Curriculum Vitae
Neal Bushaw

BASIC INFORMATION

Name:	Neal Owen Bushaw
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EMPLOYMENT

Aug. 2013+	**Visiting Assistant Professor**, *Arizona State University*, Tempe, AZ, USA.
2014	**Postdoctoral Researcher**, *Instituto Nacional de Matemática Pura e Aplicada*, Rio de Janeiro, Brazil.
2008 – 2012	**Graduate Research Assistant**, *University of Memphis*, Memphis, TN, USA.
2006 – 2008	**Graduate Teaching Assistant**, *Western Washington University*, Bellingham, WA, USA.
2006 – 2007	**Quality Assurance**, *Thomson Learning (now Cengage).*

EDUCATION

2008 – 2012.	**Ph.D., Mathematics**, *University of Memphis*, Memphis, TN, USA.
Advisor:	Dr. Béla Bollobás
Dissertation:	*Problems in Extremal Combinatorics*
Area of Focus:	Extremal and probabilistic combinatorics
Awards/Grants:	Graduate Research Assistant
	Grants/Travel Funding from NSF, AMS, MAA, ICM, CIME, IPAM, Georgia State University, University of Memphis, Renyi Institute, and many others to attend conferences, workshops, and summer schools.
2006 – 2008	**M.S., Mathematics**, *Western Washington University*, Bellingham, WA, USA.
Advisor:	Dr. Amites Sarkar
Area of Focus:	Ramsey Theory, Graph Theory
Master's Colloquium:	*Ramsey Theory and Its Applications*
Awards/Grants:	Richard Greene Academic Excellence Scholarship
	Graduate Teaching Assistant
	Grants/Travel Funding from AMS, MAA, AMATYC, Western Washington University, University of Memphis to attend conferences and workshops.
2002 – 2006	**B.A., Mathematics**, *University of Colorado*, Boulder, CO, USA.

Minor: Computer Science

Awards: Mathematics Department Problem of the Month, Feb 2005.

Mathematics Department Problem of the Month, Jan 2004.

Deans List, each semester Spring 2004 - Spring 2006.

TEACHING

(Teaching philosophy, evaluations, teaching logs, sample course materials, etc. are available upon request.)

2013 – **Visiting Assistant Professor**, *Arizona State University*, Tempe, AZ, USA.

- **Nominee:** College of Liberal Arts and Sciences Outstanding Lecturer Award (AY 2013-2014)
- **Nominee:** College of Liberal Arts and Sciences Outstanding Lecturer Award (AY 2014-2015)
- **Courses taught:**
  - MAT 194: CLAS Early Start Program, Mathematics: (∼ 20 students). Two week intensive program, for incoming mathematics students identified as 'at-risk'. Responsible for design and implementation of the mathematical portions, 3 hrs per day for the two weeks before start of classes.)
  - MAT 243: Discrete Math Structures: Fall 2016 (∼ 55 students).
  - MAT 265: Calculus for Engineers I: Fall 2016 (∼ 80 students).
  - MAT 266: Calculus for Engineers II: Fall 2016 (∼ 80 students).
  - MAT 275: Modern Differential Equations: Fall 2013 (2 Sections, ∼85 students per section).
  - MAT 300: Mathematical Structures: Fall 2014, Fall 2015, Spring 2017 (2 sections) (∼35 students per section).
  - MAT 416/513: Introduction to Graph Theory: Spring 2017 (∼35 students).
  - MAT 516: Graph Theory I: Fall 2014, Fall 2015 (∼15 students per section).
  - MAT 517: Graph Theory II: Spring 2015, Spring 2016, Spring 2017 (∼3-8 Students per section).
  - MAT 792: Research: Fall 2015, Spring 2016 (1 Student).

2008 – 2012 **Graduate Teaching Assistant**, *University of Memphis*, Memphis, TN, USA.

- **Courses taught:**
  - MATH 1710: College Algebra, Spring 2011 (2 Sections, ∼25 Students per section) .

2006 – 2008 **Graduate Teaching Assistant**, *Western Washington University*, Bellingham, WA, USA.

- **Courses taught:**
  - MATH 112: Functions and Algebraic Methods: Fall 2006. (∼35 students)
  - MATH 114: Precalculus I: Winter 2007, Spring 2007, Fall 2007. (∼35 students per section)
  - MATH 115: Precalculus II: Winter 2008. (∼35 students per section)
  - MATH 157: Business Calculus: Spring 2008. (∼60 students)

RESEARCH INTERESTS

Overview: My interests lie primarily within combinatorics, that area of mathematics which studies finite discrete structures. I am particularly interested in new aspects of the classical forbidden subgraph problem in graphs and hypergraphs, the structure of sum-free sets, and the use of probability in deterministic settings.

Keywords: Extremal combinatorics; set systems; graph theory; Turán theory; probabilisitic methods.

Subject Classifications: 05C05, 05C15, 05C35, 05C55, 05C65, 05C80, 05D05, 05D10, 05D40 (*2010 AMS Subject Classifications).*

FUNDING

2015 AZComp Fellow, Arizona Computing Postdoctoral Academy.

2015 CIDSE Postdoc Best Practices Travel Award.

2014 CNPq Bolsa Pos-Doutorado Junior. Funding for postdoctoral research position at Instituto Nacional de Matemática Pura e Aplicada for Jan-Jul 2014.

2013 FAPeSP Combinatorial structures and Optimization Algorithms in the Theory of Computing. Grant awarded, but unable to participate due to residency restrictions.

PUBLICATIONS

In Preparation: N. Bushaw, K. D'Amours. *Variants of Revolutionaries and Spies.*

N. Bushaw, A. Czygrinow, J. Yie. *Even Cycles in Dense 2-Connected Graphs.*

Submitted: N. Bushaw, N. Kettle. *Turán Numbers for Multiple Copies of Forestable Graphs.*

N. Bushaw, N. Kettle. *Thresholds for Pebbling on Grids.*

To Appear: N. Bushaw, K. Gunderson, S. Kalikow. *Random-step Markov Processes*, Israel Journal of Mathematics.

J. Balogh, N. Bushaw, M. Collares Neto, H. Liu, R. Morris, M. Sharifzadeh. *The Typical Structure of Graphs with No Large Cliques*, Combinatorica.

Published: N. Bushaw, R. Morris, M. Collares Neto, P. Smith. *The Sharp Threshold for Maximum-size Sum-free Subsets of Even-order Abelian groups*, Combinatorics, Probability and Computing **20**, no. 4, pp 609-640. (2015)

N. Bushaw, N. Kettle. *Turán Numbers for Forests of Paths in Hypergraphs.* SIAM J. Discrete Math **28-2**, pp 711-721. (2014)

N. Bushaw, N. Kettle. *Turán Numbers of Multiple Paths and Equibipartite Forests.* Combinatorics, Probability and Computing **20**, pp 837-853. (2011)

Tech. Rep.: N. Bushaw. *Problems in Extremal Combinatorics.* (Dissertation, 2012)

N. Bushaw, P. Csorba, L. Erickson, D. Gerbner, D. Piguet, A. Riet, T. Terpai, D.K. Vu. *Large Matchings with Few Colors.* arXiv:1209.2033 [math.CO]. (Technical Report, 2009)

SPEAKING

Invited: *Minimum Codegree Conditions for Tiling by Tight Cycles*, AMS Special Session on Probabilistic and Extremal Combinatorics, Spring North Sectional Meeting, North Dakota State University, Fargo, ND, USA. 15 Apr 2016.

Threshold Pebbling on Grids of Arbitrary Dimension, AMS Special Session on Probabilistic Combinatorics, Fall Southeastern Sectional Meeting, University of Memphis, Memphis, TN, USA. 17 Oct 2015.

Turán Numbers of Equibipartite Forests and Forests of Hyperpaths, Theoretical Computer Science and Combinatorics Seminar, Universidade do Sao Paulo, Sao Paulo, Brazil. 14 Dec 2012.

Random Markov Processes, Mathematics and Computer Science Seminar, Universidade Federal do Ceara, Fortaleza, Brazil. 17 Jan 2014.

Turán numbers of Linear and Equibipartite Forests, Mathematics and Computer Science Seminar, Universidade Federal do Ceara, Fortaleza, Brazil. 1 Dec 2012.

Turán Numbers for Multiple Paths and Some Forests, Discrete Mathematics Seminar, University of Nebraska, Lincoln, NE, USA. 13 Oct 2011.

Conference: *Turán Numbers for Forestable Graphs*, AMS-MAA Joint Conference Contributed Talk, Seattle, WA, USA. 6 Jan 2016.

Threshold Pebbling for Grids, Connections in Discrete Mathematics, Simon Fraser University, Burnaby, BC, CA. 16 Jun 2015.

Turán Numbers for Multiple Paths, Atlanta Lecture Series in Combinatorics and Graph Theory IV, Georgia State University, Atlanta, GA, USA. 5 Nov 2011.

Turán Numbers for Multiple Paths and Equibipartite Trees, Paul Turán Memorial Conference, Rényi Institute of Mathematics, Budapest, Hungary. 25 Aug 2011.

Local: *Turán Numbers and their Variants*, Postdoc Lunch Seminar Series, Arizona State University, Tempe, AZ, USA. 13 Sept 2016.

The Forbidden Subgraph Problem and its Variants, Postdoc Lunch Seminar Series, Arizona State University, Tempe, AZ, USA. 4 Nov 2015.

Pebbling Problems on Graphs, Discrete Math Seminar, Arizona State University, Tempe, AZ, USA. 29 Sep 2015.

Introduction to Hypergraph Containers, Discrete Math Seminar, Arizona State University, Tempe, AZ, USA. 24 Mar 2015.

Supersaturation Theorems, Hypergraph Containers, and Typical Structures, Discrete Math Seminar, Arizona State University, Tempe, AZ, USA. 20 Jan 2015.

Typical Structure of Graphs with No Large Clique, Postdoc Lunch Seminar Series, Arizona State University, Tempe, AZ, USA. 24 Oct 2014.

Random Markov Processes, Probability Seminar, Arizona State University, Tempe, AZ, USA. 1 Nov 2013.

The Sharp Threshold for Maximum-Size Sum-Free Subsets in Even-Order Abelian Groups, Discrete Math Seminar, Arizona State University, Tempe, AZ, USA. 23 Oct 2013.

Turán Numbers of Linear and Equibipartite Forests, Discrete Math Seminar, Arizona State University, Tempe, AZ, USA. 4 Sep 2013.

Turán Numbers for Multiple Paths and Equibipartite Trees, Combinatorics Seminar, University of Memphis, Memphis, TN, USA. 22 Apr 2011.

Ramsey Theory and Applications, Mathematics Colloquium, Western Washington University, Bellingham, WA, USA. 20 May 2008.

Outreach: *Musimathics*, ASU Mathematics Circle, Arizona State University, Tempe, AZ, USA. 19 Oct 2016. (High School level outreach workshop).

Mad Scientists, Permutations, and Combinatorics, ASU Mathematics Circle, Arizona State University, Tempe, AZ, USA. 27 Apr 2016. (High School level outreach workshop)

Conway's Rational Tangles, ASU Mathematics Day Workshop, Arizona State University, Tempe, AZ, USA. 1 Apr 2016. (High School level outreach workshop)

Winning Strategies, ASU Mathematics Circle, Arizona State University, Tempe, AZ, USA. 16 Sep 2015. *(High School level outreach workshop)*

The Hadwidger-Nelson Problem, ASU Mathematics Club, Arizona State University, Tempe, AZ, USA. 2 Sep 2015. *(Undergraduate level outreach talk)*

The Mathematics of Billiards and Reflections, Mathematics Awareness Day Workshop, Arizona State University, Tempe, AZ, USA. 24 April 2015. *(High School level outreach workshop, joint w/ T. Stepien, M. Kawski)*

Voting Theory: Why it isn't fair, Cantor Sect Undergraduate Mathematics Club, University of Memphis, Memphis, TN, USA. 11 Nov 2011. *(Undergraduate level outreach talk)*

PROFESSIONAL SERVICES

Referee: *Acta Mathematicae Applicatae Sinica; Bulletin of the ICA; Combinatorics, Probability, and Computing; Discrete Mathematics; Discussiones Mathematicae Graph Theory; Electronic Journal of Combinatorics; Graphs and Combinatorics; J. Graph Theory; SIAM Discrete Math*

Reviewer: *MAA Books; Math Reviews; Zentralblatt MATH*

Member: American Mathematical Society

Mathematical Association of America

Postdoc Best Practices, School of Computing, Informatics, and Decision Systems Engineering, ASU Chapter.

Arizona Computing Postdoctoral Academy

References and Teaching Evaluations Available Upon Request

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