

JONATHAN CUTLER
CURRICULUM VITÆ

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POSITIONS HELD

2012–present	Associate Professor, Montclair State University
2016–2017	Acting Chair, Department of Mathematical Sciences, Montclair State University
2007–2012	Assistant Professor, Montclair State University
2005–2007	Research Assistant Professor, University of Nebraska-Lincoln
Fall 2004	Post-doctoral Research Fellow, Umeå University, Umeå, Sweden
2000–2004	Van Vleet Memorial Doctoral Research Assistant, University of Memphis
1998–2000	Graduate Teaching Assistant, University of Memphis

EDUCATION

2004	Ph.D., University of Memphis, Memphis, TN Dissertation: <i>Extremal and Algebraic Graph Theory</i> Advisor: Dr. Béla Bollobás
2000	M.Sc., University of Memphis, Memphis, TN Thesis: <i>The Matthews-Sumner Conjecture</i> Advisor: Dr. Richard Schelp
1998	B.A., Carleton College, Northfield, MN

RESEARCH PAPERS

22. “Enumerative Nordhaus-Gaddum inequalities” with D. Bal, in preparation.
21. “Supersaturation for subgraph counts” with JD Nir[†] and A. J. Radcliffe, submitted.
20. “Homomorphisms into loop-threshold graphs” with N. Kass*, *Electronic J. of Combin.* **27** (2020), P2.38.
19. “Minimizing the number of independent sets in triangle-free regular graphs” with A. J. Radcliffe, *Discrete Math.* **341** (2018), 793-800.
18. “The maximum number of complete subgraphs of fixed size in a graph with given maximum degree” with A. J. Radcliffe, *J. Graph Theory* **84** (2017), 134-145.
17. “Maximal-clique partitions and the Roller Coaster Conjecture” with L. Pebody, *J. Combin. Theory Ser. A* **145** (2017), 25-35.
16. “The multistep Friendship Paradox” with J. Brown Kramer and A. J. Radcliffe, *Amer. Math. Monthly* **123** (2016), 900-908.
15. “A note on the values of independence polynomials at -1 ” with N. Kahl, *Discrete Math.* **339** (2016), 2723-2726.

[†]Ph.D. student

*Undergraduate student

14. “Counting dominating sets and related structures in graphs” with A. J. Radcliffe, *Discrete Math.* **339** (2016), 1593-1599.
13. “Extremal graphs for homomorphisms II” with A. J. Radcliffe, *J. Graph Theory* **76** (2014), 42-59.
12. “The maximum number of complete subgraphs in a graph with given maximum degree” with A. J. Radcliffe, *J. Combin. Theory Ser. B* **104** (2014), 60-71.
11. “Hypergraph independent sets” with A. J. Radcliffe, *Combin. Probab. Comput.* **22** (2013), 9-20.
10. “Independent sets in graphs with given minimum degree” with J. Alexander[†] and T. Mink[†], *Electronic J. of Combin.* **19(3)** (2012), #P37.
9. “Extremal problems for independent set enumeration” with A.J. Radcliffe, *Electronic J. Combin.* **18(1)** (2011), #P169.
8. “Extremal graphs for homomorphisms” with A.J. Radcliffe, *J. Graph Theory* **67** (2011), 261-284.
7. “Negative dependence and Srinivasan’s sampling process” with J. Brown Kramer and A.J. Radcliffe, *Combin. Probab. Comput.* **20** (2011), 347-361.
6. “An entropy proof of the Kahn-Lovász theorem” with A.J. Radcliffe, *Electronic J. of Combin.* **18(1)** (2011), #P10.
5. “The interlace polynomial of forests” with C. Anderson*, with A.J. Radcliffe and L. Traldi, *Discrete Math.* **310** (2010), 31-36.
4. “Trees through specified vertices,” *Discrete Math.* **309** (2009), 2749-2754.
3. “Unavoidable subgraphs of colored graphs” with B. Montágh. *Discrete Math.* **308** (2008), 4396-4413.
2. “Latin squares with forbidden entries” with L.-D. Öhman. *Electronic J. of Combin.* **13** (2006), #R47.
1. “The interlace polynomial of graphs at -1 ” with P. Balister, B. Bollobás, and L. Pebody. *European J. of Combin.* **23** (2002), 761-767.

TECHNICAL REPORTS/SURVEYS

2. “Coloring graphs with graphs: a survey,” *Graph Theory Notes N.Y.* **63** (2012), 7-16.
1. “Cycle double covers of graphs with disconnected frames” with R. Häggkvist. Research report 6, 2004, Department of Mathematics, Umeå University.

AWARDS AND GRANTS

2017-2022	Simons Foundation Collaboration Grant for “Problems related to the enumeration of independent sets in graphs”
2015-2017	NSA Mathematical Sciences Program Young Investigators Grant for “Enumerative extremal problems”
2012	Monclair State University (MSU) College of Science and Mathematics (CSAM) Outstanding Academic Advising Award
2008-2009	MSU CSAM interdisciplinary grant for “Investigating land use change using cellular automata”

[†]Master’s student

*Undergraduate student

2007	Co-PI on National Sciences Foundation grant for Random Combinatorial Structures conference
2006-2007	Project NExT Fellow (Sepia Dot), MAA and University of Nebraska-Lincoln, sponsors
2000-2004	Van Vleet Memorial Doctoral Research Fellowship

INVITED LECTURES

January 2022	“Enumerative Nordhaus-Gaddum inequalities,” Special Session on Topics in Extremal Combinatorics, Joint Mathematical Meetings, Seattle, WA
July 2021	“Enumerative Nordhaus-Gaddum inequalities,” Minisymposium on Graphs and Geometries, SIAM Conference on Discrete Mathematics, virtual meeting
April 2021	“Enumerative Nordhaus-Gaddum inequalities,” Discrete Mathematics seminar, University of Nebraska-Lincoln
April 2021	“Enumerative Nordhaus-Gaddum inequalities,” AMS Sectional Meeting, Special Session on Graph Theory and Applications, virtual meeting
April 2020	“Counting independent sets,” Mathematics Department Colloquium, Towson University (cancelled due to COVID-19)
March 2020	“Nordhaus-Gaddum-type inequalities,” AMS Sectional Meeting, Special Session on Recent Advances in Graph Theory and Combinatorics, Charlottesville, VA (cancelled due to COVID-19)
September 2019	“Nordhaus-Gaddum-type inequalities,” AMS Sectional Meeting, Special Session on Extremal Graph Theory, Madison, WI
October 2018	“A proof of the Roller Coaster Conjecture,” MAA-NJ Invited Paper Session on Graph Theory, Montclair State University, Montclair, NJ
September 2018	“Supersaturation in extremal enumeration,” AMS Sectional Meeting, Special Session on Graph Theory, Newark, DE
April 2018	“Supersaturation in extremal enumeration,” Graph Theory Day 75, Brooklyn College (CUNY), Brooklyn, NY
April 2018	“Supersaturation in extremal enumeration,” AMS Sectional Meeting, Special Session on Algebraic and Extremal Graph Theory, Boston, MA
October 2016	“Minimizing the independence polynomial for regular graphs,” AMS Sectional Meeting, Special Session on Extremal and Probabilistic Combinatorics, Minneapolis, MN
March 2016	“A Proof of the Roller Coaster Conjecture,” Discrete Mathematics Seminar, University of Delaware, Newark, DE
March 2016	“A Proof of the Roller Coaster Conjecture,” AMS Sectional Meeting, Special Session on Graph Vulnerability Parameters and Their Role in Network Analysis, Stony Brook, NY
October 2015	“The k -step Friendship Paradox,” AMS Sectional Meeting, Special Session on Probabilistic Combinatorics, Memphis, TN
October 2015	“A Proof of the Roller Coaster Conjecture,” AMS Sectional Meeting, Special Session on Graph Theory, Hypergraphs, and Set Systems, Chicago, IL
April 2015	“A Proof of the Roller Coaster Conjecture,” New York Combinatorics Seminar, CUNY Graduate Center, New York, NY
March 2015	“A Proof of the Roller Coaster Conjecture,” Mathematics Department Seminar, William Paterson University, Haledon, NJ
March 2015	“A Proof of the Roller Coaster Conjecture,” Discrete Mathematics Seminar, University of Nebraska-Lincoln, Lincoln, NE
November 2014	“Coloring graphs with graphs,” Mathematics Department Colloquium, Wesleyan University, Middletown, CT
October 2013	“Independent sets in graphs with given minimum degree,” Graph Theory and Combinatorics Seminar, University of Illinois at Urbana-Champaign, Urbana, IL

October 2013	“Independent sets in graphs with given minimum degree,” Rutgers Discrete Math Seminar, Rutgers University, New Brunswick, NJ
March 2013	“Extremal problems for homomorphisms,” Graph Theory and Combinatorics Seminar, University of Illinois at Urbana-Champaign, Urbana, IL
February 2013	“Coloring graphs with graphs,” Undergraduate Mathematics Colloquium, Monmouth University, West Long Branch, NJ
September 2012	“Hypergraph independent sets,” AMS Sectional Meeting, Special Session on New Advances in Graph Theory, Rochester, NY
April 2012	“Coloring graphs with graphs,” Plenary Lecture, Graph Theory Day 63, Fairleigh Dickinson University, Hackensack, NJ
October 2011	“Independent sets in graphs with given minimum degree,” AMS Sectional Meeting, Special Session on Extremal and Probabilistic Combinatorics, Lincoln, NE
July 2011	“Extremal problems related to graph homomorphisms,” 28th Brazilian Colloquium of Mathematics, Instituto Nacional de Matemática Pura e Aplicada (IMPA), Rio de Janeiro, Brazil
May 2011	“Extremal problems for homomorphisms,” Combinatorial and Additive Number Theory (CANT 2011), CUNY Graduate Center, New York, NY
May 2011	“Extremal problems related to homomorphisms,” AMS Sectional Meeting, Special Session on Probabilistic and Extremal Combinatorics, Las Vegas, NV
March 2011	“Extremal problems related to homomorphisms,” New York Combinatorics Seminar, CUNY Graduate Center, New York, NY
December 2010	“Coloring graphs with graphs,” Discrete Mathematics Seminar, Seton Hall University, South Orange, NJ
November 2010	“Hypergraph independent sets,” AMS Sectional Meeting, Special Session on Graphs and Hypergraphs, South Bend, IN
November 2010	“Coloring graphs with graphs,” Mathematics Department Colloquium, University of Fairfield, Fairfield, CT
October 2010	“Hypergraph independent sets,” Discrete Mathematics Seminar, University of Delaware, Newark, DE
May 2010	“Extremal problems for homomorphisms,” AMS Sectional Meeting, Special Session on Graph Theory, Newark, NJ
May 2009	“Negative dependence and Srinivasan’s sampling process,” 22nd Cumberland Conference on Combinatorics, Graph Theory and Computing, Bowling Green, KY
March 2009	“Extremal problems for counting homomorphisms,” AMS Sectional Meeting, Special Session on Extremal and Probabilistic Combinatorics, Urbana-Champaign, IL
January 2009	“Entropy inequalities,” SIAM Mini-symposium on Graph Theory, AMS-MAA Joint Meetings, Washington, DC
May 2008	“Extremal problems for counting homomorphisms,” International Conference on Interdisciplinary Mathematical and Statistical Techniques, Memphis, TN
April 2008	“The interlace polynomial of graphs,” Mathematics Department Seminar, Lafayette College
October 2007	“Negative dependence and Srinivasan’s sampling process,” AMS Sectional Meeting, Special Session on Extremal and Probabilistic Combinatorics, Chicago, IL
February 2007	“On the number of complete bipartite subgraphs of a graph,” Department of Mathematical Sciences Seminar, Montclair State University
January 2007	“On the number of complete bipartite subgraphs of a graph,” Mathematics Department Colloquium, University of Nebraska–Lincoln
November 2006	“On the number of complete bipartite subgraphs of a graph,” AMS Sectional Meeting, Special Session on Extremal and Probabilistic Combinatorics, Fayetteville, AR
April 2005	“Latin squares with forbidden entries,” AMS Sectional Meeting, Special Session on the Probabilistic Paradigm in Combinatorics, Dover, DE
February 2005	“On the cycle double cover conjecture,” Mathematics Department Colloquium, University of Nebraska–Lincoln

March 2003 “The geodetic number of digraphs,” Mathematics Department Colloquium, Gettysburg College, Gettysburg, PA

CONFERENCES ORGANIZED

September 2016 Special Session on New Developments in Graph and Hypergraphs, AMS Eastern Sectional Meeting, Bowdoin, ME. With Deepak Bal and Jozef Skokan.
 April 2016 Special Session on Probabilistic and Extremal Combinatorics, AMS Central Sectional Meeting, Fargo, ND. With Jamie Radcliffe.
 April 2007 Random Combinatorial Structures supported by the NSF, Lincoln, NE. With Jamie Radcliffe.
 October 2005 Special Session on Graph Theory, AMS Central Sectional Meeting, Lincoln, NE. With Jamie Radcliffe.

MENTORING EXPERIENCE

GRADUATE STUDENTS

2021-present Rachel Lopez
 2021-present Kyle Robbins
 2019-2020 Daniel Arabia
 2012-2014 Matthew Jakubowski
 2011-2013 Miriam Parnes
 2011-2013 Melissa Fuentes
 2011-2013 Tim Mink
 2010-2012 James Alexander
 2009-2011 Leslie Cheteyan
 2008-2010 Ashish Gupta

UNDERGRADUATE STUDENTS

2019-2020 Rachel Lopez
 2016-2018 Kevin Weatherwalks
 2015-2017 Andrew Pallotto
 2012-2014 Bradford Morris
 2012-2014 Steven Kuipers
 2011-2012 Alejandro Bequillard
 2011-2012 Nicholas Kass
 Spring 2011 Erick Szentmiklosy
 Spring 2010 Jonathan Ballone
 Spring 2008 Brian Perkins

TEACHING EXPERIENCE

MONTCLAIR STATE UNIVERSITY

Fall 2021 Calculus II
 Topology
 Spring 2021 Calculus II
 Foundations of Modern Algebra
 Fall 2020 Calculus II
 Spring 2020 Calculus I
 Topology (Graduate)

Fall 2019	Calculus I Advanced Calculus I/Intermediate Analysis I (Graduate)
Spring 2019	Calculus I
Fall 2018	Calculus II Linear Algebra I (Graduate)
Spring 2018	Calculus II Advanced Calculus I/Intermediate Analysis I (Graduate)
Fall 2017	Calculus I Advanced Calculus I
Spring 2017	Topology
Fall 2016	Theory of Numbers
Spring 2016	Calculus II Topology (Graduate)
Fall 2015	Transitions to Advanced Mathematics Graph Theory (Graduate)
Spring 2015	Calculus III Transitions to Advanced Mathematics
Fall 2014	On Sabbatical
Spring 2014	Calculus I Combinatorial Mathematics (Graduate)
Fall 2013	Linear Algebra Foundations of Modern/Abstract Algebra
Spring 2013	Calculus III Topology
Fall 2012	Calculus III Topics for Undergraduates: The Probabilistic Method
Spring 2012	Calculus I Advanced Calculus I/Intermediate Analysis I (Graduate)
Fall 2011	Calculus II Graph Theory (Graduate)
Spring 2011	Probability
Fall 2010	New Student Experience in the Mathematical Sciences Calculus II Applied Combinatorics and Graph Theory
Spring 2010	Calculus I Theory of Numbers
Fall 2009	Probability Combinatorial Mathematics (Graduate)
Spring 2009	Contemporary Applied Mathematics for Everyone Topology
Fall 2008	Contemporary Applied Mathematics for Everyone Graph Theory (Graduate)
Spring 2008	Calculus I Development of Mathematics
Fall 2007	Calculus I Development of Mathematics

JOURNALS REFEREED

AKCE International Journal of Graphs and Combinatorics, American Mathematical Monthly, Annals of Combinatorics, Ars Combinatoria, Australasian Journal of Combinatorics, Combinatorics, Probability and Computing, Discrete Applied Mathematics, Discrete Mathematics, Electronic Journal of Combinatorics, Entropy, European Journal of Combinatorics, Graphs and Combinatorics, Involve, Journal of Combinatorial Theory, Series A, Journal of Combinatorial Theory, Series B, Journal of Graph Theory, Random Structures

& Algorithms, Rocky Mountain Journal of Mathematics, SIAM Journal of Discrete Mathematics, Utilitas Mathematica

SERVICE

COLLEGE AND UNIVERSITY

2020-present	Chair of Department Personnel Action Committee (DPAC), Department of Physics and Astronomy
2018	Member of search committee for the Dean of the College of Science and Mathematics (CSAM)
2013-2016	Chair, Academic Affairs Council, University Senate
2010-2016	Senator representing CSAM, University Senate
2015-2016	Member of search committee for CSAM budget manager
2015-2016	Member of search committee for Red Hawk Math Learning Center Director
2008-2010	Member of the CSAM seminar committee
2010-2011	Member of search committee for Red Hawk Math Learning Center Director

DEPARTMENT

2020-present	Graduate Program Coordinator, Department of Mathematics
2020-2021	Member of Master's Thesis committee for Cheyenne Petzold
2019-2020	Member of Master's Thesis committee for Ely Schudrich
Fall 2020	Member of DPAC
Fall 2019	Chair of the DPAC
2019-2020	Member of Master's Thesis committee for Somia Benali
2017-2020	Calculus course coordinator
2011-2020	Member of the Faculty Advisory Board to the Red Hawk Math Emporium
2017-2020	Putnam Examination co-coach, Montclair State University
2018-2019	Member of DPAC
2017-2018	Adjunct hiring committee
2017-2018	Member of Master's Thesis committee for Giancarlo LaBruna
2017-2018	Member of Master's Thesis committee for Joseph DeGaetani
2017-2018	Member of Master's Thesis committee for Adam Cartisano
2016-2017	Acting Chair, Department of Mathematical Sciences
2011-2016	Founder and mentor to the MSU Mathematics Problem Solving Group
2015-2016	Member of Master's Thesis committee for James Johnston
2015-2016	Member of ad-hoc committee for graduate assistant assignment
2010-2015	Member of Professional Master's Organizing committee and sub-committee
2009-2015	Putnam examination coach, Montclair State University
2014-2015	Member of search committee for tenure-track position in discrete mathematics
2014-2015	Member of Master's Thesis committee for Christian Hyra
2013-2014	Member of DPAC
2011-2013	Montclair State University SIAM Student Chapter Faculty Advisor
2008-2013	Co-founder and organizer of the Montclair State University discrete math seminar
2012-2013	Member of Master's Thesis committee for Drew O'Neill
2012-2013	Member of Master's Thesis committee for Francesca Pizzigoni
2011-2012	Member of Master's Thesis committee for Stewart Hengeveld
2010-2011	Member of Master's Thesis committee for Jennifer Feiner
2010-2011	Member of Master's Thesis committee for Emel Demirel
2009-2011	Chair of special interest group (SIG) in Pure and Applied Mathematics
2009-2011	GK-12 program research advisor for Leslie Cheteyan
2007-2010	Member of New Doctoral Program Proposal committee
2009-2010	Member of Master's Thesis committee for Michael Wilson

2009-2010	Member of the search committee for tenure-track position in applied mathematics
2007-2009	Editor of Department of Mathematical Sciences newsletter
2007-2008	Member of the search committee for tenure-track position in applied mathematics

OTHER

2021-present	Project NExT Consultant
2021-present	External reviewer for tenure, University of Houston-Victoria
2021-present	External reviewer for tenure, Grand Valley State University
2013-present	Kappa Mu Epsilon Corresponding Secretary (NJ Beta Chapter), Montclair State University
2011-present	Co-organizer of the New York Combinatorics Seminar, CUNY Graduate Center
2008-present	Reviewer for Mathematical Reviews/MathSciNet
2020-2021	Member of dissertation committee for Melissa Fuentes, University of Delaware
Summer 2020	Grant proposal reviewer for the Czech Science Foundation
2019-2020	External reviewer for B.S. in Mathematics Program, Department of Mathematics and Computer Science, Seton Hall University
2015-2016	Member of AMS panel to improve MathSciNet/Mathematical Reviews
2015-2016	Member of dissertation committee for James Alexander, University of Delaware
April 2011	Presider for Joint GSUMC-MAA Talk at the MAA-NJ Spring Meeting
April 2011	Panelist on NJ-NExT panel at MAA-NJ Spring Meeting
2010-2011	Invited member of <i>Nature</i> Reader Panel

PROFESSIONAL SOCIETIES

1999-present	American Mathematical Society
2004-present	Mathematical Association of America