JACOB LAUBACHER

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EDUCATION

[3] Ph.D. in Mathematics — May 2017
Bowling Green State University — *Bowling Green, OH*

- Dissertation: *Secondary Hochschild and cyclic (co)homologies*
- Advisor: Mihai D. Staic

[2] M.A. in Pure Mathematics — May 2013
Kent State University — *Kent, OH*

[1] B.S. in Mathematics — May 2010
Ohio Dominican University — *Columbus, OH*

- Magna Cum Laude

TEACHING

[3] Associate Professor — August 2022 – Present
St. Norbert College – Department of Mathematics — *De Pere, WI*

- Fall 2024
  - MATH 250 – Advanced Foundations in Mathematics
  - MATH 132 – Calculus and Analytic Geometry II
  - MATH 131 – Calculus and Analytic Geometry I
- Spring 2024
  - Sabbatical
- Fall 2023
  - MATH 490 – Mathematical Economics (independent study)
  - MATH 306 – Abstract Algebra
  - MATH 233 – Calculus and Analytic Geometry III
  - MATH 132 – Calculus and Analytic Geometry II
- Spring 2023
  - MATH 490 – Probability and Statistics II (independent study)
  - MATH 373 – Real Analysis
  - MATH 233 – Calculus and Analytic Geometry III
  - MATH 131 – Calculus and Analytic Geometry I
- Fall 2022
  - MATH 490 – Mathematical Economics (independent study)
  - MATH 250 – Advanced Foundations in Mathematics
  - MATH 233 – Calculus and Analytic Geometry III
  - MATH 128 – Introductory Statistics for Business

[2] Assistant Professor — August 2018 – May 2022
St. Norbert College – Department of Mathematics — *De Pere, WI*

- Spring 2022
  - MATH 490 – Advanced Topology (independent study)
  - MATH 376 – Complex Analysis
  - MATH 128 – Introductory Statistics for Business (two sections)
- Fall 2021
  - MATH 490 – Probability and Statistics II (independent study)
  - MATH 250 – Advanced Foundations in Mathematics
  - MATH 128 – Introductory Statistics for Business (two sections)
- Spring 2021
  - MATH 321 – Probability and Statistics
  - MATH 131 – Calculus and Analytic Geometry I
  - MATH 128 – Introductory Statistics for Business
- Fall 2020
  - MATH 250 – Advanced Foundations in Mathematics
  - MATH 128 – Introductory Statistics for Business
  - HONR 101 – Introduction to Honors

- Spring 2020
  - MATH 321 – Probability and Statistics (arranged course)
  - MATH 250 – Advanced Foundations in Mathematics
  - MATH 128 – Introductory Statistics for Business
  - MATH 115 – Precalculus Mathematics
- Fall 2019
  - MATH 355 – Topology
  - MATH 128 – Introductory Statistics for Business
  - MATH 123 – Applications of Contemporary Mathematics
- Spring 2019
  - MATH 321 – Probability and Statistics
  - MATH 250 – Advanced Foundations in Mathematics
  - MATH 123 – Applications of Contemporary Mathematics
- Fall 2018
  - MATH 250 – Advanced Foundations in Mathematics
  - MATH 131 – Calculus and Analytic Geometry I
  - MATH 128 – Introductory Statistics for Business

[1] Visiting Assistant Professor August 2017 – May 2018
St. Norbert College – Department of Mathematics *De Pere, WI*

- Spring 2018
  - MATH 203 – Linear Algebra
  - MATH 131 – Calculus and Analytic Geometry I
  - MATH 128 – Introductory Statistics for Business
- Fall 2017
  - MATH 131 – Calculus and Analytic Geometry I
  - MATH 123 – Applications of Contemporary Mathematics (two sections)

PUBLICATIONS

[16] Samuel Hokamp and **Jacob Laubacher**. A class of homeomorphisms with group actions. In progress.

[15] Samuel Carolus, **Jacob Laubacher**, Sydney D. Vitalbo, and Leah K. Widlarz. Replacing bar-like resolutions in a simplicial setting. Submitted, arXiv:2404.06368, 2024.

[14] Mark W. Bissler, **Jacob Laubacher**, and Mark L. Lewis. A family of graphs that cannot occur as character degree graphs of solvable groups. Submitted, arXiv:1707.03020, 2024.

[13] **Jacob Laubacher**, Mark Medwid, and Dylan Schuster. Classifying character degree graphs with seven vertices. Submitted, arXiv:2308.01216, 2023.

[12] Kylie Bennett, Elizabeth Heil, and **Jacob Laubacher**. Secondary Hochschild cohomology and derivations. *Bull. Iranian Math. Soc.*, 49(4):Paper No. 49, 11 pp., 2023.

[11] **Jacob Laubacher**. Secondary Hochschild homology and differentials. *Mediterr. J. Math.*, 20(1):Paper No. 52, 11 pp., 2023.

[10] Sara DeGroot, **Jacob Laubacher**, and Mark Medwid. On prime character degree graphs occurring within a family of graphs (ii). *Comm. Algebra*, 50(8):3307–3319, 2022.

[9] Samuel Carolus and **Jacob Laubacher**. Simplicial structures over the 3-sphere and generalized higher order Hochschild homology. *Categ. Gen. Algebr. Struct. Appl.*, 15(1):93–143, 2021.

[8] Samuel Carolus, **Jacob Laubacher**, and Mihai D. Staic. A simplicial construction for noncommutative settings. *Homology Homotopy Appl.*, 23(1):49–60, 2021.

[7] **Jacob Laubacher** and Mark Medwid. On prime character degree graphs occurring within a family of graphs. *Comm. Algebra*, 49(4):1534–1547, 2021.

[6] Samuel Carolus, Samuel A. Hokamp, and **Jacob Laubacher**. Deformation theories controlled by Hochschild cohomologies. *São Paulo J. Math. Sci.*, 14(2):481–495, 2020.

[5] Mark W. Bissler and **Jacob Laubacher**. Classifying families of character degree graphs of solvable groups. *Int. J. Group Theory*, 8(4):37–46, 2019.

[4] Mark W. Bissler, **Jacob Laubacher**, and Mark L. Lewis. Classifying character degree graphs with six vertices. *Beitr. Algebra Geom.*, 60(3):499–511, 2019.

[3] Mark W. Bissler, **Jacob Laubacher**, and Corey F. Lyons. On the absence of a normal nonabelian Sylow subgroup. *Comm. Algebra*, 47(3):917–922, 2019.

[2] Jacob Laubacher, Mihai D. Staic, and Alin Stancu. Bar simplicial modules and secondary cyclic (co)homology. *J. Noncommut. Geom.*, 12(3):865–887, 2018.

[1] Jacob Laubacher. Properties of the secondary Hochschild homology. *Algebra Colloq.*, 25(2):225–242, 2018.

MENTORING EXPERIENCE

[14] Project with Sydney Vitalbo '26 and Leah Widlarz '26 Spring 2024

- "Replacing bar-like resolutions in a simplicial setting."
- Poster presentation at the SNC Undergraduate Research Forum, April 27, 2024.
- Joint project with Dr. Samuel Carolus (Department of Defense).
- Funded through *The Poss-Wroble Fellowship*.

[13] Project with Tyler Blom '27 Fall 2023

- "Sums of Pairs: A Pure and Pleasant Proof."
- Oral presentation at the SNC Pi Mu Epsilon Conference, November 10, 2023.

[12] Project with Dylan Schuster '24 Summer 2023

- "Classifying character degree graphs with seven vertices."
- Oral presentation at the SNC Pi Mu Epsilon Conference, November 10, 2023.
- Oral presentation at the JMM in San Francisco, CA, January 4, 2024.
- Recipient of a *PME Speaker Award* at the JMM in San Francisco, CA, January 5, 2024.
- Joint project with Dr. Mark Medwid (Rhode Island College).
- Funded through *The Poss-Wroble Fellowship*.

[11] Actuarial Preparation with Cameron Krueger '23 Spring 2023

- Took *Exam P* on May 12, 2023.

[10] Project with Kylie Bennett '23 and Elizabeth Heil '23 Fall 2022 – Spring 2023

- "Secondary Hochschild cohomology and derivations."
- Poster presentation at the SNC Undergraduate Research Forum, April 28, 2023.
- Funded through *The Collaborative*.

[9] Actuarial Preparation with Daniel Scaife '23 Fall 2021

- Passed *Exam P* on November 19, 2021.

[8] Project with Sara DeGroot '22 Summer 2021 – Spring 2022

- "On prime character degree graphs occurring within a family of graphs (ii)."
- Poster presentation at the SNC Undergraduate Research Forum, April 28, 2022.
- Joint project with Dr. Mark Medwid (Rhode Island College).
- Funded through *The Collaborative*.

[7] New Faculty Mentor for Dr. Samuel Hokamp Fall 2019 – Spring 2020

[6] Project with Jack Maastricht '20 Fall 2019

- "Modernizing Archimedes' Approach to Pi."
- Poster presentation at the SNC Undergraduate Research Forum cancelled due to COVID.
- Funded through *The Collaborative*.

[5] Vocational Experience with Brianne Barta '21 Spring 2019

- Through *Navigate*, a vocational and discernment program at SNC.

[4] Project with Brady Miller '19 Spring 2019

- "Measuring the Market Impact of Wisconsin Political Events."
- Oral presentation at the SNC Undergraduate Research Forum, April 12, 2019.
- Joint project with Dr. Daniel Kling (Economics).
- Funded through *The Collaborative*.

[3] Project with Jaewon Kim '20 Fall 2018

- "Next Time I Will Win: Breaking Down the Gambler's Fallacy."
- Presented at the SNC Pi Mu Epsilon Conference, November 3, 2018.

[2] Project with Mark Nichols '19 Summer 2018

- "Examples of graphs that admit no normal nonabelian Sylow p-subgroup."
- Presented at MathFest in Denver, CO, August 2, 2018.
- Participated in SURF.
- Funded through *The Poss-Wroble Fellowship*.

[1] Project with Henry Petersen '18 Fall 2017

- "Configurations of the Rubik's Cube."
- Presented at the SNC Pi Mu Epsilon Conference, November 4, 2017.

SERVICE OUTSIDE THE MATH DISCIPLINE

[20] Member of the Faculty Personnel Committee (elected) Fall 2024 – Present

[19] Member of the Honors Program Committee (appointed) Fall 2022 – Spring 2024

[18] Member of the Governance Group (appointed) Fall 2022 – Spring 2023

[17] Committee member for the Job Search for the Administrative Assistant in the Division of Natural Science Summer 2022

[16] External Committee Member for the Job Search in Biology Fall 2021

[15] Member of the HLC Teaching Evaluation Working Group (appointed) Fall 2020

[14] Member of the Athletic Committee (appointed) Fall 2020

[13] Virtual Summer Advisor Summer 2020

[12] External Committee Member for the Job Search in Computer Science Spring 2020

[11] External Committee Member for the Job Search in Supply Chain and Operations Management for the Schneider School of Business & Economics Fall 2019

[10] Member of the Faculty Development Committee (elected) Fall 2019 – Spring 2022

- Chair of the Summer Grant Subcommittee Spring 2022
- Facilitator of the session "Creating a Learning-Community through Mentoring" Summer 2021
- Chair of the Summer Grant Subcommittee Spring 2021

[9] Invited Speaker for a Q&A Panel during New Faculty Orientation August 15, 2019

[8] Summer Advisor Summer 2019

[7] Judge for the Poster Session at the Undergraduate Research Forum April 12, 2019

[6] Judge for the Delaney Writing Contest Spring 2019

[5] Academic Advisor Fall 2018 – Present

- Currently has 16 advisees

[4] Member of the External Faculty Pool for Tenure Track Searches Fall 2018 – Spring 2020

[3] Member of the Academic Honor Board (elected) Fall 2018 – Spring 2020

[2] Bruess Brigade Participant Summer 2018

[1] Judge for the Poster Session at the Undergraduate Research Forum April 20, 2018

SERVICE WITHIN THE MATH DISCIPLINE

[12] Discipline Coordinator Fall 2022 – Present

[11] Co-organizer for MATH 499 Spring 2021 – Present

[10] Committee Member for the Job Search in Mathematics Fall 2020 – Spring 2021

[9] Organizer for the Math Teaching Assistants Fall 2019 – Spring 2022

[8] Committee Member for the Open Rank Job Search in Mathematics Fall 2018

[7] Co-organizer for the SNC PME Undergraduate Regional Conference Fall 2018 – Fall 2020

[6] Advisor for the National Mathematics Honor Society at SNC Fall 2018 – Present

[5] Advisor for the Actuarial Club Fall 2018 – Fall 2019

[4] Advisor for the Math Club Fall 2018 – Fall 2019

[3] Administer of Math Placement Exams Summer 2018 – Summer 2019

[2] Editor of the SNC Math Newsletter Spring 2018 – Spring 2019

[1] Leader of the SNC Putnam Team Fall 2017 – Spring 2019

SCHOLARLY SERVICE

[4] Invited Speaker for "Pints and Publications" at SNC December 7, 2022

[3] Referee for Mathematical Journals Summer 2020 – Present

- *Transactions on Combinatorics*
- *Algebra Colloquium*
- *Monatshefte für Mathematik*
- *Communications in Algebra*
- *Discrete Mathematics*
- *Journal of Pure and Applied Algebra*

[2] Reviewer for MathSciNet (Ten articles) Spring 2019 – Present

- Reviewed "Equivariant one-parameter deformations of associative algebra morphisms" by Raj Bhawan Yadav
- Reviewed "Applications of Hochschild cohomology to the moduli of subalgebras of the full matrix ring" by Kazunori Nakamoto and Takeshi Torii
- Reviewed "Dihedral modules with ∞-simplicial faces and dihedral homology for involutive A_∞-algebras over rings" by S. V. Lapin
- Reviewed "Edge partitions of the complete graph and a determinant-like function" by Steven R. Lippold, Mihai D. Staic, and Alin Stancu
- Reviewed "Finite solvable groups with few imprimitive irreducible characters" by Temha Erkoc and Burcu Cinarci
- Reviewed "p-divisibility of co-degrees of irreducible characters" by Roya Bahramian and Neda Ahanjideh
- Reviewed "Deformations of Loday-type algebras and their morphisms" by Apurba Das

- Reviewed "Solvable groups whose character degree graphs generalize squares" by Mark L. Lewis and Qingyun Meng
- Reviewed "On a question of Dixon and Rahnamai Barghi" by Sesuai Y. Madanha
- Reviewed "The dominant dimension of cohomological Mackey functors" by Markus Linckelmann

[1] Judge/Moderator for an MAA Student Paper Session at MathFEST August 3, 2018

- Introduced and judged a session consisting of five talks

PROFESSIONAL DEVELOPMENT

[5] Joint Mathematics Meeting in San Francisco, CA January 3rd – 6th, 2024

[4] Joint Mathematics Meeting in Baltimore, MD January 16th – 19th, 2019

[3] MathFest in Denver, CO August 1st – 4th, 2018

[2] Joint Mathematics Meeting in San Diego, CA January 10th – 13th, 2018

[1] AMS Fall Eastern Sectional Meeting in Buffalo, NY September 16th – 17th, 2017

INVITED TALKS

[7] Character Degree Graphs with Seven Vertices July 24, 2024

- AMS-UMI International Joint Meeting in Palermo, Sicily, Italy
- Special Session on Graphs Associated with Groups: Advances and Applications
- Could not attend due to financial reasons

[6] Classifying Prime Character Degree Graphs April 26, 2024

- MSCS Research Seminar at St. Olaf College, Northfield, MN

[5] Prime Character Degree Graphs of Solvable Groups March 15, 2024

- Mathematics Colloquium Series at Bowling Green State University, Bowling Green, OH

[4] Jesus was the Greatest Mathematician Ever March 4, 2022

- SNCtalks, Walter Theater, De Pere, WI

[3] Mathematics: None Shall Pass November 14, 2018

- S.T.E.A.M. Engine GB, Neville Public Museum, Green Bay, WI

[2] The New Year's Day Afterthought March 15, 2018

- Departmental Colloquium at Rhode Island College, Providence, RI

[1] Simplicial Structures for Higher Order Homology over the 2-Sphere September 16, 2017

- AMS Sectional Meeting in Buffalo, NY
- Special Session on Cohomology, Deformations, and Quantum Groups: A Session Dedicated to the Memory of Samuel D. Schack

CONTRIBUTED TALKS

[7] Secondary Hochschild Homology and Differentials January 5, 2024

- At the JMM in San Francisco, CA

[6] The Kool-Aid Man November 11, 2020

- Mathematics Colloquium Series at SNC

[5] Snakes, Chains, and Kernels February 14, 2019

- Mathematics Colloquium Series at SNC

[4] A Deformation Theory Controlled by $H^\bullet_{S^d}(A, A)$ January 17, 2019

- At the JMM in Baltimore, MD

[3] The Paw of the Lion April 6, 2018

- Mathematics Colloquium Series at SNC

[2] Properties of the Secondary Hochschild Homology January 12, 2018

- At the JMM in San Diego, CA

[1] Ramsey Numbers September 7, 2017

- Mathematics Colloquium Series at SNC