Michelle Bodnar

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Education

University of California San Diego 2013 – Spring 2018 — La Jolla, CA
Mathematics PhD Advisor – Brendon Rhoades — GPA: 3.94
Master's of Arts in Mathematics, January 2016
Research focus: Algebraic Combinatorics, Rational Catalan Theory

University of Michigan 2009 – 2013 — Ann Arbor, MI
Bachelor's of Science in Mathematics — GPA: 3.54
Minors in Computer Science and Music

Technical Skills

- C++, algorithm design, LaTeX, MATLAB, HTML, Git, SQL, and Python

Work Experience

Senior Teaching Assistant of UCSD Mathematics department 2017-2018
- Trained approximately 70 incoming graduate students to be successful teaching assistants in the math department
- Helped organize open house and new student orientation
- Maintained Senior TA website for the entire math department

NREIP Intern at Naval Surface Warfare Center, Dahlgren Division Summer 2017
- Researched quantum t-designs and weak value measurements
- Developed a spherical 4-design of optimal size which works in any dimension

Associate Instructor at UCSD Summer 2016
- Taught Math 20C to classes of approximately 80 and 120 students during the summer and oversaw graduate student teaching assistants for the course

Teaching assistant at UCSD 2013-2017
- Mathematics for Algorithms, Discrete Math, Probability, Calculus, Partial Differential Equations, Real Analysis, Proofs

Canada/USA Mathcamp Summer 2015
- Taught algorithms course to advanced high school students

Collaborative Undergraduate Research Experience Program Summer 2015
- Mentored undergraduate researchers in hyperplane arrangements and Shi/Ish duality

University of North Carolina REU Summer 2012, 2013
- NSF funded research in partial words under advisor Francine Blanchet-Sadri
- Mentored undergraduate researchers and trained them to use LaTex, Beamer, and HTML.

University of Wyoming REU Summer 2011
- NSF funded research in solid angles under advisor Tyrrell MacAllister

Publications

- M. Bodnar. *Rational Noncrossing Partitions for all Coprime Pairs*. Submitted 25 January, 2017.
- M. Bodnar and B. Rhoades. *Cyclic sieving and rational Catalan theory*. Electronic Journal of Combinatorics, v.23, 2016.
- F. Blanchet-Sadri, et al. *New Bounds and Extended Relations Between Prefix Arrays, Border Arrays, Undirected Graphs, and Indeterminate Strings*. Theory of Computing Systems, pp 1-25 (January 2016).
- F. Blanchet-Sadri, et al. *Combinatorics on Partial Word Borders*. Theoretical Computer Science, Vol. 609 Issue P2, pp 469-493 (2016).
- F. Blanchet-Sadri, et al. *Squares and Primitivity in Partial Words*. Discrete Applied Mathematics, Vol. 185, pp 26-37 (2015).

Awards

- UCSD Mathematics Teaching Award 2017
- James B. Ax Fellowship from UCSD 2013
- Outstanding Poster Presentation Award from AMA 2012
- Michigan Marching Band Scholarship 2012
- Evelyn O. Bychinsky Award (U of M Math Department) 2011

Conferences

- Joint Mathematics Meetings. Boston, Massachusetts. 2012.
- Conference on Language and Automata Theory and Applications. Bilbao, Spain. 2013.
- Graduate Student Combinatorics Conference. Lawrence, Kansas. 2017.

Talks

- Graduate Student Combinatorics Conference. *Rational Catalan Combinatorics.* Lawrence, Kansas. April 2017.
- Food for Thought Seminar. *A Combinatorialist's Rebuttal*. University of California, San Diego. March 2017.
- Graduate Student Workshop in Algebra, Number Theory, and Algebraic Geometry. *Rational Catalan Combinatorics: An Algebraic Approach.* December 2016.
- Food for Thought Seminar. *Adventures in Coding Theory*. University of California, San Diego. May 2016.
- Food for Thought Seminar. *Greedy Algorithms and Matriods*. University of California, San Diego. April 2015.

Other Experience

- Coauthored solutions to all 1115 problems in *Introduction to Algorithms,* better known as CLRS. They can be found on my website.

- Co-organizer of the Food For Thought seminar at UCSD
- Helped initiate daily coffee hour in UCSD's math department to facilitate more faculty-student interactions on a regular basis
- Served as referee for the Journal of Computer and System Sciences, International Journal of Foundations of Computer Science, and European Journal of Combinatorics.
- Started the mathematics graduate student mentor program at UCSD which pairs incoming PhD students with current students to foster a sense of community and ease the transition to graduate life.

Related Coursework

- Artificial Intelligence
- Coding Theory
- Combinatorics
- Convex Optimization
- Cryptography
- Data Structures and Algorithms
- Numerical Analysis
- Probability / the probabilistic method