

# John H. Johnson Jr.

## Curriculum Vitae

March 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.

### Manuscript

1. **John H. Johnson** (Nov. 2011). “A dynamical characterization of  $C$  sets”. (available on arXiv:1112.0715).

### Funding and Support

#### 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

### 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

### 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

### Khintchine 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

### 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

## Conferences

### 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

### 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 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

|             |   |
|-------------|---|
| 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   |