J.D. Quigley

Max Planck Institute for Mathematics
Vivatgasse 7
53111 Bonn
Germany

Email: jquigley1993@gmail.com
Webpage: quigleyjd.github.io

Employment

RTG Postdoctoral Scholar, University of Oregon. September 2022 - June 2025.

Mentor: Daniel Dugger.

Postdoctoral Fellow, Max Planck Institute for Mathematics. August 2022 - December 2022.

Mentor: Tobias Barthel.

H.C. Wang Assistant Professor, Cornell University. July 2019 - June 2022.

Mentor: Inna Zakharevich.

Education

Ph.D. in Mathematics, University of Notre Dame. June 2014 - May 2019.

Advisor: Mark Behrens.

B.S. in Mathematics, University of Illinois at Urbana-Champaign. August 2011 - December 2013.

Cum Laude with Departmental Distinction.

Honors, Awards, and Grants

NSF RTG: Electronic Computational Homotopy Theory Research Community (PI Daniel Isaksen, co-PIs Bertrand Guillou, J.D. Quigley, Vesna Stojanoska), DMS-2135884. August 2022 - July 2025.

AMS-Simons Travel Grant. July 2021 - June 2023.

Sady Dissertation Prize. Mathematics Department, University of Notre Dame. 2019.

Oberwolfach Junior Fellows Travel Grant. 2018, 2019.

AMS Graduate Student Travel Grant. 2016.

Honorable Mention, National Science Foundation Graduate Research Fellowship. 2015, 2016.

Elizabeth R. Bennett Scholarship in Mathematics. University of Illinois at Urbana-Champaign. 2013.

Elsie Thomas Fraser Award in Mathematics. University of Illinois at Urbana-Champaign. 2012.

Publications

1. *Ranks of $RO(G)$-graded stable homotopy groups of spheres for finite groups G*, with J.P.C. Greenlees.
   Proceedings of the American Mathematical Society, Series B, to appear. arXiv:2205.02382.
2. *The 2-primary Hurewicz image of tmf*, with Mark Behrens and Mark Mahowald.
   Geometry & Topology, to appear. arXiv:2011.08956.
3. *Free incomplete Tambara functors are almost never flat*, with Mike Hill and David Mehrle.
   International Mathematics Research Notices, to appear. arXiv:2105.11513.
4. *tmf-based Mahowald invariants*.
   Algebraic & Geometric Topology 22-4 (2022), 1789-1839.
5. *Algebraic slice spectral sequences*, with Dominic Culver and Hana Jia Kong.
   Documenta Mathematica 26 (2021), 1085-1119.
6. *Motivic Mahowald invariants over general base fields*,
   Documenta Mathematica 26 (2021), 561-582.
7. *kq-resolutions I*, with Dominic Culver.
   Transactions of the American Mathematical Society 374-7 (2021), 4655-4710.
8. *Real motivic and C_2-equivariant Mahowald invariants*.
   Journal of Topology 14-2 (2021), 369-418.
9. *The Segal Conjecture for topological Hochschild homology of the Ravenel spectra*, with Gabriel Angelini-Knoll.
   Journal of Homotopy and Related Structures 16-1 (2021), 41-60.
10. *The motivic Mahowald invariant*.
    Algebraic & Geometry Topology 19-5 (2019), 2485–2534.
11. *Computing Primitively-Rooted Squares and Runs in Partial Words*, with Francine Blanchet-Sadri, Justin Lazarow, Jordan Nikkel, and Xufan Zhang.
    European Journal of Combinatorics 68 (2018), 223-241.
12. *Squares and Primitivity in Partial Words*, with Francine Blanchet-Sadri, Michelle Bodnar, Jordan Nikkel, and Xufan Zhang.
    Discrete Applied Mathematics 185 (2015), 26-37.
13. *Squares in Partial Words*, with Francine Blanchet-Sadri, Yang Jiao, John Machacek, and Xufan Zhang.
    Theoretical Computer Science 530 (2014), 42-57.

Preprints

1. *v_1-periodic motivic homotopy over prime fields*, with Hana Jia Kong.
   Submitted. arXiv:2209.08603.
2. *Some smooth circle and cyclic group actions on exotic spheres*.
   Submitted. arXiv:2209.01591.
3. *The motivic lambda algebra and motivic Hopf invariant one problem*, with William Balderrama and Dominic Leon Culver.
   Submitted. arXiv:2112.07479.
4. *On the equivalence of two theories of real cyclotomic spectra*, with Jay Shah.
   Submitted. arXiv:2112.07462.
5. *On the parametrized Tate construction*, with Jay Shah.
   Submitted. arXiv:2110.07707.
6. *Tate blueshift and vanishing for Real oriented cohomology*, with Guchuan Li and Vitaly Lorman.
   Submitted. arXiv:1910.06191.
7. *Chromatic complexity of the algebraic K-theory of $y(n)$*, with Gabriel Angelini-Knoll.
   Submitted. arXiv:1908.09164.

Talks

Invited conference talks

Baues Memorial Conference, MPIM Bonn, Germany. November 2022.

Mini-symposium: K-Theory, Symmetry, and Periodicity, Free University of Berlin. September 2022.

Motivic Geometry Conference, University of Oslo, Norway. August 2022.

Parallel Session on Algebraic Topology, Union College Mathematics Conference. June 2022.

Special Session on Homotopy Theory, AMS Sectional Meeting, University of Virginia. March 2022. (cancelled)

Midwest Topology Seminar. October 2020.

Special Session on Motivic Aspects of Topology and Geometry, AMS Sectional Meeting, University of Virginia. March 2020. (cancelled)

Workshop on Equivariant Stable Homotopy Theory and p-adic Hodge Theory, Banff International Research Station. March 2020.

Graduate Student Session, International Workshop on Algebraic Topology, Fudan University. August 2019.

Equivariant Topology & Derived Algebra (A Jolly Pleasant Conference for Greenlees), Norwegian University of Science and Technology. August 2019.

Special Session on Structured Homotopy, AMS Sectional Meeting, University of Michigan. October 2018.

Young Topologists Meeting, University of Copenhagen. July 2018.

Special Session on Homotopy Theory, AMS Sectional Meeting, Ohio State University. March 2018.

Young Topologists Meeting, University of Stockholm. July 2017.

Invited seminar talks and lecture series

Université Sorbonne Paris Nord Topology Seminar. November 2022.
Max Planck Institute for Mathematics Topology Seminar. September 2022.
University of Pennsylvania Homotopy Theory Seminar. September 2022.
University of Osnabrueck Topology Seminar. September 2022.
Monthly meeting, NSF FRG on Trace Methods and Cut-and-Paste K-Theory. October 2021.
Electronic Computational Homotopy Theory Seminar. April 2021.
Indian Institute of Technology Roorkee Motivic Homotopy Theory Seminar. April 2021.
University of Michigan Algebraic Topology Seminar. April 2021.
Princeton University Algebraic Topology Seminar. February 2021.
Free University of Berlin Topology Seminar. November 2020.
University of California, Los Angeles Topology Seminar. November 2020.
Lecture series on *Real cyclotomic spectra*. Free University of Berlin. June 2020. (cancelled)
Johns Hopkins University Topology Seminar. February 2020.
Wayne State University Topology Seminar. November 2019.
Massachusetts Institute of Technology Topology Seminar. October 2019.
Cornell University Topology and Geometric Group Theory Seminar. September 2019.
University of Osnabrueck Topology Seminar. April 2019.
University of Rochester Topology Seminar. February 2019.
University of Virginia Topology Seminar. November 2018.
University of Illinois at Urbana-Champaign Topology Seminar. November 2018.
University of Chicago Topology Seminar. November 2018.
Northwestern University Topology Seminar. October 2018.
University of Kentucky Topology Seminar. October 2018.
University of Notre Dame Topology Seminar. October 2018.
University of Oslo Topology Seminar. August 2018.
Michigan State University Geometry and Topology Seminar. November 2017.
Ohio State University Motivic Cohomology and Homotopy Theory Seminar. October 2017.

Selected expository and contributed talks

K-Theory Summer School at University of Southern California. August 2018.
European Talbot Workshop. June 2017.
Talbot Workshop. May 2017.
Talbot Workshop. April 2016.

Teaching

University of Oregon

Instructor, Sequences and Series. Spring 2023.

Instructor, Single-Variable Integral Calculus. Winter 2023.

Cornell University

Instructor, Multivariable Calculus (2 sections). Spring 2022.

Instructor, Prove It!. Fall 2021.

Instructor, Topics in Topology: Stable Homotopy Theory. Spring 2021.

Instructor, Finite Math for the Life and Social Sciences (2 sections). Fall 2020.

Instructor, Calculus III. Spring 2020.

Instructor, Calculus I (2 sections). Fall 2019.

University of Notre Dame

Head TA, Calculus B (2 sections). Spring 2019.

Head TA, Calculus A (2 sections). Fall 2017.

Instructor, Elements of Calculus I. Fall 2016.

TA, Calculus B (2 sections), Notre Dame. Spring 2016.

TA, Calculus A (3 sections), Notre Dame. Fall 2015.

Service

Referee or quick opinion for *Memoirs of the American Mathematical Society*; *Communications of the American Mathematical Society*; *International Mathematics Research Notices*; *Proceedings of the Royal Society of Edinburgh, Section A*; *New York Journal of Mathematics*; *Journal of Topology*; *Algebraic & Geometric Topology*; *Journal of Homotopy and Related Structures*; *Journal of Automata, Languages, and Combinatorics*.

Reviewer for *zbMATH* and *MathSciNet*.

Co-organizer, Electronic Computational Homotopy Theory Online Research Community, Fall 2019 - Spring 2023.

Main research seminar (co-organizer, Fall 2019 - Fall 2022), reading seminar on Mahowald invariants (co-organizer, Fall 2022), reading seminar on synthetic spectra (technical assistant, Spring 2022), reading seminar on equivariant homotopy theory (co-instructor, Fall 2021), mini-courses (co-organizer, Fall 2021 and Spring 2022), reading seminar on equivariant algebra (co-organizer, Spring 2021), Kan seminar (instructor, Fall 2019 and Fall 2020), and reading seminar on motives (co-organizer, Spring 2020).

Co-organizer, Cornell Topology and Geometric Group Theory Seminar. Fall 2021.

Advanced Placement Exams Committee, Math Department, Cornell University. Fall 2019 - Spring 2021.

External Expert, Master's Project Exam, École Polytechnique Fédérale de Lausanne. Spring 2021.

Co-organizer, Notre Dame Graduate Student Topology Seminar. Fall 2016 - Spring 2019.

Topics included functor calculus (Spring 2019), geometric group theory (Fall 2018), topological field theories (Spring 2018), operads and delooping machinery (Fall 2017), equivariant stable homotopy theory (Spring 2017), and rational homotopy theory (Fall 2016).

Mentor, Notre Dame undergraduate directed reading program. Fall 2016 - Spring 2019.

"Algebraic number theory (Jarvis)" and "Algebraic number theory (Neukirch)" with Ting Gong.

"Modern cryptography and elliptic curves (Shemanske)" with Anthony Napolitano.

"Elliptic curves, modular forms, and their L-functions (Lozano-Robledo)" with Christian Hokaj.

Outreach

K-12 Education & Outreach Committee, Math Department, Cornell University. Fall 2021 - Spring 2022.

Advisor and Faculty Organizer, Math Explorer's Club, Cornell University. Fall 2019 - Spring 2022.

Instructor, Little Circle (Ithaca Math Circle for grades K-3). Spring 2021 - Spring 2022.

Volunteer, Robinson Community Learning Center, South Bend, IN. Spring 2017 - Spring 2019.

Volunteer and Instructor, Riverbend Community Math Center, South Bend, IN. Summer 2014 - Summer 2016.

Assistant Manager, Illinois Geometry Lab, University of Illinois at Urbana-Champaign. Spring 2014.

References

Mark Behrens (advisor), University of Notre Dame, mbehren1@nd.edu

Teena Gerhardt, Michigan State University, teena@math.msu.edu

John Greenlees, University of Warwick, john.greenlees@warwick.ac.uk

Dan Isaksen, Wayne State University, isaksen@wayne.edu

Marie MacDonald (teaching), Cornell University, mb2636@cornell.edu

Inna Zakharevich, Cornell University, zakh@math.cornell.edu