
- *Rational Reciprocity Laws*, Armstrong Atlantic State University, Mathematics Research Seminar, Fall 2005.
- *Local Coefficient Matrices and Shimura's Correspondence*, AMS/MAA Joint Mathematics Meeting in San Antonio, Spring 2006.
- *Representations of Metaplectic Groups*, Minnesota State University, Mathematics Colloquium, Spring 2006 (invited presentation).
- *Generalizing Scholz's Reciprocity Law*, MAA Southeastern Section Meeting, Georgia Southern University, Spring 2007.
- *The Search for Unique Factorization*, Armstrong Atlantic State University, Hudson Luncheon Colloquium, Fall 2007.
- *Rational Residuacity of Prime Numbers*, MAA Southeastern Section Meeting, Citadel, Spring 2008.
- *Rational Reciprocity and Algebraic Number Fields*, Georgia College and State University, Spring 2009 (invited presentation).
- *Permutations of Rational Residues*, Armstrong Atlantic State University, CST Symposium, Fall 2009.
- *Permutations of Rational Residues II*, Armstrong Atlantic State University, Hudson Luncheon Colloquium, Fall 2009.

Conferences, Workshops, and Professional Meetings

- 12th Annual Workshop on Automorphic Forms and Related Topics, University of Missouri-Columbia, 1998.
- Algorithmic Number Theory Symposium III, Reed College, Portland, Oregon, 1998.
- 13th Annual Workshop on Automorphic Forms and Related Topics, University of California-Santa Barbara, 1999.
- Illinois Number Theory Conference, University of Illinois-Urbana, 1999.
- Midwest Arithmetical Geometry in Cryptography Workshop, University of Illinois-Urbana, 1999.
- 14th Annual Workshop on Automorphic Forms and Related Topics, University of Colorado-Boulder, 2000.
- Millennial Conference on Number Theory, University of Illinois-Urbana, 2000.
- Combinatorial Game Theory Workshop, MSRI, Berkeley, California, 2000.
- Workshop on Zeta Functions and Associated Riemann Hypothesis, New York University, New York City, 2002.
- Illinois Number Theory Conference, University of Illinois-Urbana, 2002.
- AMS/MAA Joint Mathematics Meeting, Atlanta, Georgia, 2005.
- AMS/MAA Joint Mathematics Meeting, San Antonio, Texas, 2006.

- AMS/MAA Joint Mathematics Meeting, New Orleans, Louisiana, 2007.
- MAA Southeastern Section Meeting, Georgia Southern University, Statesboro, GA, 2007.
- MAA Southeastern Section Meeting, Citadel, Charleston, SC, 2008.
- CURM Workshop, Provo, Utah, 2008.
- AMS/MAA Joint Mathematics Meeting, Washington D.C., 2009.
- MAA Southeastern Section Meeting, Belmont University, Nashville, TN, 2009.
- CURM Spring Conference, Brigham Young University, Provo, Utah, 2009.
- CUR 31st Annual Business Meeting, Montana State University, Bozeman, MT, 2009.
- PANTS X (Palmetto Number Theory Series), AASU, 2009.
- MAA Southeastern Section Meeting, Elon, NC, 2010 (upcoming).

Service

- Departmental (Armstrong Atlantic State University)
 - Chair of Advisement, Placement, and Internship Committee (2003-present).
 - Student Affairs Committee (2003-present).
 - Mathematics Tournament Exam Committee (2003-2005).
 - Curriculum Committee (2004-2008).
 - Grader for 2004 AASU High School Mathematics Tournament.
 - Proctor and Grader for 2006 High School Mathematics Tournament.
 - Proctor and Grader for 2007 High School Mathematics Tournament.
 - Proctor for 2008 AASU High School Mathematics Tournament.
 - Proctor for 2009 AASU High School Mathematics Tournament.
 - Organizer for AASU Mathematics Research Seminar (2005-2007).
 - Hiring Committee for Statistics Assistant Professor position in 2004.
 - Hiring Committee for Mathematics Assistant Professor position in 2005.
 - Chair of Hiring Committee for Mathematics Assistant Professor position in 2007.
 - Hiring Committee for Mathematics Assistant Professor position in 2009.
 - Coach (joint with S. Eastman) for AASU Undergraduate Math Jeopardy Team (2008-present).
- University (Armstrong Atlantic State University)
 - Advisor for undeclared majors and Mathematics majors (2003-present).
 - University Research and Scholarship Committee (2005-2006).
 - Judge for AASU 2005 Moot Court Competition.
 - Judge for AASU 2006 Moot Court Competition.
 - Judge for AASU 2005 Student Scholarship Symposium.
 - Judge for AASU 2007 Student Scholarship Symposium.
 - Judge for AASU 2008 Student Scholarship Symposium.
 - Scholarly Excellence and Achievement (SEA) Steering Committee (2009-2010).

- Community
 - Judge for 2009 Heard Elementary School 5th Grade Science Fair.
- Student Research (Armstrong Atlantic State University)
 - Jonathan Kish (2004-2005) - current Ph.D. student at University of Colorado at Boulder.
 - R. Jeremiah Eisenmenger (2006) - current Ph.D. student at University of Florida.
 - Alex Collins (2008) - current graduate student at Clemson University.
 - Kristin Ellis (2008-2009) - recent AASU graduate.
 - Stephen Savioli (2008-2009) - current AASU student.
 - Scott King (2009) - member of summer research group on reciprocity within finite groups.
 - Alex Moisant (2009) - member of summer research group on reciprocity within finite groups.
- Professional
 - Chair of AMS Number Theory II Session at 2006 Joint Mathematics Meeting.
 - Reviewer for Mathematical Reviews (2006-present):
 - * A. Knightly and C. Li, *A Relative Trace Formula Proof of the Petersson Trace Formula*, Acta Arith. **122** (2006), 297-313.
 - * A. Knightly and C. Li, *Traces of Hecke Operators*, Mathematical Surveys and Monographs **133**, American Mathematical Society, Providence, RI, 2006.
 - * N. Jones, *Trace Formulas and Class Number Sums*, Acta Arith. **132** (2008), 301-313.
 - * A. Mouhib and A. Movahhedi, *On the p -class Tower of a \mathbf{Z}_p -extension*, Tokyo J. Math. **31** (2008), 321-332.
 - Judge for Undergraduate Math Jeopardy Tournament at 2008 MAA-SE Section Meeting.
 - Judge for Undergraduate Math Jeopardy Tournament at 2009 MAA-SE Section Meeting.
 - Judge for Session on Undergraduate Research at 2009 CURM Spring Conference.
 - Elected to serve as CUR Councilor for Mathematics/Computer Science Division during 2009-2010 academic year.
 - Local organizer (with Sungkon Chang) for PANTS X (PALmetto Number Theory Series) held at AASU September 19-20, 2009.