Paul Pollack

Curriculum Vitae

Department of Mathematics
University of Illinois at Urbana-Champaign
1409 W. Green Street
Urbana, IL 61801

Phone (cell): 603.937.1100
Fax: 217.333.9576
Email: pppollac@illinois.edu
URL: http://www.math.uiuc.edu/∼pppollac/

POSITIONS HELD

University of Illinois

J. L. Doob Research Assistant Professor/NSF Postdoctoral Fellow — Fall 2008–Spring 2011

Institute for Advanced Study

Member of the School of Mathematics — Fall 2009

Dartmouth College

Visiting Research Scholar — Spring 2010

University of British Columbia

Postdoctoral Fellow — beginning Fall 2011

EDUCATION

University of Georgia

Bachelor of Science, Mathematics — Spring 2003

Princeton University

Fall 2003 – Winter 2005

Dartmouth College

Master of Arts, Mathematics — June 2007
Ph. D., Mathematics — June 2008
Thesis: *Prime polynomials over finite fields*

PAPERS

An explicit approach to Hypothesis H for polynomials over a finite field 2008
The anatomy of integers. Proceedings of a conference on the anatomy of integers, Montreal, March 13th-17th, 2006. Editors: J.M. de Koninck, A. Granville and F. Luca, pp. 259–273.

On a conjecture of Beard, O'Connell and West concerning perfect polynomials 2008
joint with L. Gallardo and O. Rahavandrainy
Finite Fields and their Applications **14**, no. 1, 242–249.

A polynomial analogue of the twin prime conjecture 2008
Proc. Amer. Math. Soc. **136**, no. 11, 3775–3784.

Simultaneous prime specializations of polynomials over finite fields 2008
Proc. London Math. Soc. **97**, no. 3, 545–567.

Arithmetic properties of polynomial specializations over finite fields 2009
Acta Arith. **136**, no. 1, 57-79.

On the distribution of sociable numbers 2009
joint with M. Kobayashi and C. Pomerance
J. Number Theory **129**, no. 8, 1990-2009.

Revisiting Gauss's analogue of the prime number theorem for polynomials over a finite field 2010
Finite Fields and their Applications **16**, no. 4, 290-299.

Multiperfect numbers with identical digits 2011
joint with F. Luca
J. Number Theory **131**, no. 2, 260–284.

On polynomial rings with a Goldbach property 2011
Amer. Math. Monthly **118**, no. 1, 71–77.

On Dickson's theorem concerning odd perfect numbers 2011
Amer. Math. Monthly **118**, no. 2, 161–164.

Long gaps between deficient numbers 2011
Acta Arith. **146**, no. 1, 33–42.

Hypothesis H and an impossibility theorem of Ram Murty 2010
Rend. Sem. Mat. Univ. Pol. Torino **68**, 183–197.

On Hilbert's solution of Waring's problem 2011
Cent. Eur. J. Math. **9**, no. 2, 294–301.

Powerful amicable numbers 2011
Colloq. Math. **122**, 103–123.

Values of the Euler and Carmichael functions which are sums of three squares 2011
INTEGERS **11**, article A13, 16 pp. (electronic)

On some friends of the sociable numbers 2011
Monatsh. Math. **162**, no. 3, 321–327.

The greatest common divisor of a number and its sum of divisors 2011
Michigan Math. J. **60**, 199–214

Perfect numbers with identical digits 2011
INTEGERS **11A**. Proceedings of the Integers Conference 2009. Article 18, 11 pp. (electronic)

Quasi-amicable numbers are rare 2011
J. Integer Sequences **14**, article 11.5.2, 13 pp. (electronic)

The exceptional set in the polynomial Goldbach problem 2010
Int. J. Number Theory (to appear)

An arithmetic function arising from Carmichael's conjecture 2010
joint with F. Luca
J. Théor. Nombres Bordeaux (to appear)

The Möbius transform and the infinitude of primes 2010
Elem. Math. (to appear)

On common values of $\phi(n)$ and $\sigma(m)$, I 2010
joint with K. Ford
Acta Math. Hungarica (to appear)

On the parity of the number of multiplicative partitions and related problems 2011
Proc. Amer. Math. Soc. (to appear)

Prime-perfect numbers 2011
joint with C. Pomerance
INTEGERS (to appear)

On common values of $\phi(n)$ and $\sigma(m)$, II 2010
joint with K. Ford (submitted)

Two remarks on iterates of Euler's totient function 2011
(submitted)

How many primes can divide the values of a polynomial? 2011
joint with F. Luca (submitted)

BOOKS

Not Always Buried Deep: A Second Course in Elementary Number Theory 2009
American Mathematical Society, 2009.

SELECTED PRESENTATIONS

Dartmouth College number theory seminar April 19, 2005
'Rational (!) cubic and biquadratic reciprocity'

Anatomy of Integers workshop (Montréal) March 15, 2006
'Some special cases of an $\mathbf{F}_q[u]$-variant of Hypothesis H'

Québec/Maine number theory conference October 1, 2006
'Irreducible compositions of polynomials over finite fields'

AMS/MAA Joint Meetings
special session on the arithmetic of function fields January 7, 2007
'Simultaneous prime values of polynomials in positive characteristic'

AMS sectional meeting (Hoboken, NJ)
special session on number theory April 15, 2007
'Prime polynomial patterns'

Québec-Vermont number theory seminar April 26, 2007
'Prime polynomial patterns'

Ross Summer Mathematics Program
50th anniversary reunion conference July 22, 2007
'Primes, polynomials, and patterns' – one of twelve invited speakers.

Maine/Québec number theory conference September 30, 2007
'Arithmetic properties of polynomial specializations over finite fields'

INTEGERS **conference (University of West Georgia)** October 25, 2007
'Arithmetic properties of polynomial specializations over finite fields'

Five college number theory seminar November 13, 2007
'The distribution of irreducible polynomials over finite fields'

Dartmouth College mathematics department colloquium January 31, 2008
'Prime polynomials'

Canadian Number Theory Association X July 16, 2008
'The distribution of irreducible polynomials over finite fields' (special session talk)

AMS sectional meeting (Urbana, IL)
session on number theory in the spirit of Erdős March 27, 2009
'Some problems concerning the fraction $\sigma(n)/n$'

Johns Hopkins number theory seminar October 6, 2009
'Prime polynomials'

INTEGERS **conference (University of West Georgia)** October 14, 2009
'Perfect numbers and their friends'

AMS sectional meeting (University Park, PA)
special session on analytic number theory,
special session on the arithmetic of function fields October 24, 2009
'The distribution of sociable numbers'
'New results on the distribution of irreducible polynomials over finite fields'

AMS/MAA Joint Meetings
special session on the arithmetic of function fields January 14, 2010
'Prime polynomials'

Dartmouth College mathematics department colloquium April 1, 2010
'Two thousand years of summing divisors'

Canadian Number Theory Association XI July 16, 2010
'Euler's function and sums of squares'

AMS/MAA Joint Meetings
AMS session on number theory (IV) January 9, 2011

'Sociable numbers, or *How I messed with perfection and lived to write papers about it.*'

University of Missouri February 9, 2011

'A perfect storm'

College of Charleston mathematics colloquium February 14, 2011

'A perfect storm'

University of Georgia mathematics colloquium April 11, 2011

'Adventures in arithmetic'

2011 Illinois Number Theory Conference May 27, 2011

'Parity of the multiplicative partition function'

Dartmouth College number theory seminar June 9, 2011

'How many primes can divide the values of a polynomial?'

The pretentious view of analytic number theory
Mathematics Research Communities 2011 workshop June 29, 2011

'Small sieves: a user-friendly introduction'

TEACHING EXPERIENCE

REGS mentor, University of Illinois

REGS stands for **R**esearch **E**xperiences for **G**raduate **S**tudents. I advised Joseph Vandehey and Paul Spiegelhalter. Their project, which involved studying "squares in polynomial product sequences," resulted in a paper currently under consideration at a research journal. For more details, see
`http://www.math.illinois.edu/REGS/regs-summer2009.html` Summer 2009

Instructor, University of Illinois

Math 347: Fundamental Mathematics	Fall 2008
Math 595: Advanced topics in elementary number theory ($\star$)	Spring 2009
Math 348: Fundamental Mathematics	Fall 2010
Math 241: Calculus III	Spring 2011

($\star$) Made UIUC's "List of teachers ranked as excellent" based on exceptional student evaluations.

Instructor, Dartmouth College

Math 3: Introduction to calculus	Fall 2006
Math 6: Finite mathematics	Summer 2007
Math 75: Applied topics in number theory and algebra (with Carl Pomerance)	Spring 2008

Teaching Seminar, Dartmouth College Summer 2006

Intensive summer-long training course taken by Dartmouth's post-qualifying exam graduate students. Includes reading and discussion of material on the philosophy and science of learning and teaching. Participants also design and execute two week-long mathematics workshops for high school students to gain hands-on teaching experience.

Counselor, Ross Summer Math Program (Ohio State University) Summers 2000, 2001, 2003

Lived in the dorms for eight-weeks alongside the high-schooler participants. Graded problem sets and answered student questions. Taught a course to other counselors on elementary/analytic number theory in 2003. Head counselor (joint with Jesse Kass) in 2003.

REFERENCES

Kevin Ford
Department of Mathematics
University of Illinois
Urbana, IL 61801
ford@math.uiuc.edu

Carl Pomerance
Department of Mathematics
Dartmouth College
Hanover, NH 03755
carl.pomerance@dartmouth.edu

Florian Luca
Instituto de Matemáticas
Universidad Nacional Autónoma de México
C.P. 58089, Morelia, Michoacán, México
fluca@matmor.unam.mx

Bruce Reznick
Department of Mathematics
University of Illinois
Urbana, IL 61801
reznick@math.uiuc.edu