

Yifei Zhu

Department of Mathematics
Southern University of Science and Technology
Shenzhen, Guangdong 518055
People's Republic of China

Email: zyf@umn.edu
Office: Huiyuan 3-419
Phone: +86-755-8801 5911
<https://yifeizhu.github.io>

POSITIONS

Southern University of Science and Technology, Shenzhen, Guangdong, China

Assistant Professor, December 2016 to present

Academy of Mathematics and Systems Science, Chinese Academy of Sciences, Beijing, China

Visiting Scholar, October 2016 to January 2017

Northwestern University, Evanston, Illinois, USA

Visiting Assistant Professor, September 2013 to August 2016

Mentor: Paul Goerss

EDUCATION

University of Minnesota, Twin Cities, Minnesota, USA

Ph.D. in Mathematics, June 2013

Advisor: Tyler Lawson

Peking University, Beijing, China

B.S. in Mathematics, July 2007

RESEARCH INTERESTS

Algebraic topology and related fields, particularly algebraic geometry and number theory.

PUBLICATIONS

Norm coherence for descent of level structures on formal deformations

Submitted for publication. Available at [arXiv:1706.03445](https://arxiv.org/abs/1706.03445).

Morava E-homology of Bousfield-Kuhn functors on odd-dimensional spheres

Proceedings of the American Mathematical Society **146** (2018), no. 1, 449–458.

DOI: [10.1090/proc/13727](https://doi.org/10.1090/proc/13727)

Modular equations for Lubin-Tate formal groups at chromatic level 2

Submitted for publication. Available at [arXiv:1508.03358](https://arxiv.org/abs/1508.03358).

The Hecke algebra action on Morava E-theory of height 2

Submitted for publication. Available at [arXiv:1505.06377](https://arxiv.org/abs/1505.06377).

The power operation structure on Morava E-theory of height 2 at the prime 3

Algebraic and Geometric Topology **14** (2014), no. 2, 953–977. DOI: [10.2140/agt.2014.14.953](https://doi.org/10.2140/agt.2014.14.953)

AWARDS AND FELLOWSHIPS

2018–2020 National Natural Science Foundation of China grant 11701263,
“Methods of algebraic geometry and number theory in algebraic topology.”

2017–2022 Overseas High-Caliber Personnel (Level C) fellowship, Shenzhen.

2007–2013 Teaching assistantship, University of Minnesota.

2007 Outstanding Graduating Student award, Peking University.

2005–2006 Outstanding Student award, School of Mathematical Sciences, Peking University.

CONFERENCE PRESENTATIONS

Power operations in elliptic cohomology and related arithmetic topics

Special Session on Algebraic and Geometric Topology, AMS-CMS Joint International Meeting, Shanghai, June 2018.

Toward calculating unstable higher-periodic homotopy types

International Workshop on Algebraic Topology, Southern University of Science and Technology, Shenzhen, June 2018.

Symmetry encoded by norm maps

International Workshop on Loop Spaces, Supersymmetry and Index Theory, Chern Insti-

tute of Mathematics, Tianjin, July 2017.

Algebraic geometry of ring spectra and multiplicative invariants for families of manifolds

Workshop on Algebraic and Geometric Topology, Nankai University School of Mathematical Sciences, Tianjin, June 2017.

Toward calculating unstable higher-periodic homotopy types (scheduled)

AMS Special Session on Homotopy Theory, Sectional Meeting, Bloomington, April 2017.

Session on chromatic power operations, with P. Nelson and P. VanKoughnett

Operations in Highly Structured Homology Theories, Banff, May 2016.

Modular equations for Lubin-Tate formal groups at chromatic level 2

AMS Session on Algebraic Geometry, Joint Meetings, Seattle, January 2016.

Power operation calculations in elliptic cohomology

AMS Special Session on Homotopy Theory, Joint Meetings, Baltimore, January 2014.

CONFERENCE ORGANIZING

International Workshop on Algebraic Topology 2019 (scheduled)

International conference, 3 days.

Joint organizer with A. Beaudry, M. Behrens, D. Isaksen, J. Kong, Z. Lü, G. Wang, Z. Xu.

Fudan University, Shanghai, August 19–21, 2019.

Summer School on Equivariant Stable Homotopy Theory (scheduled)

International conference, 5 days.

Joint organizer with A. Beaudry, M. Behrens, D. Isaksen, J. Kong, Z. Lü, G. Wang, Z. Xu.

Fudan University, Shanghai, August 13–17, 2019.

Special Session on Algebraic and Geometric Topology, AMS-CMS Joint International Meeting

International conference, 4 days, 50 participants.

Joint organizer with M. Hill, Z. Lü, J. Ma.

Fudan University, Shanghai, June 11–14, 2018.

International Workshop on Algebraic Topology

International conference, 4 days, 70 participants.

Joint organizer (principal) with A. Beaudry, M. Behrens, Z. Huan, H. Miller, N. Stapleton, G. Wang, Z. Xu.

Southern University of Science and Technology, Shenzhen, June 6–9, 2018.

Operations in Highly Structured Homology Theories

International conference, 5 days, 40 participants.

Organizer for Session on Chromatic Power Operations.

Banff International Research Station, May 22–27, 2016.

SEMINAR TALKS

Power operations in elliptic cohomology and semistable models for modular curves

Chinese Academy of Sciences Topology Seminar, November 2018.

Toward calculating unstable higher-periodic homotopy types

Electronic Computational Homotopy Theory Seminar, April 2018.

Power operations in elliptic cohomology and moduli of elliptic curves

Nankai University, November 2016.

Toward calculating unstable higher-periodic homotopy types

Chinese Academy of Sciences Topology Seminar, November 2016.

Power operation calculations in elliptic cohomology

Southern University of Science and Technology, October 2016.

Modular equations and Hecke operators for local elliptic spectra

University of Chicago Topology Seminar, January 2016.

Local moduli for elliptic spectra

University of Notre Dame Topology Seminar, January 2016.

Computing power operations for Morava E -theory of height 2 at a prime

University of Rochester Topology Seminar, October 2015.

The Hecke algebra action on Morava E -theory of height 2

University of Illinois at Urbana-Champaign Topology Seminar, October 2014.

Finite subgroups of a formal group of height 2 over \mathbb{F}_9

University of Louisiana at Lafayette Topology Seminar, March 2014.

A formal group of height 2 over \mathbb{F}_9

Northwestern University Topology Seminar, October 2013.

Power operations in height-2 Morava E -theory and its $K(1)$ -localization

University of Illinois at Urbana-Champaign Topology Seminar, September 2013.

Power operations in an elliptic cohomology theory

University of Minnesota Topology Seminar, April 2013.

Computing power operations in Morava E -theory at height 2 for the prime 3

Wayne State University Topology Seminar, March 2013.

The structure of power operations in Morava E -theory at height 2 for the prime 3

University of Chicago Algebraic Topology Seminar, March 2013.

Computing power operations for Morava E -theory of height 2 at the prime 3

University of Virginia Topology Seminar, February 2013.

SELECTED CONFERENCES AND WORKSHOPS

Arbeitsgemeinschaft: Topological Cyclic Topology

Mathematisches Forschungsinstitut, Oberwolfach, April 1–7, 2018.

West Coast Algebraic Topology Summer School

On connections between algebraic topology and number theory.

University of Oregon, Eugene, August 8–12, 2016.

Operations in Highly Structured Homology Theories

Organizer and speaker, Session on Chromatic Power Operations.

Banff International Research Station, May 22–27, 2016.

Mid-Atlantic Topology Conference—in honor of Nick Kuhn
University of Virginia, Charlottesville, April 25–26, 2015.

West Coast Algebraic Topology Summer School
University of Washington, Seattle, August 26–28, 2011.

New Contexts in Homotopy Theory—in honor of Peter May
University of Chicago, Chicago, October 16–18, 2009.

SEMINAR ORGANIZING

- 2017–present Southern University of Science and Technology, Geometry & Topology Seminar
 Joint organizer with Q. Li.
- 2011–2012 University of Minnesota, Student Topology Seminar
 Joint organizer with D. Bashkirov, R. Hank, E. Manlove.
 Collaboratively designed and created wiki pages for the seminar.

TEACHING EXPERIENCE

Southern University of Science and Technology

- Courses taught:
 - Math 101a Mathematical Analysis I
 - Math 102a Mathematical Analysis II
 - Math 301 Functions of Real Variables
 - Math 323 Topology
 - Math 327 Differential Geometry (scheduled)
 - Math 8010 Combinatorial Theory (scheduled)
- Tutorial Fellow, Shuli College.

Northwestern University

- Courses taught:
 - Math 230 Differential Calculus of Multivariable Functions
 - Math 234 Multiple Integration and Vector Calculus
 - Math 240 Linear Algebra
 - Math 300 Foundations of Higher Mathematics
- Regularly served as course coordinator for Math 230—the most-enrolled calculus course with the largest instructor group.

- Served as faculty mentor for Math 230's *Gateway Science Workshop* program for two consecutive terms, with recognition from the Provost.
- Involved in *Math Review Study Tables*—drop-in question and answer / group study sessions run prior to calculus exams in residence halls, initiated and co-sponsored by the Office of Residential Academic Initiatives and the Department of Mathematics.
- Involved in piloting the use of *Crowdmark*—a collaborative online grading and analytics platform, with recognition from the Mathematics Department Chair. Experienced with technology and administrative matters.
- Involved in transitioning common calculus course websites from *Blackboard* to *Canvas*.

University of Minnesota

- Teaching assistant for courses:
 Math 1151 Precalculus II
 Math 1271 Calculus I
 Math 2263 Multivariable Calculus
 Math 8602 Real Analysis
- Teaching assistant training, 2007. One of two (among 15) international math graduate students who were exempted from language classes.