Juliana V. Belding
Department of Mathematics
1 Oxford St
Harvard University
Cambridge, MA 02138
jbelding@math.harvard.edu
www.math.harvard.edu/~jbelding

EDUCATION

- **Ph.D. in Mathematics**, *May 2008*
  University of Maryland College Park, College Park, MD
  Thesis: *Number theoretic algorithms for elliptic curves*
  Advisor: Dr. Lawrence Washington
- **MA in Mathematics**, *May 2007*
  University of Maryland College Park, College Park, MD
  Scholarly Paper: *The Discrete Logarithm Problem on the p-torsion subgroup of elliptic curves*
  Advisor: Dr. Lawrence Washington
- **BA in Mathematics**, Summa Cum Laude, *May 2001*
  Bryn Mawr College, Bryn Mawr, PA
  Honors in Math, Minor in French.
  Thesis: *Computing fundamental units in quartic fields with two real and two complex embeddings*
  Advisor: Dr. Helen Grundman

TEACHING and related EXPERIENCE

- **Preceptor in Mathematics** Harvard University, Cambridge, MA, *Fall 2008-present*
  -Instructor and Course Coordinator for *Integrated Pre-calculus/Calculus* (coordinate syllabus, homework, workshops, and assessment for multiple sections)
  -Instructor and Assistant Course Coordinator for *Calculus I* and *Linear Algebra & Differential Equations*
  -Sole Instructor for *The Math of Symmetry: Topics from Discrete Math and Abstract Algebra*
  -Hire, train and supervise undergraduates as calculus course teaching assistants
  -Apprentice and mentor math graduate students in their role as course instructors
- **Instructor** Harvard University Summer School, Cambridge, MA, *Summer 2012*
  -Instructor for *Numbers, Mappings, and Mathematical Reasoning: An Introduction to Proof* for high-school and college students
- **Master Teacher Seminar Facilitator** Math for America, Boston and Boston University *Spring 2011-present*
  -Organize and lead monthly seminar for middle and high school master teachers on current issues in mathematics teaching/education (eg: implementing Common Core State Standards for Content and Mathematical Practice)
  -Supported teachers in design of summer seminar *Transformation and Number* about geometry and standards of math practice
- **Study Group Facilitator** Focus on Math Partnership, Boston, MA, *Spring 2010-present*
  -Co-facilitate twice-monthly study group for Cambridge Public School teachers (elementary-high school) designed to provide mathematical "research experiences" to expand content knowledge and further develop mathematical habits of mind

- **Assistant Director and Counselor** PROMYS for Teachers, Boston University, Boston, MA, *Summer 2009-10*
  -Assistant director and counselor for six-week immersion program in number theory for teachers
  -Supervised and supported fellow counselors; led weekly staff meetings
  -Organized weekly roundtables for program participants
  -Graded daily problem sets and led problem sessions
  -Mentored second-year teachers in independent projects

- **Instructor** Harvard University Extension School, Cambridge, MA, *Fall 2009*
  -Instructor for *Math For Teaching: Number Theory* course for pre-service and in-service teachers

- **Teaching Fellow, Center for the Scholarship of School Mathematics** Education Development Center, Inc., Newton, MA, *2007-8*
  -Co-taught *Researching Mathematics* course for math education doctoral students, UMd, Spring 2008.
  -Participant in seminar for math/education faculty to develop such a course, based on mathematical investigations of topics related to K-12 curricula.

- **Instructor/Teaching Assistant** University of Maryland, College Park, MD, *Fall 2004-Spring 2005, Summer 2007*
  -Instructor for *Elements of Numbers and Operations* for elementary education majors
  -TA for *Multivariable Calculus* and *Calculus I* for math and engineering majors
  -TA for *Calculus I* for social science and biology majors

- **Mathematics Teacher**, Solebury School, New Hope, PA, *2001-2002*
  -Taught Pre-Algebra, Algebra and Data Analysis to 7^{th}-12^{th} graders.

- **Dorothy M. Nepper Marshall Teaching Fellow**, Mathematics Department, Bryn Mawr College, *2001*
  -Led problem sessions, graded homework and quizzes for "transitional" proof-writing course for majors.
  -Co-wrote supplemental text on beginning topics in algebra, analysis and topology.

TALKS and PRESENTATIONS (most recent)

- **Designing Professional Development around the Common Core Standards for Mathematical Practice: A Mathematician-Teacher Collaboration** , MAA Session on The Mathematical Preparation of Teachers: The Impact of the Common Core State Standards Initiative, Joint AMS-MAA Meetings, Boston, MA, *January 2012*

- **The Common Core State Standards: What the Standards for Mathematical Practice Can Mean for Teachers and Mathematicians** with Ginger Warfield, Special Session on Intersections of Mathematics and Math Education: Research and Practice K-20, AWM Conference "40 Years and Counting: AWM's Celebration of Women in Mathematics", *September 2011*

- **Solving an M.C. Escher Mystery With Mathematics**
  Harvard University Math Table for Undergraduates, *February 2011*

- **Curves and Cryptography**
  Undergraduate Mathematics Colloquium, Amherst College, *October 2009*

- **Computing the Hilbert Class Polynomial Using p-adic Lifting**
  M.I.T. STAGE: Seminar on Topics in Arithmetic, Geometry, Etc., *May 2009*

- **"Mathematician" Meets "Math Educator": The Experience of Co-teaching a Math Inquiry Course**
  Mathematics Colloquium, University of New Hampshire, *April 2009*

- **Pairings on Elliptic Curves in Cryptography: Friend or Foe?**
  Harvard University Math Table for Undergraduates, *February 2009*

- **Posing and Pursuing One's Own Questions: Experiences of graduate students in math education and math**, with Eden Badertscher, Joint AMS-MAA Meetings, Washington, DC, *January 2009*
- **Curves and Cryptography**
  Mathematics Colloquium, Hobart and William Smith Colleges, *April 2008*
- **Curves, Cryptography and Primes of the form** $x^2 + Dy^2$
  Harvard University Math Table for Undergraduates, *February 2008*
- **A Weil Pairing on the** p**-torsion of Elliptic Curves over the Dual Numbers** $K[\epsilon]$
  AMS Special Session on Low Genus Curves Joint AMS-MAA Meetings, San Diego, CA, *January 2008*
- **Constructing Cryptographic Curves Using the Canonical Lift of Supersingular Elliptic Curves**
  AWM Workshop Poster Session, Joint AMS-MAA Meetings, San Diego, CA, *January 2008*

PUBLICATIONS and PREPRINTS

- *Pairings on Hyperelliptic Curves*. with J. Balakrishnan, S. Chisholm, K. Eisenträger, K. Stange, E. Teske
  Proceedings of the WIN Workshop, Banff International Research Station, Banff, Canada, Fields Institute Communication Series, 2009
- *Computing Hilbert class polynomials*, with R. Bröker, A. Enge, K. Lauter
  Proceedings of ANTS-VIII 2008, LNCS 5011, pp. 282-295, 2008
- *A Weil pairing on the* p*-torsion of elliptic curves over* $K[\epsilon]$
  Journal of Number Theory, Volume 128, Issue 6, June 2008, pp. 1874-1888

SERVICE, HONORS and MEMBERSHIPS

- **Co-organizer** Special Session "Intersections of Mathematics and Math Education: Research and Practice K-20" at AWM Conference "40 Years and Counting: AWM's Celebration of Women in Mathematics", *September 2011*
- **Harvard University Certificate of Teaching Excellence** from Derek Bok Center from Teaching and Learning, Fall 2010 for Math Ma and Math 152 and Spring 2011 for Math Mb
- **Co-organizer** Harvard Math Table, weekly undergraduate seminar with talks from undergrads, grads, and faculty and panels for about the mathematics major and applying to graduate school *Fall 2008-present*
- **Editor** EDGE (Enhancing Diversity in Graduate Education) Community Newsletter, Inaugural Issue, *Winter 2010*
- **Co-Organizer**, UMd Math Dept Graduation Conference, *Spring 2007-8*
- **Co-Organizer/Judge**, Spotlight on Graduate Research, *Fall 2004, 2006-7*
- **Selfridge Prize for Best Paper, ANTS VII** *Computing Hilbert class polynomials*, co-author, *May 2008*
- **Seymour Goldberg Prize for Written Exposition** , University of Maryland Math Department, *Spring 2007*
- **Excellence in Teaching Award, 3rd Place**, University of Maryland Math Department, *Fall 2004*
- **Professional Memberships** Mathematical Association of America; American Mathematical Association; Association for Women In Mathematics

CONFERENCES ATTENDED (most recent)

- **Teaching Modeling-Based Calculus** , Joint AMS-MAA Meetings, Boston, MA, *January 2012*
- **Knowledge of Mathematics for Teaching at the Secondary Level** Institute for Mathematics and Education, University of Arizona, *March 2011*
- **Inquiry-Based Learning** MAA PREP Workshop, University of Texas at Austin, *May 2010*
- **Increasing Student Success: Best Practices on Assessment, Preparation and Remediation with ALEKS**, McGraw-Hill and University of CT-Storrs, *April 2010*
- **WIN: Women In Numbers**, BIRS, Banff, Alberta, CA, *November 2008*
- **How to Build and Run a Successful Emerging Scholars Program**, MAA PREP Workshop, Washington, DC, *July 2008*

OTHER PROFESSIONAL EXPERIENCE

- **Research Intern**, Google, Inc., New York, NY, *Summer 2007*
  Designed and implemented C++ code to "find and replace" patterns in large-scale graphs.