

# MICHAEL DANIEL

Department of Mathematics

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## EDUCATION:

**Ph.D., Mathematics** August 2007

University of Colorado at Boulder

Boulder, Colorado

*Advisor:* Lynne Walling

*Thesis:* Modular forms on a function field of a finite field

**B.A. , Mathematics** May 1990

Cornell University

Ithaca, New York

## RESEARCH INTERESTS:

Broadly my research is in Algebraic Number Theory, specifically in the areas of modular and automorphic forms in the setting of rational function fields. In my thesis, I explicitly compute Fourier coefficients of Eisenstein series of polynomial level  $P \in \mathbb{F}_q[T]$  for a function field of a finite field  $\mathbb{F}_q$ . In addition to some computational ideas, I plan to extend my results to half-integral weight and for Poincaré series. Additionally, I am working on analogs of Siegel modular forms in this setting and on extending the setting to function fields over other fields such as  $\mathbb{Q}_p$ .

## PUBLICATIONS:

*Half-integral weight Eisenstein series in rational function fields* In Preparation

*Relations between Eisenstein series in rational function fields* In Preparation

*Eisenstein series with polynomial level in a function field of a finite field* In Preparation

*Coefficients of Eisenstein series in rational function fields* In Preparation

*Modular forms on a function field over a finite field* (2007) Doctoral Thesis

## ACADEMIC EMPLOYMENT:

September 2007–present

**Drexel University**

Department of Mathematics

Senior Lecturer

January 2000–May 2007

**University of Colorado at Boulder**

Department of Mathematics

Graduate Instructor/Graduate Teaching Assistant

## TEACHING EXPERIENCE:

- **Lecturer at Drexel University**

MATH 200: Calculus 4

An introduction to multivariable calculus.

MATH 122: Calculus 2

MATH 121: Calculus 1

- **Instructor at University of Colorado**

MATH 3130: Linear Algebra (1 semester)

A standard linear algebra course for math majors.

MATH 2400: Calculus 3 (3 semesters)

A multivariate calculus course.

MATH 2380 Math for the Environment (2 semesters)

A course satisfying the university's basic mathematics requirement. This course, designed by Professor Martin Walter, promotes mathematical literacy among liberal-arts students in the context of environmental issues. Introduces students to logic, financial mathematics, probability and statistics while drawing examples of applications from current political and environmental issues.

MATH 1310: Calculus 1 with Biological Applications (1 semester)

A nonstandard first course in calculus, focusing on discrete and continuous-time dynamical systems, designed for biology majors. Students write programs on TI-86 graphing calculators for a variety of problems, including Newton's and Euler's methods, calculating Riemann sums, and simulating predator-prey interactions.

MATH 1300: Analytic Geometry and Calculus 1 (1 semester)

MATH 1110–20: Spirit and Uses of Mathematics 1 & 2 (2 and 3 semesters respectively)

A course for prospective elementary-school teachers. Material includes numeration systems, arithmetic in different bases, the whole, integer, rational, and real number systems, probability, statistics, and geometry. Students develop the ability to solve mathematical problems, present their solutions, and explain material at the various levels of their future students.

MATH 1071: Finite Mathematics for Social Sciences and Business (1 semester)

Discusses systems of linear equations and introduces matrices, linear programming, and probability.

MATH 1012: Quantitative Reasoning and Mathematical Skills (2 semesters)

A course satisfying the university's basic mathematics requirement. Promotes mathematical literacy among liberal-arts students by teaching basic mathematics, logic, and problem-solving skills. Designed to stimulate interest in mathematics as a useful tool in understanding the science and technology in the world around us.

Additional Experience

Recitation TA for MATH 1300 and MATH 1000–1100: Math Modules(Self-paced exams covering material from college algebra through basic linear algebra and calculus.)

Grader for MATH 3130: Linear Algebra and MATH 3310: Introduction to Number Theory

## CONTRIBUTED TALKS

*“Eisenstein series of polynomial level in rational function fields”*

Bryn Mawr Summer Seminar, Bryn Mawr College, July 2008.

*“Eisenstein series in rational function fields”*

Drexel Mathematics Department Colloquium, Drexel University, January 2008.

*“Eisenstein series in rational function fields I, II, and III”*

Temple University Seminar on Number Theory and Modular Forms, Temple University, November 2007, January 2008, February 2008.

*“Eisenstein series in a function field of a finite field”*

21<sup>st</sup> Annual Workshop on Automorphic Forms and Related Topics, University of California at Santa Barbara, March 2007.

*“Quadratic Reciprocity in Function Fields”*

Slow Pitch Colloquium, University of Colorado at Boulder, December 2006.

*“Modular Forms on a Function Field of a Finite Field.”*

The 20<sup>th</sup> Annual Workshop on Automorphic Forms and Related Topics, University of Colorado at Boulder, March 2006.

*“Fourier Coefficients for Level 1 Eisenstein Series in a Function Field of a Finite Field.”*

Seminar on Modular Forms, University of Colorado at Boulder, March 2005 updated October 2005.

*“Modular Functions and Dirichlet Series in Number Theory I–V.”*

Seminar on Number Theory, University of Colorado at Boulder, Spring 2004.

## CONFERENCES ATTENDED:

The 22<sup>nd</sup> Annual Workshop on Automorphic Forms and Related Topics.  
Texas A and M University, March 2008.

The 21<sup>st</sup> Annual Workshop on Automorphic Forms and Related Topics.  
University of California at Santa Barbara, March 2007.

Joint Mathematics Meetings.  
New Orleans, Louisiana, January 2007.

Advances in Number Theory and Random Matrix Theory.  
University of Rochester, June 2006.

School in Number Theory and Random Matrix Theory.  
University of Rochester, May–June 2006.

The 20<sup>th</sup> Annual Workshop on Automorphic Forms and Related Topics.  
University of Colorado at Boulder, March 2006.

Joint Mathematics Meetings.  
San Antonio, Texas, January 2006.

The 19<sup>th</sup> Annual Workshop on Automorphic Forms and Related Topics.  
University of North Texas, March 2005.

The 989<sup>th</sup> Meeting of the American Mathematical Society.  
University of Colorado at Boulder, October 2003.

The 17<sup>th</sup> Annual Workshop on Automorphic Forms and Related Topics.  
University of Colorado at Boulder, March 2003.

Workshop on Zeta-Functions and Associated Riemann Hypotheses.  
Courant Institute of Mathematics, New York University, May 2002.

**ACADEMIC HONORS:**

- University Summer Research Fellowship, University of Colorado at Boulder, 2005.
- University Fellowship, University of Colorado at Boulder, 2001-2003.
- Empire State Scholar, 1986.

**INTERESTS and PROFESSIONAL AFFILIATIONS:**

- Travel, world music, and gourmet cooking.
- American Mathematical Society