

Karl Weisenburger

Department of Mathematics
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Education

Purdue University | West Lafayette, IN

Doctor of Philosophy Candidate: Mathematics

Anticipated May 2027

Hillsdale College | Hillsdale, MI

Bachelor of Science: Applied Mathematics, Latin minor

2018 – 2022

- GPA (4.0): 3.95, Summa Cum Laude

Employment and Research Experience

Air Force Research Laboratory | Albuquerque, NM

AFRL Scholar Summer Intern

May 2024 – Present

- Researching tomographic wavefront aberration sensing for wind tunnel applications.

Purdue University | West Lafayette, IN

Mathematics Research Assistant, AFRL Collaborator

May 2023 – May 2024

- Conducted research in collaboration with the Air Force Research Laboratory (AFRL) under Gregory Buzzard (MATH) and Charlie Bouman (ECE) in tomographic wavefront sensing for wind tunnel applications.

Mathematics Teaching Assistant

August 2022 – May 2023

- Calculus 2 (two sections) for the Fall '22 semester and multivariate calculus (three sections) for the Spring '23 semester.

Build Central | Chicago, IL

Data Analytics Intern

May – August 2022

- Designed and tested machine learning models for estimating construction project completion dates.
- Built data analysis dashboards to assist in productizing construction analytics.

Hillsdale College | Hillsdale, MI

Laureates Honors Program Research in Mathematics

2021 – 2022

- Investigated the viability of sparse low-rank decomposition for improving the reconstructions of neuronal networks, and developed several algorithms for classifying, interpreting, and improving reconstructions.

Summer Mathematics Research in Harmonic Measure

July – August 2020

- Investigated harmonic measure distribution functions (h-functions) via random walk simulations.

Mathematics Teaching Assistant

January – May 2022

- Graded quizzes and exams and evaluated comprehension of concepts.

Math Tutoring

August 2021 – May 2022

- Tutored undergraduate students for their math classes.

Learning Management System Student Consultant

July – October 2021

- Collaborated with Hillsdale's Information Technology Services to brainstorm and execute the processes of changing Hillsdale's online learning management system and educating students about how to use the new system.

Presentations

“Algorithmic Techniques for Interpreting the Reconstructed Connectivity Matrix of a Small World Neuronal Network”

Hillsdale College Math Department [thesis defense]

April 2022

Hillsdale College Science Research Symposium [poster]

February 2022

“Harmonic Measure Distribution Functions and Circle Domains”

Michigan Mathematical Association of America Spring Conference [talk]

April 2021

Rose-Hulman Undergraduate Math Conference [poster]

May 2021

Hillsdale College Science Research Symposium [poster]

February 2021

Leadership and Volunteering

Catholic Society | Hillsdale College

President

2020 – 2021

- Recruited and managed three separate student boards.
- Organized daily, weekly, and monthly prayer opportunities, as well as regular speaker events, lecture series, and retreats for over 500 Catholics at Hillsdale College.

Participant in Passages Program | Philos Project | Israel

January 2020

- Completed the Passages leadership program sponsored by the Philos Project which included a nine-day trip to Israel, lectures, and coursework focused on informing college students about Israeli & Palestinian cultures and promoting positive Christian engagement in the Near East.

“A Few Good Men” Community Volunteer | Hillsdale College

2019 – 2020

Academic Honors and Involvement

Recipient of the Ruth L. Schulz Memorial Mathematics Prize | Hillsdale College

February 2022

Member of The Laureates Honor Program | Hillsdale College

2021 – 2022

- Submitted a research proposal and was one of 20 students to receive Laureates designated funding.
- Completed research in the field of computational neuroscience.
- summer, fall, and spring on-site research, the writing and defense of a senior honors research thesis, and a spring research presentation at the Hillsdale Science Symposium.

Member of The Phi Kappa Phi Honor Society | Hillsdale College

March 2021 – present

- The nation's oldest and most selective all-discipline collegiate honor society.
- Eligibility restricted to the top 10 percent of seniors.

Member of The Kappa Mu Epsilon Math Honorary | Hillsdale College

2021 – 2022

Technical Skills

Programming and Software experience

- C, Python, R, MATLAB, Python DASH