VITA

DATE: April, 2003

NAME: DOUGLAS BOWMAN

PRESENT RANK: Associate Professor

DEPARTMENT: Mathematical Sciences

EDUCATIONAL BACKGROUND:

University of California, Los Angeles, CA	1993	Ph.D.
University of California, Los Angeles, CA	1991	M.A.
California State University, Los Angeles, CA	1988	B.A.

PROFESSIONAL EXPERIENCE:

Northern Illinois University, DeKalb, IL	Associate Professor	2002-
University of Illinois, Urbana-Champaign, IL	Assistant Professor	1996-2002
University of Illinois, Urbana-Champaign, IL	NSF Postdoctoral Fellow	1995-1997
Penn State University, University Park, PA	NSF Postdoctoral Fellow	1993-1994

RESEARCH:

A. Publications and Other Professional Contributions:

Articles

1. *On the divergence of the Rogers-Ramanujan continued fraction on the unit circle* (with James McLaughlin.) *Trans. Amer. Math. Soc. 356(8), 3325–3347, 2004.*
2. *A theorem on divergence in the general sense for continued fractions* (with James McLaughlin.) *J. Comput. Appl. Math. 172(2): 363–373, 2004.*
3. *Resolution of some open problems concerning multiple zeta evaluations of arbitrary depth* (with David Bradley.) *Accepted for publ. Feb 2002 in Compositio Math.*
4. *G-Continued fractions for basic hypergeometric functions II* (with Geumlan Choi). *To appear J. Math. Anal. and Appl.*
5. *Some multi-set inclusions associated with shuffle convolutions and multiple zeta values* (with David Bradley and Ji Hoon Ryoo). *European J. Combin. 24(1), 121–127, 2003.*
6. The algebra and combinatorics of shuffles and multiple zeta values (with David Bradley). *J. Comb. Th., A. 97(1): 43–61, 2002.*

7. Polynomial continued fractions (with James McLaughlin). *Acta Arith. 103(4): 329–342, 2002.*
8. q-difference operators, orthogonal polynomials, and symmetric expansions. *Memoirs of the Amer. Math. Soc. 159 No. 757, 2002.*
9. Multiple polylogarithms: a brief survey (with David Bradley). *q-series with applications to combinatorics, number theory and physics*, AMS Contemp. Math., 291: 71–92, 2001.
10. Rational approximation to a new generalization of the Rogers-Ramanujan continued fraction (with Geumlan Choi). *J. Number Theory*, 85(2):158–171, 2000.
11. G-continued fractions for basic hypergeometric functions (with Geumlan Choi). *J. Math. Anal. Appl.*, 243(2):338–343, 2000.
12. An easy proof of the Askey-Wilson integral and applications of the method. *J. Math. Anal. Appl.*, 245(2):560–569, 2000.
13. Ramanujan's short unpublished manuscript on integrals and series related to Euler's constant (with Bruce C. Berndt). In *Constructive, experimental, and nonlinear analysis (Limoges, 1999)*, pages 19–27. Amer. Math. Soc., Providence, RI, 2000.
14. The Bailey transform and D. B. Sears (with George E. Andrews). *Quaest. Math.*, 22(1):19–26, 1999.
15. Partitions with numbers in their gaps. *Acta Arith.*, 74(2):97–105, 1996.
16. A general Heine transformation and symmetric polynomials of Rogers. In *Analytic number theory, Vol. 1 (Allerton Park, IL, 1995)*, pages 163–171. Birkhäuser Boston, Boston, MA, 1996.
17. A full extension of the Rogers-Ramanujan continued fraction (with George E. Andrews). *Proc. Amer. Math. Soc.*, 123(11):3343–3350, 1995.
18. Approximation of $\lfloor na+s \rfloor$ and the zero of $\{na+s\}$. *J. Number Theory*, 50(1):128–144, 1995.
19. Modified convergence for q-continued fractions defined by functional relations. In *The Rademacher legacy to mathematics (University Park, PA, 1992)*, pages 155–165. Amer. Math. Soc., Providence, RI, 1994.
20. A new generalization of Davison's theorem. *Fibonacci Quart.*, 26(1):40–45, 1988.

Papers Submitted for Publication

1. *On the Rogers-Ramanujan-Selberg-Andrews q-difference equation and its associated G-continued fraction* (with Geumlan Choi). *Submitted June 2002: Ramanujan Journal*

Papers in Preparation

1. *An Euler-Minding theorem for G-continued fractions* (with Geumlan Choi.)
2. *On multiple polylogarithms and certain generalizations possessing periodic argument lists* (with David Bradley.)

3. *A generalization of Schur's partition theorem.*
4. *q-continued fractions with multiple limits* (with James McLaughlin.)
5. *The convergence and divergence of q-continued fractions outside the unit circle* (with James McLaughlin).

Invited Papers read at professional meetings:

1. "Integers n such that $\lfloor n\alpha + s \rfloor \neq \lfloor n\beta + s \rfloor$", Canadian Mathematical Society Winter Meeting, Ottawa Ontario, December 2002.
2. "Multiple zeta values", Centre for Experimental and Constructive Mathematics, Burnaby BC, July 2001.
3. "Recent results on multiple zeta values", Canadian Mathematical Society Annual Meeting, Saskatoon SK, June 2001.
4. "New results on multiple zeta values", Illinois Number Theory Conference, June 2001.
5. "An Introduction to multiple zeta values", Fall Mathematics and Statistics Conference, Miami University, Oxford Ohio, October 1999. Plenary lecture.
6. "The q-Wronskian and Rubel's n-nomial Theorem", International Workshop on Special Functions, City University of Hong Kong, Hong Kong, China, June 1999.
7. "Basic Hypergeometric Continued Fractions", Continued Fractions with applications, Columbia Missouri, May, 1998. Plenary lecture.
8. "Best irrationality measures for certain special functions at rational points", Topics on Number Theory, State College PA, July 1997.
9. "Best Irrationality Measures", CECM'97 Burnaby, BC, Canada, June 1997.
10. "Analytic continuation of basic hypergeometric series and the inversive closure", Mini-conference on q-series, Ohio State University, June 1996.
11. "L.J. Rogers, a q-Heisenberg algebra, and representations", Illinois Number Theory Conference, Normal IL, April 1996.
12. "Evaluations of some q-continued fractions under modified and ordinary convergence", International Conference on Analytic Number Theory, Allerton Park IL, May 1995.
13. "Transformations between products and continued fractions", AMS-MAA combined meeting, Minneapolis MN, August, 1994.
14. "What is a q-series", AMS Regional Conference, Manhattan Kansas, March, 1994
15. "Symmetric function expansions for basic hypergeometric series", Rademacher Centenary Conference, University Park, PA, July, 1992

Colloquium Talks:

1. "Basic Hypergeometric Continued Fractions", University of Waterloo, Waterloo Ontario, July, 1998.
2. "Combinatorics of continued fractions", Beloit College, September 1996.
3. "What is a q-series", University of Georgia, April, 1994.

B. **Grants, Fellowships, and Leaves of Absence (in reverse chronological order):**

Grants:

- NSF Grant DMS-0300126, July 2003– June 2006.
- UIUC Research Board Grant, Summer 2002.
- UIUC Research Board Grant, Spring 2000.
- NSF Grant DMS-9705782, "Algorithmic and combinatorial extensions of continued fractions", June 97–June 00.

Fellowships:

- NSF Postdoctoral Fellowship, 1993–1996
- NSF Graduate Fellowship, June 1989–June 1992

TEACHING AND RELATED ACTIVITIES:

A. **Teaching Responsibilities:**

Courses taught:

Fall 2002	Math 206	Introductory Discrete Mathematics (3)
	Math 240	Linear Algebra and Applications (3)
Spring 2003	Math 380	Elementary Combinatorics (3)
	Math 420	Enumerative Combinatorics (3)

B. **Direction of Theses and Dissertations or Equivalents; Service on Thesis or Dissertation Committees:**

Ph.D. Thesis Supervised at UIUC:

- Geumlan Choi: Ph.D. June 2001
  Thesis Title: *Generalizations of certain results on continued fractions*

- James McLaughlin: Ph.D. July 2002
  Thesis Title: *Aspects of continued fractions*

PhD Committees at UIUC:

Paul Bialek, February 1995

Sen-Shan Huang, April 1997

Jeffrey Meyer, September 1997

Seung Hwan Son, May 1998

Boris Iskra, May 1998

Soon-Yi Kang, July 1998

Youn-Seo Choi, March 1999

Yi-Fan Yang, October 2000

Joung Min Song, October 2000

Jinhee Yi, October 2000

Geumlan Choi, December 2000

Jaebum Sohn, March 2001

James McLaughlin, July 2002

C. **Advising Activities:**

My last four years at UIUC I served as an undergraduate advisor to mathematics majors. In addition, I served for several years as the faculty advisor for the Society for Undergraduate Mathematics. In this capacity I organized lectures and consulted with club leaders suggesting ideas for activities. I also served on the library committee, Greenwood prize committee, and on comprehensive exam comittees for analytic number theory.

In 1999 I served as the coach for the University of Illinois Association for Computing Machinery Programming Team.

PROFESSIONAL SERVICE

A. **Public Service Activities:**

Affiliations:

- Associate Member of the Centre for Experimental and Constructive Mathematics, Simon Fraser University
- Board of Directors for Project Gutenberg: `http://www.gutenberg.n et`
  (Project Gutenberg is a nonprofit project aiming to make much of the world's public domain literature available for free as etexts.)
- Member of exhibits committee of the Orpheum Children's Science Museum.