

Dr. Ryan Johnson

CONTACT INFORMATION	Department of Science and Mathematics Grace College 1 Lancer Way Winona Lake, IN, 46580	(608) 387-5337 johnsor@grace.edu
RESEARCH INTERESTS	Quantum Algebra <ul style="list-style-type: none">• Spherical fusion categories, particularly Tambara-Yamagami categories and near-group categories.• Modular categories.• Bilinear and quadratic forms on finite abelian groups. Data Science and Statistics <ul style="list-style-type: none">• COVID-19 metrics• Baseball sabermetrics• algae modeling	
EDUCATION	Iowa State University <p>Ph.D. in Mathematics, June 2014</p> <ul style="list-style-type: none">• Dissertation Topic: The Frobenius-Schur Indicator of Tambara Yamagami Categories• Advisor: Tathagata Basak• Minor in physics Hope College <p>B.S. in Mathematics, May 2009</p> <ul style="list-style-type: none">• Minor in computer science	
PUBLICATIONS	Daeger, Adrienne; Bosch, Nathan S.; Johnson, Ryan. <i>IMPACTS ON NUTRIENT AND SEDIMENT RESUSPENSION BY VARIOUS WATERCRAFT ACROSS MULTIPLE SUBSTRATES, DEPTHS, AND OPERATING SPEEDS IN INDIANA'S LARGEST NATURAL LAKE</i> . Proceedings of the Indiana Academy of Science 130 (2022), no. 2, 112–122.	
	Basak, Tathagata; Johnson, Ryan. <i>Indicators of Tambara-Yamagami categories and Gauss sums</i> . Algebra Number Theory 9 (2015), no. 8, 1793–1823.	
	Ekstrand, Jason; Erickson, Craig; Hall, H. Tracy; Hay, Diana; Hogben, Leslie; Johnson, Ryan; Kingsley, Nicole; Osborne, Steven; Peters, Travis; Roat, Jolie; Ross, Arianne; Row, Darren D.; Warnberg, Nathan; Young, Michael. <i>Positive semidefinite zero forcing</i> . Linear Algebra Appl. 439 (2013), no. 7, 1862–1874.	
ACKNOWLEDGED	Edie-Michell, Cain; Izumi, Masaki; Penneys, David. <i>Classification of $\mathbb{Z}/2\mathbb{Z}$-quadratic unitary fusion categories</i> . Preprint on arxiv https://arxiv.org/pdf/2108.01564	
STUDENT COLLABORATIONS	Johnson, Ryan; Strahan, Austin. Fall 2022 project attempting to model algae in Kosciusko county lakes. https://github.com/austin-strahan/Lakes-ML/blob/main/Project.ipynb	

Johnson, Ryan; Graves, Anna. Trained Anna Graves to continue running the R-code that compiled COVID-19 data for Grace College while I was on sabbatical.

Johnson, Ryan; Wertz, Philip. Talk given on baseball sabermetrics at the 2021 Com-munitas part 1: <https://youtu.be/-LPY3mun32M> and part 2: <https://youtu.be/3YRpYvsRJd4>.

Cain, Levi; Johnson, Ryan; Godsey, Cara Project on baseball sabermetrics that was cut short by COVID-19. https://mathatgrace.github.io/CrossRoads-Baseball/R_2020/.

Johnson, Ryan; Kuszewski, Gabriel; Ware, Katelyn. Talk given at the spring 2018 MAA joint conference with Indiana, Michigan, and Illinois.

CONFERENCE
TALKS

Concise Cyclotomic Sums Spring Meeting of the Indiana Section of the Mathematical Association of America, Indiana Wesleyan University, (April 2022).

The Frobenius-Schur Indicator of Tambara-Yamagami Categories. Meeting #1096: Joint Mathematics Meetings, Baltimore, Maryland. Event: MAA General Contributed Paper Session on Research in Algebra and Topology, (January 2014).

Some Gauss Sums Found in Category Thoery. Iowa Section of Mathematical Associa-tion of America Meeting Conference, Wartburg College, (October 2013).

Using Gauss Sums to Distinguish Certain Algebraic Structures Indiana Section MAA Spring Meeting Program at Franklin College, (March 2016).

OTHER TALKS

Adding Up Roots of Unity, and Finding the Shortest Path. And how this is related to quantum computing Grace College Faculty Forum, (November 2022).

An invariant that distinguishes Tambara-Yamagami categories Algebra Colloquium at Notre Dame University, (October 27th, 2016).

Using Gauss Sums to Distinguish Certain Algebraic Structures Hope College Math Colloquium Series, (September 2016).

A complete invariant of Tambara-Yamagami Categories Grace College Faculty Forum, (March 2014)

The Frobenius-Schur Indicator of Tambara-Yamagami Categories. Combinatorics, Al-gebra, and Number Theory Seminar, Iowa State University, (November 2013).

Positive semidefinite zero forcing. Discrete Math Seminar, Iowa State University, (De-cember, 2012).

How to Save 99 Lives. Colloquium Series, Hope College, (November 2010).

Modelling Tri-Trophic Interactions with Tall Fescue Grass, Fall Armyworms, and Par-asitic Wasps. Undergraduate Research in Mathematics at Grand Valley State Univer-sity, (July 2007).

HONORS AND
AWARDS

2011 Teaching Excellence Award

2010 Hope College Travel Grant

RESEARCH
EXPERIENCE

- 2020-2022 Compiled COVID-19 numbers for Grace College Administration
- 2019 OSU Quantum Symmetries Summer Research Program.
 Organizer: David Penneys, The Ohio State University
 Organizer: Corey Jones, The Ohio State University
 Location: The Ohio State University, Columbus, Ohio.
- 2014 Mathematics of Quantum Phases of Matter and Quantum Infor-
 mation Mathematical Research Community
 Organizer: Siu-Hung Ng, Louisiana State University
 Organizer: Eric C. Rowell, Texas A&M University
 Organizer: Zhenghan Wang, Microsoft Station Q
 Location: Snowbird Resort, Utah.