

# John H. Johnson Jr.

## Curriculum Vitae

October 2019

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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 (2019). “On some compact subsets subsets of  $\beta S$ ”. (Submission expected 2019. 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

**Upcoming 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

**Research Presentations****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

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

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

**Professional Presentations****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

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