

# David Rumsey

## Contact Information

### Home

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### Office

Department of Mathematics and Statistics, 450 Mathematical Science Building, Bowling Green, OH 43403-0001

### Email

rumseyd@bgsu.edu

## Education

**Ph.D. Applied Mathematics** Bowling Green University, Bowling Green, OH (Fall 2008 – Present)

Coursework Completed: May 2010 (GPA: 4.0/4.0)

Preliminary Exams Passed: October 2010

Areas: Partial Differential Equations, Real Analysis

### **Ph.D. expected: May 2012**

Dissertation Topic: Numerical Analysis of Hyperbolic Conservation Laws

### Committee

Chair: Dr. Tong Sun

Research Interests: Numerical analysis, scientific computations

Member: Dr. Neal Carothers

Research Interests: Functional analysis, Banach space theory

Member: Dr. So-Hisang Chou

Research Interests: Numerical analysis, fluid mechanics

Outside Reader: Dr. John Laird

Indiana-Purdue Fort Wayne, Fort Wayne, IN **M.S. Mathematics** coursework only (Fall 07 – Spring 08)

GPA: 4.0/4.0

**M.S. Electrical Engineering** Purdue University, West Lafayette, IN (1999-2001)

Core: Modeling and Simulating Solid State Devices

Thesis: "Electrical Characterization of Bulk Mosfets in Terms of Backscattering Coefficients"

Chair: Dr. Mark Lundstrom

GPA: 3.58/4.0

**B.S. Electrical Engineering** Purdue University, West Lafayette, IN (1995-1999)

GPA: 3.85/4.0

#### Research Interests

Numerical Analysis; Finite Element Methods; Integrating Technology into Curriculum; Textbook authorship

#### Teaching Interests

Trigonometry; Calculus; Linear Algebra; Differential Equations; and Discrete Mathematics

#### Publications

**Rumsey, D.** & Sun, T. *A smoothness/shock indicator for the RKDG methods*. Appl. Math Lett. Vol 23. Issue 12. 2010.

Sun, T. & **Rumsey, D.** *Numerical Smoothness and Error Analysis for RKDG*. Submitted for Review.

#### Conference Presentations

**Rumsey, D. W.** & Rumsey, S. K. (2005, October). *Implementing WAC in the Mathematics classroom*. Michigan Council of Teachers of Mathematics, Grand Rapids, MI.

**Rumsey, D. W.** (2005, October). *Geometer's Sketchpad: More than just Geometry*. Michigan Council of Teachers of Mathematics, Grand Rapids, MI.

**Rumsey, D. W.** (2005, October). *The Geometry of Quilting*. Michigan Council of Teachers of Mathematics, Grand Rapids, MI.

**Rumsey, D. W.** (2000 October) *Electrical Characterization of MOSFETS in Terms of Backscattering Parameters*. Techon 2000, Phoenix, Arizona.

#### Workshops and Business Presentations (by invitation)

**Rumsey, D. W.** *Numerical Smoothness and Error Analysis for RKDG on Scaler Nonlinear Conservation Laws, Parts I & II*  
BGSU Analysis Seminar (November & December 2010)

**Rumsey, D. W.** "Seminar Presentation"

**Rumsey, D. W.**, Dalley, J., Lauterbur, J., & Heid, K. *Writing Across the Curriculum vs. Writing in the Discipline*  
Baker College of Owosso (March 2006)  
Baker College of Owosso (November 2005)

**Rumsey, D. W.** *Intermediate Geometer's Sketchpad.*  
Baker College of Auburn Hills (September 2005)

**Rumsey, D. W.** *Electrical Characterization of MOSFETS in Terms of Backscattering Parameters.*  
AMD, Sunnyvale, CA (February 2001) and Texas Instruments, Dallas, TX, (August 2001)

#### Full Time Teaching Experience

**Program Chair of Mathematics and Physical Science, IvyTech Community College, Fort Wayne, IN,**  
Fall 2006—Fall 2007

General Studies Supervisor: Kim Barnett-Johnson, Division Chair

Courses Taught: MAT 111 – Intermediate Algebra

Additional Duties: Planned course offerings for math and physical science; staffed math and physical science courses; hired and evaluated adjunct faculty; evaluated and oversaw full time faculty; attended central office meetings; maintained and updated syllabi for courses; ordered equipment for labs; advised students; and handled student complaints

**Core Faculty, Baker College of Owosso, Owosso, MI, Fall 2004 – May 2006**

Departments/Supervisors:

General Education, Dr. Jeremy Eccles, Dean, (Fall 2005 – Spring 2006)

Education and Human Services, Dana Clark, Dean, (Fall 2004 – Spring 2005)

Courses Taught:

MTH 111: Introductory Algebra

MTH 112: Intermediate Algebra

MTH 124: Trigonometry

MTH 140: Pre-Calculus

MTH 142: Calculus II

MTH 143: Calculus III

MTH 211: Learning and Teaching Number Concepts

MTH 212: Learning and Teaching Geometry and Statistical Concepts

MTH 315: Algebraic Thinking and Proportional Reasoning

MTH 331: Geometry for Elementary Teachers

MTH 340: Discrete Mathematics

MTH 491: Senior Seminar Elementary Mathematics

MTH 492: Senior Seminar Secondary Mathematics

SCI 215: Integrated Physics

Additional Duties: Advised and assisted new faculty; advised and assisted current and new students; developed Orientation PowerPoint presentation and information pamphlets for

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education department; attended system curriculum meetings; chaired Pi Day Celebration; Chaired Competitive Olympics for local high school students

**Visiting Instructor, Purdue University, West Lafayette, IN, January 2002 – May 2002**

Departments/Supervisor: Electrical Engineering / Dr. John Nyenhuis

Courses Taught:

EE 202: Linear Circuit Analysis II

EE 402: Senior Design

#### Adjunct and Graduate Assistantship Teaching Experience

**Graduate Teaching Assistant, Bowling Green University, Bowling Green, OH Fall 2008—present**

Mathematics and Statistics Department

Supervisor: Dr. Daria Phillipova

Courses Taught:

MATH 1260: Basic Calculus

MATH 1280: Precalculus Mathematics

**Graduate Teaching Assistant, Indiana-Purdue University Fort Wayne, Fort Wayne, IN Fall 2007—May 2008**

Mathematical Sciences Department

Courses Taught:

MATH 153: Algebra and Trigonometry I

**Adjunct Faculty, Baker College of Owosso, Owosso, MI Fall 2002 – Summer 2004**

Courses Taught:

EET 134: Electronic Instrumentation

EET 214: Communication Circuits

EET 226: Microprocessor Fundamentals

EET 236: Microprocessor Applications

MTH 111: Introductory Algebra

MTH 112: Intermediate Algebra

MTH 261: Linear Algebra

MTH 340: Discrete Mathematics

SCI 215: Integrated Physics

**Graduate Teaching Assistant, Purdue University, West Lafayette, IN, 2000**

Electrical Engineering Department  
Teaching assistant for class taught in video conferencing classroom; answered questions through class newsgroup for off campus students; conducted reviews sessions for exams

**Undergraduate Teaching Assistant, Purdue University, West Lafayette, IN, 1997 - 1999**  
Electrical Engineering Department  
Tutor students and conduct review sessions before exams

### Curriculum Development

**Major Curriculum Development and Revisions, Baker College Mathematics and Science System Department, Flint, MI.**

Duties: Selected new textbook; revised course outcomes; revised syllabus guide: revised and added to supporting resources that affect entire Baker College system. \*Denotes new course development.

Courses:

MTH 140: Pre-Calculus  
MTH 251: Introduction to Differential Equations  
MTH 261: Linear Algebra  
MTH 340: Discrete Mathematics  
MTH 351: Principles of Modern Algebra\*  
MTH 431: Foundations of College Geometry\*

**Minor Curriculum Revisions, Baker College Mathematics and Science System Department, Flint, MI.**

Duties: Updated syllabus guide and resource list for new edition of textbook that affect entire Baker College System.

Courses:

MTH 111: Introductory Algebra  
MTH 112: Intermediate Algebra  
MTH 124: Trigonometry  
MTH 141: Calculus I  
MTH 142: Calculus II  
MTH 143: Calculus III  
MTH 244: Calculus IV  
SCI 351: Science Foundations I: Chemistry and Life Sciences  
SCI 352: Science Foundations II: Astronomy, Earth Science, and Physics

### Relevant Computer Experience

**Blackboard Online Class Environment:**

Extensive use of discussion board, grade book, email and contact info, assignments, and course documents

### **MyMathLab**

Extensive use of online homework when using textbooks published by Pearson.

### **Mathzone**

Extensive use for online homework for courses taught with McGraw Hill books. Currently using for MATH 1260 at Bowling Green University.

### **Aleks**

Used for Algebra review/preparation for students enrolled in calculus

### **Latex**

Extensive use for writing test, quizzes, worksheets, and course notes. Developed full set of notes for MATH 1260

### **Geogebra and Geometer's Sketchpad**

When appropriate have used to create interactive worksheets or illustrations of mathematical concepts.

### **Programming/Scripting Languages**

Matlab: Extensive knowledge. Current research uses matlab, developed device simulators, debugged programs, used as data analyzer

Visual C++: Basic knowledge of program and language

Perl: Basic knowledge

Fortran 77: Debugged and modified several device simulators

C: Course work, used for senior design project, Mixed Finite Elements code

## Selected Coursework

### **Graduate Level Mathematics Courses (Taken at Bowling Green)**

MATH 6180: Numerical Analysis I

MATH 6200: Numerical Analysis II

MATH 6510: Topology I

MATH 6610: Complex Analysis I

MATH 6630: Algebra I

MATH 6650: Real Analysis I

MATH 6660: Real Analysis II

MATH 6680: Iterative Solutions to  
Differential Equations

MATH 6700: Readings: Mixed Finite  
Element Programming

MATH 6700: Readings: Sobolev Spaces

MATH 6700: Readings: Applied Math  
and Related Topics

MATH 6700: Readings: Topics in Applied

Math

MATH 6820: Topics: Functional Operator  
Theory

MATH 6820: Topics: Approximation  
Theory

MATH 6820: Topics: Real Analysis IV

MATH 6820: Topics: Convexity and  
Optimization

MATH 6820: Topics: Generalized  
Functions

MATH 6820: Topics: Differential  
Topology

MATH 7520: Topology II

MATH 7620: Complex Analysis II

MATH 7650: Real Analysis III

**Graduate and Upper Level Mathematics Courses (Taken at Purdue and IPFW)**

MATH 511: Linear Algebra with Applications  
MATH 553: Introduction to Abstract Algebra  
MATH 554: Linear Algebra  
MATH 560: Fundamental Concepts of Geometry  
MATH 575: Graph Theory  
MATH 598: Introduction to Coding Theory and Cryptography  
MATH 441: Real Analysis  
STAT 519: Introduction to Probability

**Graduate Electrical Engineering Courses**

EE 604: Electromagnetic Field Theory  
EE 606: Solid State Devices  
EE 654: Solid State Devices II  
MATH 511: Linear Algebra  
PHYS 545: Solid State Physics

**Undergraduate Electrical Engineering Courses**

EE 301: Signals and Systems  
EE 302: Probabilistic Methods in Electrical and Computer Engineering  
EE 305: Semiconductor Devices  
EE 311: Electric and Magnetic Fields  
EE 382: Feedback System Analysis and Design

References

**Dr. Tong Sun**, Associate Professor, Department of Mathematics and Statistics, Bowling Green University, 450 Mathematical Science Building, Bowling Green, OH 43403-0001; (419) 372-7460, [tsun@bgsu.edu](mailto:tsun@bgsu.edu)

**Dr. Neal Carothers**, Professor, Department of Mathematics and Statistics, Bowling Green University, 450 Mathematical Science Building, Bowling Green, OH 43403-0001; (419) 372-8317, [carother@bgsu.edu](mailto:carother@bgsu.edu)

**Dr. Daria Fillipova**, MATH 1260 Coordinator, Department of Mathematics and Statistics, Bowling Green University, 450 Mathematical Science Building, Bowling Green, OH 43403-0001; (419) 372-7451, [dariaf@bgsu.edu](mailto:dariaf@bgsu.edu)

