John H. Johnson Jr.
Curriculum Vitae

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Future Appointment

Assistant Professor (tenure-track)

Starting Autumn 2021   Department of Mathematics
The Ohio State University
Columbus, Ohio

Current Appointment

Academic Program Specialist and Assistant Professor (non-tenure-track)

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

1. Jim Fowler, Bart Snapp, Carolyn Johns, Darry Andrews, Dan Boros, Herb Clemens, Vic Ferdinand, Brad Findell, Bill Husen, **John H. Johnson**, Nela Lakos, Elizabeth Miller, Bobby Ramsey, Jenny Sheldon, Jim Talamo, and Tim Carlson. An Open-Source Calculus Textbook on the Ximera Platform. *PRIMUS* **31**(9) (2021), 925–939. DOI: 10.1080/10511970.2020.1781720.

2. Ranthony A.C. Edmonds and John H. Johnson Jr. Intersections of Mathematics and Society. *Notices of the American Mathematical Society* **68**(2) (Feb. 2021), 207–210. DOI: 10.1090/noti2219.

3. E. Miller, J. Fowler, C. Johns, **J. Johnson Jr.**, B. Ramsey, and B. Snapp. Increasing Active Learning in Large, Tightly Coordinated Calculus Courses. *PRIMUS* **31**(3-5) (2021), 371–392. DOI: 10.1080/10511970.2020.1772923.

4. John H. Johnson Jr. and Florian Karl Richter. Revisiting the nilpotent polynomial Hales–Jewett theorem. *Adv. Math.* **321**(1) (Dec. 2017), 269–286. ISSN: 0001-8708. DOI: 10.1016/j.aim.2017.09.033. MR: 3715711.

5. Vitaly Bergelson, John H. Johnson Jr., and Joel Moreira. New polynomial and multidimensional extensions of classical partition results. *J. Combin. Theory Ser. A* **147** (Apr. 2017), 119–154. DOI: 10.1016/j.jcta.2016.11.010. MR: 3589892.

6. John H. Johnson Jr. A new and simpler noncommutative central sets theorem. *Topology Appl.* **189**(1) (July 2015), 10–24. DOI: 10.1016/j.topol.2015.03.006. MR: 3342569.

7. Neil Hindman and John H. Johnson. Images of C sets and related large sets under nonhomogeneous spectra. *Integers* **12B**(Proceedings of the Integers Conference 2011) (2012/13), Paper No. A2, 25 pp. MR: 3055676.

Accepted

8. Cory Christopherson and John H. Johnson Jr. *Algebraic characterizations of some relative notions of size.* (Accepted to *Semigroup Forum*). July 2021. arXiv: 2105.09723 [math.GN].

Manuscript

9. John H. Johnson. *A dynamical characterization of C sets.* Dec. 2011. arXiv: 1112.0715 [math.DS].

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
Office of Service-Learning and College of Arts and Sciences
The Ohio State University
($8000 includes matching funds and course release)

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

Project NExT Fellow (Gold '21 dot)

2021–2022 Mathematical Association of America

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

Students Advised

2020   Enrique Gomez-Leos
        Master of Mathematics Sciences (MMS) (graduated)
        On Four-Free Sets
        The Ohio State University

2020   Kayla Williams (undergraduate)
        Project Title: Explorations in Algebra and Combinatorics
        The Ohio State University

Research Presentations

Relative notions of syndetic and thick sets and their composition

2021 May 25   *Expanding Dynamics XII*
                Creative Online Ventures in Dynamics
                Video of virtual talk: https://youtu.be/XnHydina9C0

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

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

Hidden Figures and the Mathematical Community

2021 February 25   *Marian University*
                                (co-presenter with Ranthony A.C. Edmonds)

Connecting the Dots: Dorothy Vaughan and Community in the Hidden Figures Story

2020 July 16   *PRiME (Pomona Research in Mathematics Experience) Speaker Series*
                                (co-presenter with Ranthony A.C. Edmonds)
                                Video of virtual talk: <https://youtu.be/HhqEmJ-WYMI>

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

Outreach Presentations

Pigeonhole principle and distributions: the past, present, and future of combinatorics

2021 July 21   *MathPath*

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 Attended

Student Engagement in Mathematics through an Institutional Network for Active Learning (SEMINAL) Data Workshop Conference (online)

2020 June 3–5   Virtual

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

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 Attended

Faculty Success Program (online)

2019 (Summer)   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

Pathways Workshop

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

Mathematical Association of America Progress Through Calculus Workshop

2015 October 31   Washington, DC

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

Active Teaching and Learning in the Mathematics Classroom

2016–2020 (Summer)   Presentation (with Bart Snapp)
              Summer TA Training
              The Ohio State University

Workshop on Diversity and Inclusion in Mathematics

2019–2020 (Summer)   Workshop
              GTA Training
              Department of Mathematics
              The Ohio State University

Calculus Workshop

2017–2020   The Ohio State University

Mathematics Education Forum

2016–2019   Department of Mathematics
              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

co-Administrator

2015–2018 (Summer)   Ross Mathematics Program
                 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

Teaching Experience

2021 Spring	Math 2010S Intersections of Mathematics and Society: Hidden Figures
	Math 4547 Introductory Analysis I
2020 Autumn	Math 2568 Linear Algebra
	Math 6211 Real Analysis I (Recitation Instructor)
2020 Spring	Math 2194 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