1036 27th Ave SE
Apt. A
Minneapolis, MN 55414

Owen D. Biesel

(571) 210-1579
owenbiesel@gmail.com
owenbiesel.com/math

Positions and Education

- **Visiting Assistant Professor**, Carleton College 2017—present
  - **of Mathematics and Statistics**: 2019—present
  - **of Mathematics**: 2017—2019
- **Postdoctoral Researcher**, Leiden University 2013—2016
- **Ph.D., Mathematics** with Manjul Bhargava, Princeton University 2008—2013
- **Mathematics Tripos Part III**, Cambridge University, with distinction 2007—2008
- **B.S., Mathematics; B.S., Physics**, University of Washington 2003—2007

Research Interests

- Generalized Galois theory, algebraic geometry, and network theory.

Teaching Interests

- Introductory calculus, introductory statistics, real analysis, and abstract algebra.

Honors and Awards

- **Towsley Award**, Carleton College 2018
  The Towsley endowment for the sciences provides funding for faculty to hire student researchers.
- **Teacher of the Year Nominee**, Leiden University, Faculty of Science 2015
- **Graduate Teaching Award**, Princeton University, Mathematics Department 2013
  This prize is in recognition of contributions made to undergraduate teaching by a graduate student.
- **Centennial Fellowship**, Princeton University 2008—2012
  The Centennial Fellowship offers a competetive salary package to a small fraction of graduate students.
- **College Prize**, Churchill College, Cambridge 2008
  Recommended by Director of Studies in recognition of examination results.
- **Outstanding Graduating Senior in Mathematics**, University of Washington 2007
- **Gullicksen Award**, University of Washington 2006
  The Gullicksen Award is given annually to the most outstanding junior mathematics student.
- **Goldwater Scholarship**, Goldwater Foundation 2006
  The annual Goldwater Scholarship is given each year to approximately 300 students in the U.S.
- **Honors Calculus Award**, University of Washington 2005
  This award goes each year to the most outstanding student in Advanced Honors Calculus.
- **Andersen Scholarship**, University of Washington 2005
  The Andersen Scholarship is given annually to the most promising sophomore physics student.
- **National Merit Scholarship**, University of Washington 2004
  The University of Washington offers National Merit Scholarships each year to exceptional students.

Publications

- **Galois closure data for extensions of rings** 2018
  Transformation Groups, 23(1), 41-69. *Arxiv: 1601.07389*
- **Néron models and the height jump divisor** with R. de Jong and D. Holmes 2017
  Transactions of the American Mathematical Society, 369(12), 8685-8723. *Arxiv: 1412.8207*
- **A new discriminant algebra construction** with A. Gioia 2016
  Documenta Mathematica, 21, 1051-1088. *Arxiv: 1503.05318*

Preprints, Theses, and Other Works

- **Duality for algebras of the connected planar wiring diagrams operad** 2019
  In preparation
- **A principle for converting Lindström-type lemmas to Stembridge-type theorems, with applications to walks, groves, and alternating flows** 2018
  Submitted; Arxiv: 1805.10239
- **Isomorphisms of discriminant algebras** 2016
  with A. Gioia. *Submitted; Arxiv: 1612.01582*
- **Fine compactified moduli of enriched structures on stable curves** 2016
  with D. Holmes. *Under revision for Memoirs of the AMS; Arxiv: 1607.08835*
- **The Gibbs Phenomenon: Why JPEGs Look Yucky** 2014
  An article for Leiden University's Eureka! *Magazine.*
- **Galois Closures for Rings** 2013
  Ph.D. dissertation under Manjul Bhargava, Princeton University.
- **Modelling Language Evolution** and **The Precession of Mercury's Perihelion** 2007
  Mathematics and Physics B.S. theses under James Morrow, University of Washington.
- **Excitation energies in ^{33}Cl via ^{32}S(p,γ)** 2006
  with S. Triambak, A. García, et al. *Published in Phys. Rev. C 74*(5).

Seminar Talks

- **Duality for Algebras of the Connected Planar Wiring Diagrams Operad.** May 2019
  Fourth Symposium on Compositional Structures, Chapman University.
- **A Fine Moduli Space of Enriched Structures.** February 2019
  Algebraic Geometry Seminar, University of South Carolina
- **G-closures and discriminant algebras.** November 2018
  Number Theory Seminar, University of Waterloo
- **The Operad of Network Models.** April 2018
  Systems Thinking Micro-seminar, Carleton College
- **A New Discriminant Algebra Construction.** December 2016
  Algebraic Geometry Seminar, University of Minnesota
- **The Tropical Grassmannian.** December 2016
  Algebraic Geometry Reading Group, University of Minnesota
- **The Boundary Complex of $\bar{\mathcal{M}}_{g,n}$.** November 2016
  Algebraic Geometry Reading Group, University of Minnesota
- **Introduction to Tropicalization.** October 2016
  Algebraic Geometry Reading Group, University of Minnesota
- **What's inside the black box?** March 2016
  Guest seminar, Carleton College
- **Solvability by Radicals and Solvable Galois Groups.** May 2014
  Algebraic Geometry Seminar, University of Vienna
- **A New Definition of Discriminant Algebra.** March 2014
  Algebra, Geometry and Number Theory Seminar, Leiden University
- **Elementary Galois Theory.** July 2012
  Guest Lecture for the University of Washington's Mathematics REU
- **The Language of Categories.** February 2012
  Graduate Student Seminar, Princeton University
- **Γ-Space and Deformations of Electrical Networks.** July 2010
  Supplementary Lecture for the University of Washington's Mathematics REU

- **Topological Spaces as Relational β-Modules.** March 2010
  Graduate Student Seminar, Princeton University
- **Dual Networks.** July 2009
  Supplementary Lecture for the University of Washington's Mathematics REU

Supervised Student Research

- **Henry Chapman**, Network models and planar graph metrics. 2019
  Independent research, Carleton College
- **Nupur Bindal, Alief Moulana, Tim Schoch, Ned Wang**, Measures of Biodiversity. 2019
  Senior Integrative Exercise, Carleton College
- **Muyang Shi**, Computer representations of free finite-rank algebra constructions. 2018
  Towsley Endowment for Undergraduate Research, Carleton College
- **Maya Banks, Lynn Daniel, Angel Villa, Yuhao Wan**, Recovering Edge Conductivities in Electrical Networks. 2018
  Senior Integrative Exercise, Carleton College
- **Raoul Wols**, A McCord Functor for Alexandroff Categories. 2016
  Master's thesis, Leiden University
- **Mohamed Hashi**, Affine Objects, Restrictive Morphisms and Quasi-coherent Sheaves. 2016
  Master's thesis, Leiden University
- **Daan van Gent**, Graph Isomorphism in Quasi-Polynomial Time. 2016
  Bachelor's thesis, Leiden University
- **Michiel van den Berge**, An algorithm for morphing sounds. 2015
  Bachelor's thesis, Leiden University
- **Riccardo Ferrario**, Galois closures for monogenic degree-4 extensions of rings. 2014
  Master's thesis, Leiden University
- **Marius Stekelenburg**, Ultrafilters and Topology. 2014
  Bachelor's thesis, Leiden University

Teaching

Carleton College:

- **Instructor: Introduction to Statistics** Winter 2020
  Planned classes, wrote exams, designed student projects, managed a student grader, and assigned final grades.
- **Instructor: Introduction to Calculus** Falls 2017 and 2019
  Planned classes, wrote exams and daily quizzes, designed student projects, managed student graders, and assigned final grades.
- **Instructor: Abstract Algebra** Spring 2019
  Planned classes and weekly homework, wrote exams, designed student projects, managed a teaching assistant, and assigned final grades.
- **Instructor: Real Analysis** Winter 2019
  Planned classes and weekly homework, wrote exams, managed a teaching assistant, and assigned final grades.
- **Instructor: Linear Algebra** Spring 2018 and Winter 2019
  Planned classes and daily homework, wrote exams, managed a student grader, and assigned final grades.
- **Instructor: Multivariable Calculus** Fall 2018
  Planned classes and daily homework, wrote exams, designed student projects, managed student graders, and assigned final grades.

- **Instructor: Calculus II** Winter 2018
  Planned classes and daily homework, wrote exams, designed student projects, managed student graders, and assigned final grades.

Leiden University:

- **Instructor: Commutative Algebra** Spring 2014 and Fall 2015
  Designed syllabus, planned lectures, wrote and graded exams, and assigned final grades.
- **Instructor: Calculus** Falls 2013—2015
  Designed syllabus, planned lectures, wrote and graded exams, quizzes, and homework assignments, and assigned final grades.
- **Instructor: Mathematics Intermediate** Spring 2015
  Co-designed syllabus, facilitated classroom discussion and topic exploration, and graded student projects.

Princeton University:

- **Instructor: Precalculus** Fall 2012
  Duties included syllabus design; planning and giving all lectures; writing, proctoring, and grading quizzes and exams; organizing review sessions; holding office hours; and assigning final grades.
- **Assistant Instructor: Numbers, Equations, and Proofs** Fall 2011
  Duties included grading, holding office hours, and substitute lecturing.
- **Assistant Instructor: Investigations in Elementary Number Theory** Summer 2011
  Assisted course planning, gave weekly lectures, programmed animated visual aids, and led a small group of students in their final project.
- **Grader: Abstract Algebra** Spring 2011
  Duties included grading students' work and holding office hours.
- **Assistant Instructor: Representation Theory** Fall 2010
  Assisted in the classroom, graded students' work, and led review sessions.
- **Grader: Calculus II** Spring and Fall 2010
  Duties included grading students' work and holding office hours.
- **Assistant Instructor: The Magic of Numbers** Spring 2010
  This course covered topics including proofs, combinatorial sequences, and continued fractions and their uses in biology and music. Duties included planning and giving weekly supplemental lectures to a small group from the 150-student class, and preparing computer animations for use in the main lectures.
- **Grader: Calculus I** Fall 2009
  Duties included grading students' work and holding office hours.

University of Washington:

- **Research Assistant: Inverse Problems** Summers 2006—2010
  Duties included participation in individual and team research projects, assisting students in their own research, and organizing extra-curricular activities.
- **Teaching Assistant: Advanced Honors Calculus** Fall 2006—Spring 2007
  Duties included planning supplemental lectures, holding office hours, and grading homework assignments.
- **Grader: Introduction to Mathematical Reasoning** Spring 2006
- **Teaching Assistant: Precalculus** Summer 2004
  Duties included classroom assistance and grading homework and exams.

Departmental Service

- **Pedagogy Seminar Organizer** Spring 2019—present
  Planned and facilitated discussions on a variety of teaching-related topics.

- **Mathematics GRE Subject Test Trainer** Falls 2018 and 2019, Winter 2020
  Hosted GRE practice problem sessions and trained students in fast problem-solving skills.
- **Goodsell Gazette Editor** Fall 2018—Spring 2019
  This mathematics department newsletter collects department news, event announcements, and internship and research opportunities, and is read by students, faculty, and alumni.
- **Statistics Major Learning Goals Assessor** Fall 2018—Spring 2019
  This process involves collecting data on graduating seniors or recent graduates in order to estimate the fraction of students who have met the year's chosen learning goal.
- **Social Coordinator** Fall 2017—Spring 2018
  Duties included organizing and advertising social activities for students and faculty.

References

- **Manjul Bhargava**: bhargava@math.princeton.edu *Professor, Princeton University*
- **Eric Egge***: eegge@carleton.edu *Professor, Carleton College*
- **John Voight**: jvoight@gmail.com *Associate Professor, Dartmouth College*
- **David Holmes***: holmesdst@math.leidenuniv.nl *Assistant Professor, Leiden University*

*Also a teaching reference