

# Gabriel J. Angelini-Knoll

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## Research Interests

Algebraic topology, algebraic K-theory, and factorization homology.

## Academic Positions

- 2019-Present Postdoctoral Researcher, Freie Universität Berlin, Germany.
- 2017-2019 Postdoctoral Researcher, Michigan State University, East Lansing, Michigan.

## Education

- 2017 PhD in Mathematics, Wayne State University, Detroit, Michigan.  
Thesis: *Periodicity in Iterated Algebraic K-theory of Finite Fields*.  
Thesis Advisor: Andrew Salch.
- 2013 MA in Mathematics, Wayne State University, Detroit, Michigan.  
Thesis: *Galois Cohomology and Algebraic K-theory of Finite Fields*.  
Thesis Advisor: Andrew Salch.
- 2011 BA in Mathematics, cum laude, Kalamazoo College, Kalamazoo, Michigan.
- 2011 BA in Psychology, cum laude, Kalamazoo College, Kalamazoo, Michigan.

## Awards

- 2017 The Dr. Chornng-Shi Houh Award. Wayne State University.
- 2016 Rumble Fellowship. Wayne State University.
- 2016 Karl W. and Helen L. Folley Endowed Mathematics Scholarship. Wayne State University.
- 2015 Robert and Nancy Irvan Endowed Scholarship in Mathematics. Wayne State University.
- 2014 The Maurice J. Zelonka Endowed Mathematics Scholarship. Wayne State University.
- 2013 The Alfred L. Nelson Award. Wayne State University.
- 2012 The Sheila Sparbeck Award. Wayne State University.

## Publications

### PUBLISHED

- 2021 Gabriel Angelini-Knoll. On topological Hochschild homology of the  $K(1)$ -local sphere. *J. Topol.* (2021) 14: 258–290. [doi.org/10.1112/topo.12182](https://doi.org/10.1112/topo.12182).
- 2021 Gabriel Angelini-Knoll and J.D. Quigley. The Segal Conjecture for topological Hochschild homology of Ravenel spectra. *J. Homotopy Relat. Struct.* [doi.org/10.1007/s40062-021-00275-7](https://doi.org/10.1007/s40062-021-00275-7).
- 2018 Gabe Angelini-Knoll and Andrew Salch. A May-type spectral sequence for higher topological Hochschild homology. *Algebr. Geom. Topol.* **18** no. 5, 2593–2660. [msp.org/agt/2018/18-5/p03.xhtml](https://msp.org/agt/2018/18-5/p03.xhtml).

### SUBMITTED

- 2021 Gabriel Angelini-Knoll, Dominic Leon Culver, and Eva Höning. Topological Hochschild homology of truncated Brown-Peterson spectra I *Submitted*. [arXiv:2106.06785](https://arxiv.org/abs/2106.06785).
- 2021 Gabriel Angelini-Knoll. Complex orientations and TP of complete discrete valuation rings. *Submitted*. [arXiv:2104.07306](https://arxiv.org/abs/2104.07306).
- 2020 Gabriel Angelini-Knoll and Andrew Salch. Commuting unbounded homotopy limits with Morava K-theory. *Submitted*. [arXiv:2003.03510](https://arxiv.org/abs/2003.03510).
- 2019 Gabriel Angelini-Knoll and J.D. Quigley. Chromatic complexity of the algebraic K-theory of the Thom spectra  $y(n)$ . *Submitted*. [arXiv:1908.09164](https://arxiv.org/abs/1908.09164).
- 2018 Gabriel Angelini-Knoll. Detecting  $\beta$  elements in iterated algebraic K-theory of finite fields. *Submitted*. [arXiv:1810.10088](https://arxiv.org/abs/1810.10088).

### IN PREPARATION

- 2021 Gabriel Angelini-Knoll, Teena Gerhardt, and Mike Hill. Real topological Hochschild homology, Witt vectors, and norms. *Preprint, current draft 55 pages*.
- 2021 Gabriel Angelini-Knoll, Dominic Culver, and Eva Höning, Topological Hochschild homology of truncated Brown-Peterson spectra II. *Preprint, current draft 27 pages*.
- 2021 Gabriel Angelini-Knoll, Mona Merling, and Maximilien Péroux. Topological crossed simplicial group homology. *Preprint, current draft 24 pages*.

## Talks

### INVITED TALKS

- 2021 University of Pennsylvania, Geometry and Topology Seminar.
- 2021 AIM Workshop on Equivariant techniques in stable homotopy theory.
- 2021 University of Warwick, Topology Seminar.
- 2020 École polytechnique fédérale de Lausanne, Topology Seminar.
- 2020 Massachusetts Institute of Technology, Topology Seminar.
- 2020 Equivariant Stable Homotopy Theory and p-adic Hodge Theory, BIRS, Banff, Canada.
- 2019 Freie Universität Berlin, Topology Seminar.
- 2019 University of California Los Angeles, Algebraic Topology Seminar.
- 2019 University of Illinois Urbana-Champaign, Topology Seminar.
- 2019 AMS Sectional, University of Hawaii at Manoa.

2019 Northwestern University, Topology Seminar.  
 2019 Electronic Computational Homotopy Theory Seminar.  
 2018 AMS Sectional, Ohio State University.  
 2017 AMS Sectional: Bloomington, Indiana.  
 2017 Midwest Topology Conference, Wayne State University.  
 2017 University of Kentucky, Topology Seminar.  
 2017 Johns Hopkins University, Topology Seminar.  
 2017 University of Chicago, Topology Seminar.  
 2016 University of Notre Dame, Topology Seminar.  
 2016 Michigan State University, Topology Seminar.  
 2016 Indiana University, Topology Seminar.  
 2016 University of Illinois Urbana-Champaign, Topology Seminar.  
 2016 Ohio State University, K-theory Seminar.

#### CONTRIBUTED TALKS

2019 LG&TBQ Conference at University of Michigan, Ann Arbor.  
 2017 Transatlantic Transchromatic Homotopy theory conference, University of Regensburg.  
 2016 Graduate Student Geometry and Topology Conference, Indiana University.  
 2015 Young Topologists' Meeting, École Polytechnique Fédérale de Lausanne.  
 2015 Graduate Student Geometry and Topology Conference, UIUC.

#### INVITED TALKS FOR AN UNDERGRADUATE AUDIENCE.

2018 REU in experimental mathematics, Michigan State University.  
 2017 Math Club, University of Kentucky.  
 2014 Undergraduate seminar, Kalamazoo College.  
 2013 Undergraduate seminar, Wayne State University.

## Teaching

### FREIE UNIVERSITÄT BERLIN

#### Primary instructor

Winter 2021/22 19223811 Forschungsmodul: Topologie: TBD  
 Summer 2021 19203017 Pro-Seminar/Seminar on Algebra - Symmetries.  
 Winter 2020/21 19243901 Algebraic K-theory: Fundamental theorems in algebraic K-theory and applications.  
 Winter 2020/21 19223811 Forschungsmodul: Topologie: Equivariant stable homotopy theory.  
 Summer 2020 19223811 Forschungsmodul: Topologie: Cohomology of Groups.  
 Winter 2019/20 19217011 Seminar zur Topologie: Simplicial Methods in Topology.

#### Research seminar organizer

Winter 2021/22 19209716 Forschungsseminar Geometrie und Topologie: TBD

- Summer 2021 19209716 Forschungsseminar Geometrie und Topologie: Special topics
- Winter 2020/21 19209716 Forschungsseminar Geometrie und Topologie: Higher symmetry.
- Winter 2020/21 19209716 Forschungsseminar Geometrie und Topologie: K-theory of pullbacks.
- Summer 2020 19209716 Forschungsseminar Geometrie und Topologie: Chromatic homotopy.

### Teaching Assistant

- Summer 2021 19219402 Higher algebra. A course on  $\infty$  categories and  $\infty$  operads. (Course taught by H. Reich.)
- Summer 2020 19215101 Aufbaumodul: Topologie III. A course on homotopy theory. (Course taught by H. Reich.)
- Winter 2019/20 19206201 Basismodul: Topologie II. A course on homology theories. (Course taught by H. Reich.)

### MICHIGAN STATE UNIVERSITY

#### Primary instructor

- Winter 2019 MTH 961 Algebraic Topology II: Homotopy theory, spectral sequences, characteristic classes.
- Fall 2018 MTH 132 Calculus I: A first course in calculus for engineering majors.
- Winter 2018 MTH 310 Abstract Algebra I and Number Theory: A first course on ring theory.
- Fall 2017 MTH 124 Business Calculus: A first course in calculus for Business majors.

#### Research seminar organization:

- Winter 2018 Seminar on Algebraic K-theory. Organized with N. Grieve.

### WAYNE STATE UNIVERSITY

#### Primary instructor

- Fall 2015 Intermediate Algebra with Trigonometry: An elementary college algebra course.
- Winter 2015 Intermediate Algebra with Trigonometry: An elementary college algebra course.
- Winter 2014 Intermediate Algebra with Trigonometry: An elementary college algebra course.
- Fall 2013 Elementary Functions: A course in precalculus.
- Summer 2013 Elementary Statistics: A first course in statistics and probability.
- Summer 2013 Math in Today's World: A quantitative literacy course.
- Winter 2013 Elementary Functions: A course in precalculus.
- Fall 2012 Elementary Functions: A course in precalculus.
- Summer 2012 Math in Today's World: A quantitative literacy course.

## Service

### CONFERENCE ORGANIZATION

- 2019 Co-organizer for AMS Sectional Meeting on Homotopy theory. UW Madison.
- 2019 Co-organizer for Midwest Topology Conference. Michigan State University.

## REVIEWER

Annals of K-theory  
MathSciNet

## UNDERGRADUATE RESEARCH MENTORSHIP

- 2019 Undergraduate research project leader and mentor for a NSF and NSA funded REU at Michigan State University.
- 2019 Undergraduate research project leader and mentor for Discovering America Program at Michigan State University. Co-led with T. Gerhardt.

## TEACHING MENTORSHIP AND SERVICE

- 2018 Teaching Mentor for incoming Graduate Teaching Assistants. Michigan State University.
- 2015 Teaching Mentor for incoming Graduate Teaching Assistants. Wayne State University.
- 2013 Teaching Mentor for incoming Graduate Teaching Assistants. Wayne State University.
- 2013 Course coordinator for Math in Today's World. Wayne State University.

## Languages

English (mother tongue), Spanish (B2), German (A2). French (A1)

## References

Teena Gerhardt [teena@math.msu.edu](mailto:teena@math.msu.edu)  
Mike Hill [mikehill@math.ucla](mailto:mikehill@math.ucla)  
Mona Merling [mmerling@math.upenn.edu](mailto:mmerling@math.upenn.edu)  
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