

Karl Mahlburg

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Citizenship: USA

Birth Date: February 6, 1980.

Positions:

- C.L.E. Moore Instructor, Massachusetts Institute of Technology, 2006 – .

Education:

- Ph.D., Mathematics, University of Wisconsin-Madison, 2006.
Advisor: Ken Ono
Thesis: *Congruences for the coefficients of modular forms and applications to number theory*
- M.A., Mathematics, University of Wisconsin-Madison, 2003.
- B.S., Mathematics with Highest Distinction, Harvey Mudd College, 2001.

Research Interests:

- Number Theory
- Theory of Partitions
- Modular Forms
- Combinatorics

Publications:

1. *Partition congruences and the Andrews-Garvan-Dyson crank*, Proceedings of the National Academy of Sciences **102** (2005), no. 43, 15373–76.
2. *More congruences for the coefficients of quotients of Eisenstein series*, Journal of Number Theory **115** (2005), no. 1, 89–99.
3. *The overpartition function modulo small powers of 2*, Discrete Mathematics **286** (2004), no. 3, 263–267.
4. (with K. Ono) *Arithmetic of certain hypergeometric modular forms*, Acta Arithmetica **113** (2004), no. 1, 39–55.

5. (with J. Getz) *Partition identities and a theorem of Zagier*, Journal of Combinatorial Theory (A) **100** (2002), 27–43.
6. (with A. Benjamin, G. Levin, and J. Quinn) *Random approaches to Fibonacci identities*, The American Mathematical Monthly **107** (2000), 511–16.

Invited Seminars:

- Plenary address, International Conference on Number Theory and Mathematical Physics and SASTRA Ramanujan Award Presentation, Kumbakonum, India, December 20-22, 2005.
- *The Andrews-Garvan crank and partition congruences*, Algebra Seminar, SUNY-Buffalo, October 11th, 2005.
- Special Colloquium Series Speaker at the Research Experience for Undergraduates in computational number theory and combinatorics, Clemson University, June 8–11, 2005.
- *The Andrews-Garvan crank and partition congruences*, Combinatorics/Number Theory Seminar, Ohio State University, May 13th, 2005.
- *The Andrews-Garvan crank and partition congruences*, Combinatorics/Algebra Seminar, Iowa State University, April 4th, 2005.
- *The Andrews-Garvan crank and partition congruences*, Combinatorics Seminar, University of Minnesota-Minneapolis, April 1st, 2005.
- *The Andrews-Garvan crank and partition congruences*, Combinatorics Seminar, University of Pennsylvania, March 29th, 2005.

Conferences and Other Presentations:

- Special Session on Q-Series and Partitions, AMS Sectional Meeting, San Francisco State University, April 29-30, 2006.
- *Cranks revisited and higher partition congruences*, Midwest Number Theory Conference for Graduate Students and Recent Ph.D.'s II, University of Illinois , Urbana-Champaign, February 2005.
- *Cranks revisited and higher partition congruences*, Special Year in Mathematics Additive Number Theory Conference, University of Florida, Gainesville, November 2004.
- *Cranks revisited and higher partition congruences*, Combinatorics Seminar, University of Wisconsin-Madison, Fall 2004.
- *Arithmetic of Certain Hypergeometric Modular Forms*, Canadian Number Theory Association Meeting VIII, Toronto, June 2004.

- *Partition identities and a theorem of Zagier*, Integers Conference, Carrollton, Georgia, November 2003.
- *Partition identities and a theorem of Zagier*, Midwest Number Theory Conference for Graduate Students and Recent PhDs, Madison, Wisconsin, October 2003.
- *Partition identities and a theorem of Zagier*, AMS Special Session on Q-Series in Number Theory and Combinatorics, AMS Regional Meeting, Baton Rouge, Louisiana, March 2003.
- *Partition identities and a theorem of Zagier*, Canadian Number Theory Association Meeting VII, Montreal, Canada, June 2002.
- *Partition identities and a theorem of Zagier*, Combinatorics Seminar, University of Wisconsin-Madison, Spring 2002.
- *Partition identities and a theorem of Zagier*, Number Theory Seminar, University of Wisconsin-Madison, Fall 2001.

Teaching Activities:

- Recitation Instructor for Course 18.01A/18.02A (Calculus), M.I.T., Fall 2006.
- Assistant Instructor for UW-Madison Research Experience for Undergraduates, Summer 2005, 2006.
- Teaching Assistant for Math 171, 217 (Calculus), UW-Madison, 2004 – 2005.
- Tutor in school-sponsored and private settings, 1999–2004.
- Grader of homework, quizzes, and exams for undergraduate courses, 1998–2004.

Grants and Fellowships:

- Clay Mathematics Institute Liftoff Fellow, Summer 2006.
Host: George Andrews at Pennsylvania State University.
- Recommended for National Science Foundation Postdoctoral Research Fellowship (declined), 2006.
- UW-Madison VIGRE Fellowship, 2001–02, 2005–2006.
- NSF Graduate Fellowship, 2002–2005.

Awards and Honors:

- Inaugural Proceedings of the National Academy of Sciences *Paper of the Year Award*, presented at the National Academy of Sciences, 2006.

- UW-Madison Excellence in Mathematical Research Award, Spring 2005.
- Graduated with Honors in Mathematics and Humanities and Social Sciences (Harvey Mudd), Spring 2001.
- William and Margaret Radley Prize in the Humanities (Harvey Mudd), Spring 2001.
- 61st William Lowell Putnam Examination Honorable Mention, Spring 2001.
- Harvey Mudd Scholar-Athlete of the Year, 2001.
- Harvey S. Mudd Merit Scholarship, 1997–2001.
- Robert C. Byrd Scholarship, State of Colorado, 1997–2001.

Professional Activities:

- Referee Work for:
Ars Combinatoria, Discrete Mathematics, Electronic Journal of Combinatorics, European Journal of Combinatorics, INTEGERS - Electronic Journal of Combinatorial Number Theory (2), Journal of Combinatorial Theory (A), Ramanujan Journal (2); (9 total papers refereed).
- Reviewer for AMS Mathematical reviews; 9 written.
- Member of Graduate Program Committee, UW-Madison, 2005.
- Member of the Wisconsin Teaching Assistants' Association, 2005.
- Member of the American Mathematical Society, 2002 – .

Other Interests:

- Volunteer pianist at Wisconsin Governor's Mansion, 2003 – 2005.
- Classical and jazz music.
- Distance running, biking, skiing.