

CURRICULUM VITÆ

Byungchan Kim

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Education

B.A. in Mathematics, *magna cum laude*. Aug. 2004
Seoul National University.

Graduate Study in mathematics. Sep. 2004 – Jun. 2005
Seoul National University.

Ph.D., Mathematics. *Expected May 2010*
University of Illinois at Urbana-Champaign.
Thesis Advisors : Scott D. Ahlgren and Bruce C. Berndt.
Dissertation Title : Arithmetic of partition functions and q -combinatorics.

Research Interests

Partition functions, Partial theta functions, Mock theta functions.

Enumerative and Algebraic Combinatorics.

Modular and Automorphic Forms.

q -series and special functions.

Research

Publications in Refereed Journals

The overpartition function modulo 128, *Integers* **8** (2008), A #38, 8 pp.

A short note on the overpartition function, *Discrete Math.* **309** (2009), 2528 – 2532.

Combinatorial proofs of certain identities involving partial theta functions, *Int. J. Number Theory*, to appear.

Ramanujan's lost notebook: Combinatorial proofs of identities associated with Heine's transformation or partial theta functions (with B.C. Berndt and A.J. Yee), *Journal of Combinatorial Theory, Series A*, to appear.

On the subpartitions of the ordinary partitions, *Ramanujan Journal* (Special issue for G.E. Andrews' 70th birthday), to appear.

On inequalities and linear relations for 7-core partitions, *Discrete Math.*, to appear.

Papers in Refereed Conference Proceedings

The overcubic partition function mod 3, Proceeding of a conference in memory of K. Venkatachalienger, to appear.

Papers Submitted for Publication

A crank analog for a certain kind of partition function arising from the cubic continued fraction.

Papers in Preparation

Explicit bounds for the number of p -core partitions (with J. Rouse).

Partition identities from mock theta functions (with Y.S. Choi).

Periodicity of signs of Fourier coefficients of eta quotients.

Asymptotic expansion of partial theta functions (with B. Berndt and S. Kim).

Asymptotic formulas for a certain class of partition functions (with B. Berndt and S. Lim).

Talks and presentations*Invited talks*

Combinatorics of certain identities involving partial theta functions.

Conference on Quadratic Forms, Sums of Squares, Theta Functions and Integral Lattices.

University of Florida.

Mar. 11, 2009

On the subpartitions of the ordinary partitions.

2009 Spring AMS Central Sectional Meeting (Special Session on q -Series and Partitions).

University of Illinois at Urbana-Champaign.

Mar. 27, 2009

Combinatorial proofs for some q -series identities.

Number Theory Seminar, Korea Institute for Advanced Study.

Jul. 9, 2009

TBD (Upcoming)

Focused Week on Quadratic Forms and Theta Functions

University of Florida.

Mar. 22–28, 2010

Contributed talks

Combinatorial proofs of identities involving partial theta function, Partitions.

Partitions, q -Series and Modular Forms Conference.

University of Florida.

Mar. 12, 2008

The overpartition function mod small powers of 2.

Designs–Graphs–Number Theory Conference.

Illinois State University.

Apr. 18, 2008

A Crank analog for a certain kind of partition function arising from the cubic continued fraction.

Combinatory Analysis 2008: Partitions, q -series, and Applications.

Pennsylvania State University.

Dec. 7, 2008

Ramanujan's lost notebook: combinatorial proofs of identities associated with partial theta functions.

Ramanujan Rediscovered.

IITB, Bangalore, India.

Jun. 2, 2009

Explicit bounds for the number of p -core partitions (Upcoming).

Midwest number theory conference for graduate students VI.

University of Wisconsin, Madison.

Nov. 7–8, 2009

Explicit bounds for the number of p -core partitions (Upcoming).

2010 AMS-MAA joint mathematics meeting

Moscone West Convention Center, San Francisco

Jan. 13–16, 2010

Honors & Awards

Fellowships

Mathematics Department Fellowship.

Spring 2007 and Spring 2008

Bateman Fellowship.

Spring 2009

This is awarded to a continuing graduate student in number theory on the basis of both course work and research in number theory.

William C. Healy Fellowship.

Spring 2010

Awards

Bateman Prize.

2009–2010

This is awarded to the graduate student in number theory whose research is considered to be the best of that of any current student in number theory.

Professional Activities

Refereeing

International Journal of Number theory (5), *Journal of Combinatorics and Number theory*, *Journal of Mathematical Analysis and Applications*. and *Proceeding of a conference in memory of K. Venkatakalienger*.

Research Visit

Korea Institute for Advanced Study,

Jun. 8 – Jul. 10, 2009

Other Conferences and Workshops Attended

Midwest number theory conference for graduate students and recent Ph.Ds.

University of Illinois at Urbana-Champaign.

Oct. 28–29, 2006

Illinois number theory fest.

University of Illinois at Urbana-Champaign.

May 16–20, 2007

CMI/MSRI workshop: modular forms and arithmetic.

University of California at Berkeley.

June 28 – July 02 2008

Illinois number theory celebration.

University of Illinois at Urbana-Champaign.

Mar. 25–26, 2009

2009 KIAS-POSTECH number theory workshop.

Postech, Pohang, S. Korea.

June 26–28, 2009

Academic Experience

Seoul National University, Department of Mathematics

Teaching Assistant, Calculus I and II.

Fall 2004 and Spring 2005

University of Illinois at Urbana-Champaign, Department of Mathematics

Grader and tutor for various undergraduate courses

Fall 2005 – Fall 2007, and Fall 2009

Research experience for graduate student under direction of B.C. Berndt

Summer 2007

Research assistant under direction of B.C. Berndt

Fall 2007 and Fall 2008

References

Scott Ahlgren (Thesis Advisor)

Associate Professor

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Bruce Berndt (Thesis Advisor)

Professor

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