

John H. Johnson Jr.

Curriculum Vitae

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Current Appointment

Academic Program Specialist and Assistant Professor

2017–present Department of Mathematics
The Ohio State University
Columbus, Ohio

Education

Ph.D., Mathematics

2011 Howard University, Washington, DC
Some Differences Between an Ideal in the Stone-Čech Compactification of Commutative and Noncommutative Semigroups
Advisor: Neil Hindman

B.S., Applied Mathematics

2005 Texas A&M University, College Station, TX

Research Interests

My research interest is on the interplay between the algebraic structure of the Stone-Čech compactification, dynamics, and combinatorics related to Ramsey theory.

Scholarship

Peer reviewed publications

1. **John H. Johnson Jr.** and Florian Karl Richter (Dec. 2017). Revisiting the nilpotent polynomial Hales–Jewett theorem. *Advances in Mathematics* **321**(1), 269–286. doi: 10.1016/j.aim.2017.09.033.
2. Bergelson, Vitaly, **John H. Johnson Jr.**, and Joel Moreira (Apr. 2017). New polynomial and multidimensional extensions of classical partition results. *Journal of Combinatorial Theory, Series A* **147**, 119–154. doi: 10.1016/j.jcta.2016.11.010.
3. **John H. Johnson Jr.** (July 2015). A new and simpler noncommutative central sets theorem. *Topology and its Applications* **189**(1), 10–24. doi: 10.1016/j.topol.2015.03.006.
4. Neil Hindman and **John H. Johnson** (2012/13). Images of C sets and related large sets under nonhomogeneous spectra. *Integers* **12B**, 1–25.

In Preparation

1. Cory Christopherson, **John H. Johnson Jr.**, and Florian Karl Richter (2020). “On some compact subsets subsets of βS ”. (Submission expected early 2020. Abstract or draft manuscript available upon request.)

Manuscript

1. **John H. Johnson** (Nov. 2011). “A dynamical characterization of C sets”. (available on [arXiv:1112.0715](https://arxiv.org/abs/1112.0715)).

Funding and Support

Young Mathematicians Conference

2019–present co-Principal Investigator
National Science Foundation
The Ohio State University
(\$140,000)

Intersections of Math and Society

2019–present Service-Learning Course Development Grant
 College of Arts and Sciences
 The Ohio State University
 (course release)

Intersections of Math and Society

2019–present Service-Learning Course Grant
 Office of Service-Learning
 The Ohio State University
 (\$8000 includes matching funds)

Building a Buckeye Calculus Community

2018–present Principal Investigator
 Association of Public and Land-Grant Universities
 The Ohio State University
 (\$93,297)

Ohio State Teaching Enhancement Programs (OSTEP) Fellow

2017–2018 Course Design Learning Community
 University Center for the Advancement of Teaching
 The Ohio State University
 (\$1000)

Honors and Awards**Outstanding Staff Award**

2019 Young Scholars Program
 The Ohio State University

Distinguished Faculty Service Award

2017 Todd Anthony Bell National Resource Center on the African American Male
 The Ohio State University

Mentoring Minorities in Mathematics

2011 co-PI (with Anthony Tongen)
 Single Player Mancala-type Games

Sloan Minority Ph.D. Program

2007–2011 Alfred P. Sloan Foundation

GK-12 Fellowship

2008–2010 National Science Foundation

LSAMP Bridge to the Doctorate Fellowship

2006–2008 National Science Foundation

Research Presentations**Composing some notions of largeness and a classification problem for certain structured sets**

2019 November 2 *AMS Sectional Meeting — Special Session on Čech–Stone Compactification
 of Semigroups: Algebra, Topology, Dynamics, and Combinatorics*
 University of Florida
 Gainesville, FL

Upper Banach density along filters

2018 May 25 *Combinatorial and Additive Number Theory (CANT) 2018 Conference*
 Graduate Center
 City University of New York
 New York City, NY

Some notions of largeness relative to filters and their algebraic characterizations

2017 November 24 *Ultrafilters, Ramsey theory and dynamics*
 Institut Camille Jordan
 University of Lyon 1
 Lyon, France

Khinchine recurrence for upper Banach density along filters

2017 November 2 *Ergodic Theory and Probability Seminar*
 The Ohio State University
 Columbus, Ohio

An algebraic proof of Szemerédi's affine cube lemma via ultrafilters

2015 January 12 *Joint Mathematics Meeting 2015*
 San Antonio, TX

A new and simpler noncommutative Central Sets Theorem

2011 March 13 *American Mathematical Society Spring Sectional Meeting (in Set-Theoretic Topology)*
 Georgia Southern University
 Statesboro, GA

 J -sets in Commutative and Uncommutative Semigroups

2011 January 6 *Joint Mathematics Meeting 2011*
 New Orleans, LA

A Dynamical Characterization of C -sets

2011 April 14 *Colloquium*
 James Madison University
 Harrisonburg, VA

 C -sets in an Uncountable Semigroup

2010 January 15 *Joint Mathematics Meeting 2010*
 San Francisco, CA

Professional Presentations**Using Data in STEM Course Redesign**

2019 October 4 *Assessment 2019 Conference* (co-presenter Caroline Breitenberger)
 The Ohio State University
 Columbus, Ohio

A motivating example from ergodic theory and an application to number theory

2018 March 26 *Math 395 Technical Communication I* (Guest Lecturer)
 Denison University
 Granville, Ohio

Making static theorems dynamic: Connections between dynamics and combinatorial number theory

2018 January 26 *Special Seminar*
 Northwestern University
 Evanston, IL

Technology Mediated Active Learning in a Large Lecture Calculus Class

2017 July 28 *MAA MathFest 2017*
 Chicago, IL

Piloting an active learning course by a novice lecturer in a large enrollment calculus class

2017 January 4 *Joint Mathematics Meeting 2017*
 Atlanta, GA

Nicole Oresme's density of irrational rotations theorem

2016 November 11 *Reading Classics Seminar*
 The Ohio State University
 Columbus, Ohio

A history of Beatty's problem and Lambek's and Moser's theorem on partitions of positive integers into two classes

2014 January 21 *Reading Classics Seminar*
The Ohio State University
Columbus, Ohio

Connections between the two notions of Partition Regular Matrices

2009 November 15 *Graduate Conference in Algebra and Topology*
Binghamton University
Binghamton, NY

Ramsey theory and matrices

2009 April 26 *DC Math Graduate Student Meeting*
George Washington University
Washington, DC

Outreach Presentations

Structure in colors and density: Explorations in Ramsey theory

2019 February 23 *Math Circle for Teachers*
The Ohio State University
Columbus, Ohio

Stability and Geometry: Using derivatives to detect the shape of space

2018 March 23 *Young Scholars Program 9th Grade Campus Visit Day*
The Ohio State University
Columbus, Ohio

Szemerédi's proof of Roth's theorem

2017 February 22 *Radical Pi Math Club*
The Ohio State University
Columbus, Ohio

The Three Finite Sums Theorems of Schur, Folkman, and Hindman

2014 February 14 *Radical Pi Math Club*
The Ohio State University
Columbus, Ohio

Upcoming Conferences

AMS Sectional Meeting

2019 November 2–3 *AMS Sectional Meeting — Special Session on Čech–Stone Compactification of Semigroups: Algebra, Topology, Dynamics, and Combinatorics*
University of Florida
Gainesville, FL

Field of Dreams

2019 November 15–17 *The National Alliance for Doctoral Studies in the Mathematical Sciences*
(conference hosted by) Washington University of St. Louis
St. Louis, MO

Conferences

Progress Through Calculus (PtC) and Student Engagement in Mathematics through an Institutional Network for Active Learning (SEMINAL) Joint Conference

2019 May 29–31 Lincoln, NE

Field of Dreams

2018 November 2–4 *The National Alliance for Doctoral Studies in the Mathematical Sciences*
(conference hosted by) Washington University of St. Louis
St. Louis, MO

Institute on Teaching and Mentoring

2018 October 25–28 *The Compact for Faculty Diversity*
Arlington, VA

**Student Engagement in Mathematics through an Institutional Network for Active Learning (SEMINAL)
Phase 2 Workshop**

2018 June 22–24 Denver, CO

Combinatorial and Additive Number Theory (CANT) 2018

2018 May 22–25 Graduate Center
City University of New York
New York City, NY

Ultrafilters, Ramsey theory and dynamics

2017 November 20–24 Institut Camille Jordan
University of Lyon 1
Lyon, France

MathFest

2017 July 26–29 Mathematical Association of America
Chicago, IL

Joint Mathematics Meetings

2017 January 4–7 Atlanta, GA
2015 January 10–13 San Antonio, TX
2011 January 6–9 New Orleans, LA
2010 January 13–16 San Francisco, CA
2009 January 5–8 Washington, DC
2007 January 5–8 New Orleans, LA

Mathematical Association of America Precalculus to Calculus: Insights & Innovations

2016 June 16–20 University of St. Thomas
Saint Paul, MN

American Mathematical Society Committee on Education

2015 October 30–31 Washington, DC

American Mathematical Society Spring Sectional Meeting

2011 March 12–13 Georgia Southern University
Statesboro, GA

Graduate Conference in Algebra and Topology

2009 November 14–15 Binghamton University
Binghamton, NY

DC Math Graduate Student Meeting

2009 April 25–26 George Washington University
Washington, DC

Conference on Ramsey Theory and Topological Algebra: In Honor of Neil Hindman

2008 July 25–27 Miami University
Oxford, Ohio

NSF-CMBS Ergodic Ramsey Theory Conference

2008 June 22–28 Eastern Illinois University
Charleston, IL

Workshops**Faculty Success Program (online)**

2019 May – August National Center for Faculty Development and Diversity

Academic Job Market and New Faculty Boot Camp

2018 October 24–26 *Sloan Scholars Mentoring Network*
Arlington, VA

Nonstandard methods in combinatorial number theory

2017 August 14–18 American Institute of Mathematics
San Jose, CA

Course Design Institute

2016 December 14–20 University Center for the Advancement of Teaching
The Ohio State University
Columbus, Ohio

Mathematical Association of America Progress Through Calculus Workshop

2015 October 31 Washington, DC

Pathways Workshop

2016 August 19–21 Department of Mathematics
Kent State University
Kent, Ohio

Previous Appointments**Calculus Design Coordinator**

2015–2017 Department of Mathematics
The Ohio State University

Ross Assistant Professor

2012–2015 Department of Mathematics
The Ohio State University

Visiting Assistant Professor

2011–2012 Department of Mathematics and Statistics
James Madison University

Professional and Academic Experience**Number Theory Seminar Instructor**

2014–2018 (Summer) Ross Mathematics Program
The Ohio State University

Instructor for Young Scholars Summer Bridge Program

2013–2018 (Summer) Mathematics and Statistics Learning Center
The Ohio State University

Combinatorics and Probability Instructor

2014–2015 (Summer) Sampling Advanced Mathematics for Minority Students (SAMMS)
The Ohio State University

Mathematics Director for Building Mathematical Capacity Summer Experience

2013 (Summer) Young Scholars Program
Office of Diversity and Inclusion
The Ohio State University

Preparing Future Faculty Intern

2010–2011 Department of Mathematics and Statistics at James Madison University
Harrisonburg, VA

Mathematics Immersion Instructor

2010 (Summer) The New Teacher Project
Washington, DC

Mathematics Teacher

2009 – 2010 (Summer) Howard University Upward Bound Program
Washington, DC

GK-12 Fellow

2008–2010 Howard University and Archbishop Carroll High School
Washington, DC

Graduate Assistant

2007 (Summer) Howard University Science, Engineering, and Mathematics
Distinguished Scholars Program
Washington, DC

Departmental Service**Young Mathematicians Conference Committee**

2018–present Department of Mathematics
The Ohio State University

Diversity and Departmental Climate Committee

2018–present Department of Mathematics
The Ohio State University

Mathematics Education Forum

2016–present Department of Mathematics
The Ohio State University

co-Administrator

2015–2018 (Summer) Ross Mathematics Program
The Ohio State University

Diversity and Departmental Climate Report

2019 April 11 Presentation (with Ranthony A.C. Edmonds) to
Mathematics Advisory Board Meeting
The Ohio State University

Diversity and Departmental Climate Committee

2018 October 4 Presentation (with Angelica Cueto) to
Mathematics Advisory Board Meeting
The Ohio State University

Active Teaching and Learning in the Mathematics Classroom

2016–2018 (Summer) Presentation (with Bart Snapp)
Summer TA Training
The Ohio State University

Improving Communications for Mathematics Majors

2018 Spring Presentation (with Tim Carlson and Hannah Alpert) to
Mathematics Advisory Board Meeting
The Ohio State University

Calculus Workshop

2017–present The Ohio State University

Teaching Experience

2020 Spring Math 2153 Intersections of Mathematics and Society: Hidden Figures
2019 Autumn Math 2153 Calculus III
2019 Spring Math 1151 Calculus I
Math 1152 Calculus II
2018 Autumn Math 5201 Introduction to Real Analysis I
Math 1151 Calculus I
2018 Spring Math 1152 Calculus II
Math 1151 Calculus I Recitation Instructor
2017 Autumn Math 1151 Calculus I
2017 Spring Math 1172 Engineering Mathematics A
2016 Autumn Math 1172 Engineering Mathematics A
2015 Spring Math 3345 Fundamentals of Higher Mathematics
Math 2168 History of Mathematics for Middle School Teachers
2014 Autumn Math 1152 Calculus II Recitation Instructor
2014 Spring Math 2168 History of Mathematics for Middle School Teachers
Math 1151 Calculus I Recitation Instructor
2013 Autumn Math 5001 Introduction to Set Theory
Math 1151 Calculus I Recitation Instructor
2013 Spring Math 3345 Fundamentals of Higher Mathematics
2012 Autumn Math 1151 Calculus I Recitation Instructor
Math 1148 College Algebra
2012 Spring Math 235 Calculus I
2011 Autumn Math 235 Calculus I
2010 Spring Math 235 Calculus I
2009 Autumn Math 235 Calculus I