

# Maria Belk

## Curriculum Vitae

Department of Mathematics

Texas A&M University

College Station, TX 77843-3368

Cell Phone: (979) 204-0842

E-mail: mbelk@math.tamu.edu

<http://www.math.tamu.edu/~mbelk>

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### Education:

- **Cornell University, Ph.D.**, Mathematics, August 2005.  
*Applications of Stress Theory: Realizing Graphs and Kneser-Poulsen*  
Advisor: Robert Connelly
- **Cornell University, M.S.**, Mathematics, May 2002.
- **Carleton College, B.A.**, Mathematics, June 1999.  
Magna Cum Laude with distinction in mathematics

### Professional Experience

- **Texas A&M University**, Visiting Assistant Professor, Department of Mathematics, August 2005 – Present.

### Research Interests

- Discrete Geometry, Computational Geometry, Graph Theory

### Publications and Preprints

- Monotonicity of the volume of the union of four balls in hyperbolic space. Submitted to *Contributions to Discrete Mathematics*.
- Making contractions continuous: a problem related to the Kneser-Poulsen conjecture (with Robert Connelly). Submitted to *Contributions to Discrete Mathematics*.
- Realizability of graphs (with Robert Connelly). *Discrete and Computational Geometry*. 37 (2007), no. 2, 125-137.
- Realizability of graphs in three dimensions. *Discrete and Computational Geometry*. 37 (2007), no. 2, 139-162.

### **Dissertation**

- *Applications of Stress Theory: Realizing Graphs and Kneser-Poulsen*. Ph.D. Thesis. Cornell University. 2005.

### **Conference Talks**

- “Realizing Graphs”, Discrete Geometry and Topology in Low Dimensions, Banff International Research Station, April 2007.
- “Realizability of Graphs”, Horizon of Combinatorics, July 2006.
- “Realizability of Graphs”, Discrete Geometry session, Canadian Mathematical Society Meeting, December 2004
- “Realizability of Graphs”, Modeling Protein Flexibility and Motions, Banff International Research Station, July 2004.

### **Conference Poster**

- “Realizability of Graphs”, AWM Workshop for Women Graduate Students and Recent Ph.D.’s, Joint Mathematics Meetings, January 2005.

### **Seminar Talks**

- “Problems related to the Kneser-Poulsen conjecture”, Texas A&M Algebra and Combinatorics seminar, September 2007.
- “Zombie Graphs”, Texas A&M Postdoc Colloquium, October 2006.
- “Realizability of Graphs”
  - SMTposium, Carleton College, June 2007.
  - Texas A&M Algebra and Combinatorics seminar November 2005.
  - Texas A&M Postdoc Colloquium, October 2005.
  - Binghamton University Combinatorics Seminar, Fall 2004.
  - Cornell Discrete Geometry and Combinatorics seminar, Fall 2004.
  - Cornell graduate student colloquium, November 2003.
- “Problems related to the Kneser-Poulsen conjecture in hyperbolic space”
  - Cornell Discrete Geometry and Combinatorics seminar, Fall 2003.
  - University of Calgary summer discrete geometry seminar, July 2003.
- “Polytopes and the Colin de Verdière number”, Cornell Discrete Geometry and Combinatorics seminar, Fall 2001.

## Teaching Experience

- **Texas A&M University**
  - Fall 2007 Instructor for Graduate Engineering Mathematics (linear algebra and vector calculus)
  - Spring 2007 Instructor for 2 sections of Differential Equations (Matlab used in class and on tests)
  - Fall 2006 Instructor for Engineering Calculus II (large lecture hall, 70 students, supervised a TA)
  - Spring 2006 Instructor for Linear Algebra
  - Fall 2005 Instructor for Graduate Engineering Mathematics (linear algebra and vector calculus)
- **Cornell University**
  - Fall 2003 Instructor for Calculus II
  - Fall 2002 Instructor for Calculus II
- **Teaching Assistant at Cornell University:** Teaching Assistant for several courses, including Engineering Calculus II, Multivariable Calculus, and Linear Algebra, between Fall 1999 and Spring 2005.
- **Grader at Cornell University:** Grader for 4 courses between Summer 2000 and Fall 2004: Math 294 (Engineering Mathematics II), Math 452 (Classical Geometries), Math 336 (Applicable Algebra), and Math 455 (Applicable Geometry).
- **Assistant to the Course Coordinator at Cornell University:** Aided the course coordinator for Math 192 in Fall 2001 and for Math 112 in Fall 2002.
- **Mathematics Content Liaison for Academic Excellence Workshop:** Aided communication between the mathematics department and undergraduate led collaborative learning sessions, Fall 2001, Cornell University.

## Outreach

- **Co-organizer and facilitator for “Expanding Your Horizons” math workshops:** Organized and led hands-on activities on topology, symmetry, the game of Nim, probability, and minimal surfaces for middle school girls. April 2000-2005 at Cornell University, and October 2006 and December 2007 at Texas A&M University.
- **Graduate Assistant for Math Explorers Club:** Assisted professors in leading modules. Designed and led computer activities for high school students in the Math Explorers Club, a program organized by Cornell University. Fall 2000-Spring 2002.

### **Honors and Grants**

- AWM Workshop for Women Graduate Students and Recent Ph.D.'s at the Joint Mathematics Meeting, January 2005.
- NSF VIGRE Grant, Spring 2001. Funding to design and lead computer activities for Math Explorers Club, a program run by the Cornell math department for high school students.
- NSF VIGRE Grant, Summer 2000 and 20001, Ph.D. research.
- Member of Phi Beta Kappa.

### **REU Experience**

- Participant in the 1998 Rose-Hulman Institute of Technology REU.

### **Professional Societies**

- American Mathematical Society (AMS).
- Association for Women in Mathematics (AWM).
- Mathematical Association of America (MAA).

### **References**

- Dr. Robert Connelly, Cornell University, [connelly@math.cornell.edu](mailto:connelly@math.cornell.edu)
- Dr. Károly Bezdek, University of Calgary, [bezdek@math.ucalgary.ca](mailto:bezdek@math.ucalgary.ca)
- Dr. Maria Terrell (teaching), Cornell University, [maria@math.cornell.edu](mailto:maria@math.cornell.edu)
- Dr. G. Donald Allen (teaching), Texas A&M University, [dallen@math.tamu.edu](mailto:dallen@math.tamu.edu)