Padraic Bartlett

CONTACT INFORMATION

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EMPLOYMENT

Department of Mathematics/College of Creative Studies(CCS), UCSB

Career Lecturer with Potential Security of Employment (July 2013 -)

- Teaching duties: A (3/3/3) teaching load of upper- and lower-division courses in the Letters and Sciences (L&S) and CCS Mathematics departments.
- Research duties: collaborating and supervising with multiple undergraduates on research projects in graph theory and discrete mathematics, as well as maintaining my own research interests.
- Advising duties: close mentoring and supervision for the students of the even-year CCS Mathematics classes throughout their four-year career at UCSB.
- Recruiting duties: running admissions and selecting the students for the even-year CCS Mathematics classes.

EDUCATION

Department of Mathematics, California Institute of Technology

Ph.D. in Mathematics under Richard M. Wilson, June 2013.

- Dissertation topics: Latin squares, NP-completeness, graph decompositions.

University of Chicago

B.A. in Mathematics, June 2008.

TEACHING EXPERIENCE

AY 2013-2014: Math 7H, CCS 103, Math 137A/B, Math 108A/B; UCSB.

- I created materials for, designed, and taught multiple year-long (Math 7H, CCS 103) and quarter-long (Math 137A, Math 137B, Math 108A, Math 108B) courses catering to students in the L&S and CCS mathematics departments at UCSB. All of these courses were designed or redesigned from scratch, with each quarter of almost every class featuring north of a hundred pages of typeset notes comprising a class text, novel problem sets, tests, and quizzes. Several of these classes featured techniques from IBL or "flipped" classroom teaching methods, and emphasized student involvement and participation in shaping the class and curricula. Student evaluations for these courses ranged from 1.0 to 1.3 on a 1-5 scale (smaller numbers being better,) as compared to departmental averages of around 2.3/5.

AY 2010-2013: Math 8 / Math 1d / (various); Caltech.

- I designed and taught multiple classes for first-year Caltech undergraduates on proof methods, calculus, and analysis. Classes were designed completely from scratch, with each class containing its own sets of 100+ pages of typeset notes creating a class text, problem sets, and tests. Student ratings for these courses averaged $> 4.8/5$ (larger numbers being better) over each run that I taught. To put these numbers in context: the overall student ratings for each run of any of these classes were the highest amongst all courses concurrently taught throughout the entire Caltech university[1].

Summer 2010-2014: Mentor, Faculty; Canada/USA Mathcamp.

- I designed and taught courses ranging from proof methods to spectral graph theory for talented high school students at the Canada/USA Mathcamp. Additionally, I ran research projects into open questions in combinatorics for several groups of students each summer. Students have turned work from these projects into poster sessions for local mathematics conferences, state science fair first prizes, and Intel ISEF finalist berths.

[1] As compared to other courses with at least 10 evaluations.

Publications

P. Bartlett, *Completions of ϵ-Dense Partial Latin Squares,* Journal of Combinatorial Designs, Vol. 21: 447-463. doi: 10.1002/jcd.21355

Grants and Awards

National Science Foundation, *REU Site: UCSB Mathematics Summer Research Program for Undergraduates.* Co-PI with Prof. Cachadina. A three-year grant for a REU on the UCSB campus, that will support twelve undergraduates and one graduate student for eight weeks each summer. ($345,600.)

Conferences and Seminars

Conference Talks Given:

2012: *Completing $\leq\epsilon$-dense partial latin squares.*
Versions of this talk given at the 17th Coast Combinatorics Conference, University of Victoria (October 2012), 26th Midwestern Conference on Combinatorics, Cryptography, and Computing, Southern Utah University (October 2012), and WilsonFest 2012, California Institute of Technology (March 2012).

Seminar Talks Given:

2014: *The Unit Distance Graph Problem and the Axiom of Choice.* UCSB Discrete Geometry seminar.
2014: *NP-Completeness and Latin Squares.* UCSB Discrete Geometry seminar.
2013: *Quasirandom Graphs.* UCSB Discrete Geometry seminar.
2012: *Random and Quasirandom Graphs.* Caltech Graduate Student Seminar.
2011: *Completing Sparse Partial Latin Squares.* Caltech Combinatorics Seminar.
2010: *How to Not Prove the Four-Color Theorem.* Canada/USA Mathcamp.

Conferences and Workshops Attended:

2014: MAA MathFest, Portland, OR. Project NExT workshop participant.
2014: Joint Mathematics Meetings, Baltimore, MD. Project NExT workshop participant.
2013: MAA MathFest, Hartford, CT. Project NExT workshop participant.
2013: MAA Prep IBL Workshop, California Polytechnic State University.
2012: 17th Coast Combinatorics Conference, University of Victoria.
2012: 26th Midwestern Conference on Combinatorics, Cryptography, and Computing, Southern Utah University.
2012: WilsonFest 2012, California Institute of Technology.
2010: 24th Midwestern Conference on Combinatorics and Combinatorial Computing, Illinois State University
2009: IPAM Workshop IV: Topics in Graphs and Hypergraphs, UCLA.

Honors and Awards

2013-14: Project NExT fellow, MAA
2011: Apostol Award for Excellence in Teaching, Caltech.
2010: Johnson Prize for Excellence in Teaching, Caltech.
2010: ASCIT Teaching Award, Caltech.
2008: Paul R. Cohen Prize in Mathematics, University of Chicago.