

Zachary L. Miner

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Education

Aug 2004 - May
2011

Ph.D. Mathematics, *University of Texas*, Austin, May 2011.

Ph.D.
Dissertation

Norms Extremal with respect to the Mahler Measure and a generalization of Dirichlet's Unit Theorem

Advisor

Professor Jeffrey Vaaler

Aug 2000 - May
2004

B.S. Pure Mathematics (honors), *University of Texas*, Austin.

Publications

Norms extremal with respect to the Mahler measure (with P. Fili). Submitted for publication. arXiv:1006.5503

Orthogonal decomposition of the space of algebraic numbers and Lehmer's problem (with P. Fili). Submitted for publication. arXiv:0911.1975

A generalization of Dirichlet's S-unit theorem (with P. Fili). Preprint.

Teaching Experience

Instructor of Record:

- Spring 2011 M316K: Foundations of Arithmetic (1 section, 3 hours; *inquiry-based*)
- Fall 2010 M408N: Differential Calculus for Science (1 section, 3 hours)
- Summer 2010 M305G: Elementary Functions and Coordinate Geometry (1 section, 3 hours)
- Spring 2010 M408K: Differential Calculus (1 section, 3 hours)
- Fall 2009 M305G-CNS: Elementary Functions and Coordinate Geometry for Science (2 sections, 3 hours each)
- Spring 2009 M305G: Elementary Functions and Coordinate Geometry (2 sections, 3 hours each)
- Fall 2008 M505G: Elementary Functions and Coordinate Geometry (1 section, 5 hours)

Teaching Assistant:

- Summer 2008 M408K: Differential Calculus (with Leslie Vaaler)
- Summer 2007 M408C: Differential and Integral Calculus I (with Kathy Davis)
- Spring 2007 M408D: Sequences, Series, and Multivariable Calculus (3 sections with Oscar Gonzalez)
- Fall 2006 M408K: Differential Calculus (3 sections with Diane Radin)
- Spring 2006 M408K: Differential Calculus (2 sections with Corinne Irwin)
- Fall 2005 M408L: Integral Calculus (3 sections with Yannick Sire)

Grader:

- Spring 2008 M341: Linear Algebra and Matrix Theory (two sections with Kenneth Chu)
- Fall 2007 M380C: Graduate Algebra (with Jeffrey Vaaler)
- Summer 2005 M305G: Elementary Functions and Coordinate Geometry (2 courses)
- Spring 2005 M328K: Introduction to Number Theory (with Frank Gerth III)
- Spring 2005 M328K: Introduction to Number Theory (with Stephen McAdam)
- Fall 2004 M328K: Introduction to Number Theory (with Altha Rodin)

Tutor:

- Fall 2004- Spring 2005 Tutor for various undergraduate math courses (primarily calculus and linear algebra) at the University of Texas Learning Center. (20 hours per week)
- Fall 2005-present Private tutor in Undergraduate Number Theory, Real Analysis, Linear Algebra, Calculus, and Probability, as well as High School and Middle School level Algebra and Geometry

Teacher Training

- Mar. 2011 College of Natural Sciences New Faculty and Teaching Strategies Workshop. University of Texas at Austin
- Oct. 2009 The Teaching Strategies Workshop: "Can learning about the brain change how we educate?". University of Texas at Austin
- Spring 2006- Spring 2007 Supplemental Instruction (SI) program. (Weekly meetings with other teachers to discuss teaching strategies and the problems we face. Receiving feedback from other teachers sitting in on our classes, as well as giving feedback to other teachers.)
- Fall 2005 M398T: Supervised Teaching in Math

Scholarships and Awards

- 2009 Department of Mathematics Outstanding Teaching Award. Sole recipient (with prize of \$1,200).
- Summer 2009 Graduate Research Assistantship
- Summer 2006 Fellowship

Talks Given

- Apr. 2011 *A generalization of Dirichlet's unit theorem*, Number Theory Seminar, Texas A&M University.
- Apr. 2011 *Thesis Defense*, Algebra, Number Theory, and Combinatorics Seminar, UT Austin.
- Apr. 2011 *Heights of Algebraic Numbers*, The Undergraduate Mathematics Research Group, UT Austin.
- Apr. 2011 *Extremal Metric Heights and Norms*, Jr. Number Theory Seminar, UT Austin.
- Dec. 2010 *A Generalization of Dirichlet's S-unit theorem*, Jr. Number Theory Seminar, UT Austin.
- Jan. 2010 *S-unit Projections in the Vector Space of Algebraic Numbers Modulo Torsion*, Jr. Number Theory Seminar, UT Austin.

- Dec. 2009 *Norms Extremal with respect to the Mahler Measure*, Jr. Number Theory Seminar, UT Austin.
- May 2008 *A Notion of Degree Related to the Weil Height*, Sr. Number Theory Seminar, UT Austin.
- Apr. 2008 *A Notion of Degree Related to the Weil Height*, Jr. Number Theory Seminar, UT Austin.
- Sep. 2007 *A Lower Bound for the Height in Abelian Extensions*, Jr. Number Theory Seminar, UT Austin.
- May 2007 *Smyth's result on the Mahler Measure of Nonreciprocal Polynomials*, Jr. Number Theory Seminar, UT Austin.

Conferences Attended

- May 2011 Summer School Program on Arithmetic Dynamics, organized by the Mathematics Department at the University of Georgia and funded by UGA's VIGRE grant. Athens, GA.
- Jan. 2011 Panelist, 'What I wish I had known before applying for a job', AMS-MAA Joint Meetings, Organized by the AMS Committee on the Profession. New Orleans, LA.
- Jan. 2011 AMS-MAA Joint Meetings. New Orleans, LA.
- Jan. 2010 AMS-MAA Joint Meetings. San Francisco, CA.
- May 2008 The Mathematical Interests of Peter Borwein. Simon Fraser University, Burnaby, BC.
- May 2007 Illinois Number Theory Fest. University of Illinois at Urbana-Champaign, Urbana-Champaign, IL.
- Jan. 2006 AMS-MAA Joint Meetings. San Antonio, TX.

Research Interests

Number theory, heights of algebraic numbers, Mahler measure and Lehmer's problem, Diophantine approximation, heights in arithmetic dynamics

Additional Skills

Experience working with SAGE open source mathematics software and Wolfram Mathematica.

Languages

Native	English
Proficient	Spanish
Reading	French

Professional Membership

Member, American Mathematical Society, 2004 – Present