MARK JOSEPH BEHRENS

Curriculum Vitae

Department of Mathematics
University of Notre Dame
Notre Dame, IN 46556
mbehren1@nd.edu

Degrees:

Ph.D., Mathematics, University of Chicago, 2003, Thesis Advisor: J. P. May
M.A., Mathematics, University of Alabama at Tuscaloosa, 1998
B.S., Mathematics, University of Alabama at Tuscaloosa, 1998
B.S., Physics, University of Alabama at Tuscaloosa, 1998

Employment:

CLE Moore Instructor, Department of Mathematics, MIT, Supervisor: M. J. Hopkins,
2003-2005
Assistant Professor, Department of Mathematics, MIT, 2005-2011
Visiting Scholar, Department of Mathematics, Harvard University, 2007-2008
Associate Professor, Department of Mathematics, MIT, 2011-2014
Professor, Department of Mathematics, Notre Dame, 2014-present
Visiting Scholar, Department of Mathematics, Northwestern University, 2023

Honors:

Scholar, Barry M. Goldwater Scholarship and Excellence in Education Program, 1995
Postdoctoral Fellow, NSF, 2003
Fellow, Sloan Foundation, 2007
Invited Address, 1044th meeting American Mathematical Society, 2008
CAREER grant, NSF, 2011
Cecil and Ida B. Green Career Development Associate Professorship, 2011-2014
MIT School of Science Teaching Prize for Graduate Education, 2011
John and Margaret McAndrews Professorship, 2014
Fellow of the American Mathematical Society, 2022

Undergraduate Research Projects Supervised:

Sauter, Trace, summer 2009
Lerner, Ben, spring 2010
Tynan, Phillip, summer 2010
Li, Yan, summer 2010
Atsaves, Louis, spring, summer 2011
Hahn, Jeremy, summer, fall 2011, spring 2012
Wear, Peter, spring 2012
Velcheva, Katerina, fall 2012, spring 2013
Tseng, Dennis, spring, summer 2013
Kraft, Benjamin, summer 2013

Tran, Brandon, fall 2013, spring 2014
Jon Vandenburgh, fall 2014-spring 2016
Justin Skycak – spring 2017
David Shaw – spring 2018
Sanath Devalapurkar – summer 2019
Keita Allen – summer 2022
Zhuo Zhang – summer 2023
Rushil Mallarapu – summer 2023

Ph.D. Students Supervised:
Osorno, Angelica, An infinite loop space structure for K-theory of bimonoidal categories, 2010
French, Jennifer, Derived mapping spaces as models for localizations, 2010
Pereira, Luis Alexandre, Goodwillie calculus and algebras over a spectral operad, 2013
Ullman, John, On the regular slice spectral sequence, 2013
Wang, Guozhen, Unstable chromatic homotopy theory, 2015
Culver, Dominic, On BP<2>-cooperations, 2017
Jedlovec, Phillip, Hopf Rings and the Ando-Hopkins-Strickland Theorem, 2018
Kjaer, Jens, Homology of the derivatives of the identity functor on spaces, 2019
Quigley, James, Generalized Mahowald invariants, 2019
Petersen, Sarah, Ravenel-Wilson Hopf ring methods in C_2-equivariant homotopy theory and the $\underline{H\mathbb{F}_2}$ homology of C_2-equivariant Eilenberg-MacLane spaces, 2022
Konovalov, Nikolai, Algebraic Goodwillie Spectral Sequence, 2023
Rau-Murthy, Hari, 2024
Schreiner, Bridget, 2024
Malin, Connor, 2024
Guoqi Yan, 2024
Sihao Ma, in progress
Roger Murray, in progress
Pengkun Huang, in progress

Postdoctoral Researchers Supervised:
Jack Carlisle, 2022-
Jay Shah, 2017-2019
Luis Alexandre Pereira, 2017-2018
Bhattacharya, Prasit, 2015-2017, 2020-2022
Ormsby, Kyle, 2010-2014
Stapleton, Nathaniel, 2011-2014
Stojanoska, Vesna, 2011-2014

Teaching Experience (at Notre Dame)
Math 80430, Topics in topology (algebraic K-theory and the telescope conjecture), fall 2023
Math 80430, Topics in topology (infinite loop space theory), fall 2020
Math 80430, Topics in topology (equivariant homotopy theory), fall 2019
Math 20550, Calculus III, fall 2021, spring 2019, 2020, 2024 (course chair in 2020)

Math 60440, Basic topology II, spring 2017, 2018, 2021, 2022
Math 70330, Intermediate geometry/topology (Kan seminar) fall, 2016,2022
Math 80430, Topics in topology (chromatic homotopy theory) fall, 2015
Math 40740, Topology, fall, 2017, 2018, spring, 2015, 2016
Math 80430, Topics in topology (stable homotopy theory) fall, 2014

Teaching Experience (at MIT)
18.02A, Calculus lecture, fall 2011, 2012, IAP 2012, 2013
18.02, Calculus recitation, fall 2003, spring 2007
18.100A, Analysis I, spring 2007, spring 2009
18.904, Seminar in Topology, fall 2005
18.906, Algebraic Topology II, spring 2006, 2010, 2011, 2012, 2013, 2014
18.915, Graduate Topology Seminar, fall 2006, 2009, 2013
18.917, Topics in Algebraic Topology, fall 2008
18.950, Differential Geometry, fall 2009

Service (at Notre Dame):
Open search committee – 2021-22
Hiring committee – 2020-21
Chair search committee – 2019-2020, 2021-22, 2023-24
Graduate recruiting trip, Xavier University of New Orleans, 2018
Graduate recruiting trip, Field of Dreams conference, St Louis, 2017, 2019
Graduate recruiting trip, SIDIM, University of Puerto Rico, 2017
Coorganizer, Notre Dame summer undergraduate workshop in geometry/topology,
        2017-2019
Coorganizer, Notre Dame graduate bridge program, 2015-present
Mentor, Building Bridges Mentoring Program, 2016-2017, 2019-2020, 2021-22
Topology (RTG/AoV) postdoc search committee, 2016-2018
Topology (AoV) faculty search committee, 2015-2019
CAP committee, 2016-2018
Strategic Opportunities Search Committee, 2015, 2022
Topology graduate admissions committee, 2015-present
Graduate committee, 2015-2021, 2022-present
Math Research@ND, Speaker, 2015.
Undergraduate advisor, 2015-2018
Coorganizer, Topology seminar, 2014-present.
Research presentation, prospective graduate student visitation weekend, 2015, 2016, 2018
Endowed chair committees, 2015, 2016, 2018, 2019 (2), 2022, 2023

Service (at MIT):
Graduate admissions committee, Department of Mathematics, 2005-2006, 2007-2012.
Moore Instructor committee, Department of Mathematics, 2009-2012.
Colloquium Committee, Department of Mathematics, 2009-2012
Diversity Committee, Department of Mathematics, 2010-2012
School of Science underrepresented minority strategic group, 2008-2013
MSRP, Mentor: 2009, 2011, Math coordinator: 2011-2013, faculty lecture, 2011

Undergraduate academic advisor, Department of Mathematics, 2007-2014
Microteaching workshop, 2009-2013
SEPT program lecturer, 2006, 2009
Laureates and Leaders dinner, 2009, 2010
MMBA mentorship dinner, 2010
Graduate student lunch seminar, Speaker: spring 2008, fall 2008, 2009, 2011, fall 2012
      Organizer: spring 2011
Organizer: K-theory lunch seminar, spring 2009
MAP mentor, 2010-2012
ROUTE mentoring program, 2011-2013
IAP math lecture series, 2006, 2007
IAP Directed reading program, coorganizer, 2011-2013
Freshman Advisor, 2011-2012
UROP coordinator: pure mathematics, 2011-2014

External Service:

Editor, Proceedings of the AMS, 2018-2020
Editor, Geometry and Topology, 2013-current
Editor, Advances in Mathematics, 2011-2015
Editor, Journal of Homotopy and Related Structures, 2012-2017
Reviewer, AMS math reviews, 2004-2015

Publications:

1. *A new proof of the Bott periodicity theorem*, Topology Appl. 119 (2002), 167-183.
2. *Addendum to "A new proof of the Bott periodicity theorem"*, Topology Appl. 143 (2004), 281-290.
3. *On the existence of the self map v_2^9 on the Smith-Toda complex V(1) at the prime 3*, with Satya Pemmaraju, Contemp. Math. 346 (2004), 9-49.
4. *Root invariants in the Adams spectral sequence*, Trans. Amer. Math. Soc. 358 (2006), 4279-4341.
5. *A modular description of the K(2)-local sphere at the prime 3*, Topology 45 (2006), 343-402.
6. *Isogenies of elliptic curves and the Morava stabilizer group*, with Tyler Lawson, J. of Pure Appl. Algebra 207 (2006), 37-49.
7. *Some root invariants at the prime 2*, Geom. Topol. Monographs 10 (2007), 1-40.
8. *Buildings, elliptic curves, and the K(2)-local sphere*, Amer. J. Math. 129 (2007) 1513-1563.
9. *On the existence of a v_2^{32}-self map on M(1,4) at the prime 2*, with Michael Hill, Michael J. Hopkins, and Mark Mahowald, Homology, Homotopy Appl. 10 (2008), 45-84.
10. *Congruences between modular forms given by the divided beta family in homotopy theory*, Geom. Topol. 13 (2009), 319-357.
11. *β-family congruences and the f-invariant*, with Gerd Laures, Geom. Topol. Monographs 16 (2009) 9-29.
12. *Topological automorphic forms*, with Tyler Lawson, Memoirs of the AMS. 958 (2010), i-xxiii, 1-132.
13. *The homotopy fixed point spectra of profinite Galois extensions*, with Daniel G. Davis, Trans. Amer. Math. Soc. 362 (2010) 4983-5042.
14. *Topological automorphic forms on U(1,1),* with Tyler Lawson, Math. Zeit. 267 (2011), 497-522.
15. *Higher real K-theories and topological automorphic forms,* with Michael J. Hopkins, J. Topology 4 (2011), 39-72.
16. *The Goodwillie tower for S^1 and Kuhn's theorem,* Algebr. Geom. Topol. 11 (2011), 2453-2475.
17. *The homotopy groups of $S_{E(2)}$ at $p \geq 5$ revisited,* Adv. Math. 230 (2012), 458-492.
18. *The EHP sequence and the Goodwillie tower,* Memoirs of the AMS 1026 (2012), i-xi, 1-90.

19. *The construction of tmf*, Topological Modular Forms, AMS Mathematical Surveys and Monographs 201 (2014) 131-188.
20. *On the homotopy of Q(3) and Q(5) at the prime 2*, with Kyle Ormsby, Algebr. Geom. Topol. 16-5 (2016), 2459-2534.
21. *A C_2-equivariant analog of Mahowald's Thom spectrum theorem*, with Dylan Wilson, Proceedings of the AMS 146 (2018), 5003-5012.
22. *On the ring of tmf cooperations at the prime 2,* with Kyle Ormsby, Nathaniel Stapleton, and Vesna Stojanoska, J. Topology 12 (2019) 577-657.
23. *Spectral algebra models of unstable v_n-periodic homotopy theory,* with Charles Rezk, Springer Proc. in Math. and Stat. 309 (2019).
24. *Topological modular and automorphic forms,* Handbook of Homotopy Theory, edited by H. Miller, Chapman and Hall/CRC Handbooks in Mathematics Series (2019).
25. *On the E_2 term of the bo-based Adams spectral sequence,* with Agnés Beaudry, Prasit Bhattacharya, Dominic Culver, and Zhouli Xu, Journal of Topology 13 (2020) 356-415.
26. *The Bousfield-Kuhn functor and topological Andre-Quillen cohomology,* with Charles Rezk, Inventiones 220 (2020) 949-1022.
27. *Detecting exotic spheres in low dimensions using coker J,* with Michael Hill, Michael Hopkins, and Mark Mahowald, J. London Math. Soc. 101 (2020) 1173-1218.
28. *C_2-equivariant stable homotopy theory from real motivic stable homotopy theory*, with Jay Shah, Annals of K-theory 5 (2020) 411-464.
29. *The telescope conjecture at height 2 and the tmf resolution*, with Agnés Beaudry, Prasit Bhattacharya, Dominic Culver, and Zhouli Xu, J. Topology 14 (2021) 1243-1320.
30. *The Hurewicz image of tmf*, with Mark Mahowald and James Quigley, Geometry and Topology 27 (2023) 2763-2831.

Submitted and In Progress Publications:

31. *The structure of the v_2-local algebraic tmf resolution,* with Prasit Bhattacharya and Dominic Culver, submitted (35 pages).
32. *A deformation of Borel equivariant homotopy,* with Gabriel Angelini-Knoll, Eva Belmont, and Hana Jia Kong, submitted (49 pages).

Invited Presentations:

Root invariants in the Adams spectral sequence, Topology seminar, University of Illinois at Urbana-Champaign, 2002

Root invariants and v_2-periodicity at the prime 3, Topology seminar, University of Chicago, 2002

Root invariants in the Adams spectral sequence, Sectional meeting of the AMS, Orlando, FL, 2002

On the homology of tmf, Topology seminar, University of Notre Dame, 2003

Homotopy beta elements at the prime 3, Northwestern University, 2003

Isogenies of elliptic curves and the K(2)-local sphere, Conference in honor of Goro Nishida, Kinosaki, Japan, 2003

Lecture series on root invariants, Workshop attached to Nishida conference, Nagoya, Japan, 2003

Root invariants, Adams spectral sequences, and Greek letter elements, Topology seminar, MIT, 2003

Isogenies of elliptic curves and the K(2)-local sphere, Topology seminar, University of Chicago, 2003

A modular description of the K(2) local sphere, MIT topology seminar, 2004

A modular description of the K(2)-local sphere at the prime 3, Special session on homotopy theory (in honor of William Browder's 70th birthday), Sectional meeting of the AMS, Lawrenceville, NJ, 2004

Isogenies of elliptic curves and the K(2)-local sphere, Workshop on forms of homotopy theory:

elliptic cohomology and loop spaces, Fields Institute, 2004

Isogenies of elliptic curves and the K(2)-local sphere, Topology/geometry seminar, Brown University, 2004

The K(2)-local sphere and isogenies of elliptic curves, Topology seminar, Northwestern University, 2004

Stable homotopy groups of spheres and modular forms, Wayne State University Colloquium, 2005

A resolution of the K(2)-local sphere, Wayne State University Topology Seminar, 2005

A resolution of the K(2)-local sphere, University of Rochester, 2005

Hypercohomology of categories, Union College Mathematics Conference, Union College, 2005

Whitehead products and the Goodwillie tower, Workshop on operads and the Goodwillie Calculus, Clay Mathematics Institute, 2005

Buildings, elliptic curves, and the K(2)-local sphere, Topology seminar, University of Illinois at Urbana-Champaign, 2005

Buildings, elliptic curves, and the stable homotopy groups of spheres, Topology seminar, Bonn, Germany, 2005

Buildings, elliptic curves, and the stable homotopy groups of spheres, Joint meeting of AMS, DMV, OMG, Mainz, Germany, 2005

Computing homotopy groups of spheres with modular forms, Colloquium, Purdue University, 2005

Hypercohomology of categories, Topology seminar, Purdue university, 2005

The Eichler-Shimura correspondence for GL(2), Talbot Workshop, North Conway, NH, 2005

Cohomology theories associated to Shimura varieties, Topology seminar, MIT, 2005

Computing homotopy groups of spheres with modular forms, Colloquium, University of Chicago, 2006

Cohomology theories associated to Shimura varieties, Topology seminar, University of Chicago, 2006

Computing homotopy groups of spheres with modular forms, Colloquium, University of Texas at Austin, 2006

Cohomology theories associated to Shimura varieties, Seminar, University of Texas at Austin, 2006

Computing homotopy groups of spheres with modular forms, Colloquium, Johns Hopkins University, 2006

v_2-periodicity at the prime 2, Algebraic and Geometric Topology: a conference in honor of Bob Stong, University of Virginia, 2007

Stable homotopy groups of spheres and modular forms, Harvard faculty colloquium, Harvard University, 2007

Topological automorphic forms, Workshop on stacks in geometry and topology, Fields Institute, 2007

On the construction of tmf, Talbot workshop, North Conway, NH, 2007

Topological automorphic forms, Complex cobordism in homotopy theory: its impacts and prospects, Johns Hopkins University, 2007

Topological automorphic forms, Abel Symposium, Oslo, Norway, 2007

Lecture series on topological automorphic forms, Nagoya Institute of Technology, Nagoya, Japan, 2008

Wrapping spheres around spheres, General lecture, Nagoya Institute of Technology, Nagoya, Japan, 2008

Congruences amongst modular forms and the divided beta family, Special session on algebraic topology, Joint meetings of the AMS, San Diego, CA, 2008

Congruences amongst modular forms and periodic families of elements in the stable homotopy groups of spheres, Boston University number theory seminar, 2008

On the existence of a v_2^{32} self-map at the prime 2, Special session on applications of ring spectra,

Sectional meeting of the AMS, Bloomington, IN, 2008

Discussion sessions, Homotopical group theory and topological algebraic geometry workshop, University of Copenhagen, Denmark, 2008

Congruences amongst modular forms and the divided beta family, Homotopical group theory and topological algebraic geometry, Bonn, Germany, 2008

Homotopy fixed points of profinite Galois extensions, MIT topology seminar, 2008

Congruences between modular forms and the divided beta family, Wayne State University Topology Seminar, 2008

Congruences amongst modular forms and the stable homotopy groups of spheres, Invited address, 1044th meeting of the AMS, Huntsville, AL, 2008

Modular forms and topology, Graduate student colloquium, Northwestern University, 2008

Orientations and Eisenstein series, Topology seminar, University of Minnesota, 2008

Orientations and Eisenstein series, Number theory seminar, Harvard University, 2008

Orientation theory, Topology Seminar, Hebrew University of Jerusalem, Jerusalem, Israel, 2009

Lecture series on topological modular forms, Workshop in homotopy theory on topological modular forms, Caesarea Maritime Center, Caesarea, Israel, 2009

Orientations and Eisenstein series, Topology seminar, Berkeley University, 2009

Orientations and Eisenstein series, Topology seminar, Johns Hopkins University, 2009

Modular forms in topology, Colloquium, Tufts University, 2009

Chromatic fracture of gl_1, Mini-FRG on p-divisible groups and stable homotopy theory, 2009

On the relationship between EO_n and TAF, Eastern Section Meeting of the AMS, University Park, Penn State University, 2009

Higher real K-theories and topological automorphic forms, Topology seminar, University of British Columbia, 2010

Higher real K-theories and topological automorphic forms, Midwest Topology Seminar, Michigan University, 2010

The homotopy groups of the E(2)-local sphere, revisited, Topology seminar, MIT, 2010

The EHP sequence and the Goodwillie tower, Georgia topology conference, Athens, GA, 2010

The homotopy groups of the E(2)-local sphere, revisited, Conference on homotopy theory and derived algebraic geometry, Fields Institute, 2010

Introduction to the Adams-Novikov Spectral Sequence: Ravenel's Proof for Primes > 3, Hot topics workshop on the Kervaire invariant, MSRI, 2010

The homotopy groups of the E(2)-local sphere, revisited, Topology seminar, CUNY graduate center, 2010

The EHP sequence and the Goodwillie tower, Algebraic topology seminar, Princeton, 2010

The Goodwillie tower and the Whitehead conjecture, Topology seminar, UIUC, 2011

The Goodwillie tower and the Whitehead conjecture, Topology seminar, Univ. of Chicago, 2011

A survey of the Goodwillie tower of the identity, Workshop on functor calculus and operads, BIRS, 2011

The odd primary EHP sequence, Union mathematics conference, 2011

XII Lisbon Summer Lectures in Geometry: Topological Automorphic Forms, Instituto Superior Técnico, Lisbon, Portugal, 2011

Congruences between modular forms and the divided β family, MSRP faculty lecture, MIT, 2011

The Morava E-homology of the L(k) spectra, Topology summer seminar, MIT, 2011

Homological behavior of the Goodwillie tower, Workshop on homotopy theory, MFO, 2011

The Morava E-theory of the Goodwillie tower, Special session on calculus of functors, JMM, Boston, 2012

Exotic spheres and topological modular forms, Second Abel Conference: A Mathematical Celebration of John Milnor, IMA, 2012

The Morava E-theory of the Goodwillie tower, Topology seminar, University of Chicago, 2012

Exotic spheres and topological modular forms, Midwest topology seminar, Northwestern, 2012

Exotic spheres and topological modular forms, Colloquium, UIC, 2013

Exotic spheres and topological modular forms, Colloquium, University of Washington, 2013
Exotic spheres and topological modular forms, Colloquium, Northwestern University, 2013
Exotic spheres and topological modular forms, Colloquium, University of Notre Dame, 2013
Exotic spheres, Colloquium, Wellesley College, 2013
The Bousfield-Kuhn functor and topological Andre-Quillen cohomology, Conference on
        Equivariant, Chromatic, and Motivic Homotopy Theory, Northwestern University,
        2013
Faculty mentor, Talbot workshop on chromatic homotopy, Lake Tahoe, CA, 2013
A Lie algebra model for unstable v_n-periodic homotopy, JHU-UMD Algebra and Number Theory
        Day, Johns Hopkins University, 2013
A Lie algebra model for unstable v_n-periodic homotopy, Principle speaker, Lehigh University
        Geometry and Topology Conference, Lehigh University, 2013
Lecture series on computational methods in stable homotopy theory, MSRI summer school in
        algebraic topology, 2013
On the tmf-resolution, Topology seminar, MIT, 2014
On the tmf-resolution, Topology seminar, University of Chicago, 2014
The ring cooperations for 2-primary tmf, Midwest Topology Seminar, UIC, 2015
The Morava E-cohomology of QX, Mid-Atlantic Topology Conference, University of Virginia,
        2015
The ring cooperations for 2-primary tmf, Advances in Homotopy Theory - a conference in
        honor of Hans-Werner Henn on the occasion of his 60th birthday, Strasbourg, 2015
The Morava E-cohomology of QX, Hausdorff Institute for Mathematics, Bonn, 2015
The Bousfield-Kuhn functor and topological Andre-Quillen cohomology, Conference on
        Topology and Geometry, Bonn, 2015
The bo-Adams spectral sequence, Cascade Topology Seminar, Portland, 2015
The bo-Adams spectral sequence, Topology Seminar, Northwestern University, 2015
Detectors in homotopy theory, Colloquium, Indiana University, 2016
Topological Modular Forms, Workshop on derived and equivariant homotopy theory, AIM, 2016
Exotic spheres, Algebraic topology summer school, University of Chicago, 2016
Perspectives on the telescope conjecture, Topology seminar, UIUC, 2016
Perspectives on the telescope conjecture, Fall Central Sectional Meeting of the AMS, Minneapolis,
        2016
Detectors in Homotopy Theory, Colloquium, University of Colorado, Boulder, 2017
A Generalization of Quillen-Sullivan Rational Homotopy Theory, Topology Day, University of
        Colorado, Boulder, 2017
Generalized Quillen-Sullivan theory, Northwestern, 2017
A Generalization of Quillen-Sullivan Rational Homotopy Theory, Graduate Student Topology and
        Geometry Conference, 2017.
The motivic telescope conjecture, Midwest topology seminar, University of Chicago, 2017
The motivic telescope conjecture, Transatlantic transchromatic workshop, University of Regensburg,
        2017
The tmf resolution of Z, Homotopy theory: tools and applications, UIUC, 2017
Detectors in Homotopy Theory, Colloquium, University of Michigan, 2017
An equivariant analog of Mahowald's Thom spectrum theorem, MIT, 2018
Computational chromatic homotopy theory, Chromatic Homotopy Theory: Journey to the Frontier,
        University of Colorado, 2018
C_2-equivariant homotopy groups from real motivic homotopy groups, Equivariant and Motivic
        Homotopy Theory, Isaac Newton Institute, 2018
The tmf-based Adams spectral sequence for Z, Derived Algebraic Geometry and Chromatic
        Homotopy Theory, Isaac Newton Institute, 2018
Recent progress in the stable homotopy groups of spheres, colloquium, University of Alabama, 2019
C_2-equivariant stable homotopy groups of spheres. UIUC, 2020

C_2-equivariant stable homotopy groups of spheres. Electronic Computational Homotopy Theory
　　　Seminar, 2020
K-theory and the Hopf invariant one problem. University of Chicago REU, 2020.
tmf-resolutions. University of Michigan, 2020.
Current themes in the study of the homotopy groups of spheres. SUStech, 2020.
The EHP sequence and the Goodwillie tower, MPIM, 2021.
The algebraic tmf resolution. Northwestern University, 2021.
The algebraic tmf resolution. Princeton University, 2021.
tmf-resolutions. University of Chicago, 2022.
tmf-resolutions. New Directions in Group Theory and Triangulated Categories, 2022.
Recent advances in the stable homotopy groups of spheres, UCSD, 2023.
An odd primary analog of real motivic homotopy, Northwestern, 2023.
tmf resolutions at the prime 2, Northwestern, Conference in honor of Paul Goerss, 2023.
The v2-local algebraic tmf resolution, University of Washington, 2023.
K-theory and the Adams spectral sequence, University of Chicago REU, 2023.
tmf resolutions at the prime 2, Transatlantic transchromatic homotopy theory conference,
　　　Regensburg, Germany, 2023.

Conferences organized:
1. Special session on Homotopy Theory and Algebraic Topology (with Mike Hill), 2008 Fall
    Southeastern Meeting of the AMS, Huntsville, AL, October 24-26, 2008
2. Mayday 2009 (with Maria Basterra, Andrew Blumberg, Mike Mandell, and Jim McClure),
    Conference honoring Peter May on the occasion of his 70th birthday, University of Chicago, Oct 16-
    18 2009.
3. Special session and satellite conference on Homotopy Theory (with Mark Johnson, Haynes Miller,
    James Turner, and Donald Yau), 2012 Joint meetings of the AMS, Jan 6-7, 2012 (satellite
    conference: MIT, Jan 5, 2012).
4. Quillen Memorial Conference (with Clark Barwick, Joachim Cuntz, Eric Friedlander, Michael
    Hopkins, Jean-Louis Loday, Haynes Miller, Andrew Ranicki, Graeme Segal, Isadore Singer), MIT,
    Oct 6-8, 2012.
5. Reimagining the Foundations of Algebraic Topology (with Vigleik Angeltveit, Julie Bergner, and
    Andrew Blumberg), MSRI, April 7-11, 2014.
6. Midwest Topology Seminar (with Dan Isaksen and Sean Tilson), Conference honoring Robert
    Bruner on the occasion of his 65th birthday, Wayne State University, Oct 10-11, 2015
7. Topologie (with Peter Teichner, Nathalie Wahl, and Michael Weiss), Oberwolfach, 2016
8. Midwest Topology Seminar (with UND topology group), Notre Dame, 2017
9. Directed Reading Program Workshop (with Moon Duchin, Katie Mann, Felipe Ramirez, Gigliola
    Staffilani, and Bena Tshishiku), MIT, 2018
10. Topologie (with Ruth Charney, Peter Teichner, and Michael Weiss), Oberwolfach, 2018
11. Derived algebraic geometry and chromatic homotopy theory (with David Gepner, Paul Goerss,
    Michael Hopkins, and Tyler Lawson), Newton Institute, 2018
12. Topologie (with Ruth Charney, Soren Galatius, and Michael Weiss), Oberwolfach, 2020
13. Midwest Topology Seminar (with Robert Bruner, Paul Goerss, Dan Isaksen, and Vesna Stojanoska),
    online, 2020
14. Midwest Topology Seminar (with Robert Bruner, Paul Goerss, Dan Isaksen, and Vesna Stojanoska),
    online, 2021
15. Topologie (with Ruth Charney, Soren Galatius, and Andras Stipsicz), Oberwolfach, 2022
16. Topologie (with Ruth Charney, Oscar Randal-Williams, and Andras Stipsicz), Oberwolfach, 2022

Research Contracts and Grants:

NSF, Midwest Topology Seminar (with Daniel Isaksen, and Vesna Stojanoska, Manuel Rivera, and Carmen Rovi), 2/1/2024-1/31/2025, $49,500

AIM, SQuaRE (with Gabriel Angelini-Knoll, Eva Belmont, and Hana Jia Kong), 2023-2025

NSF, Equivariant and Motivic Deformations of Stable Homotopy Theory, 8/15/2020-7/31/2024, $338,800

NSF, Workshops: Homotopy Harnessing Higher Structures (with Paul Goerss, Michael Hill, Julia Bergner, and David Ayala), 7/1/2018-12/31/2019, $30,000

NSF, Midwest Topology Seminar (with Robert Bruner, Daniel Isaksen, and Vesna Stojanoska), 8/8/2017-8/8/2023, $30,000

NSF, Chromatic homotopy – stable and unstable, 8/15/2016-7/31/2020, $327,078

NSF RTG: Geometry and Topology (with Matthew Gursky, Liviu Nicolaescu, Stephan Stolz, Gabor Szekelyhidi), 8/1/2016-7/31/2023, $1,849,955

NSF Conference grant: The legacy of Daniel Quillen: K-theory and homotopical algebra (with Clark Barwick and Haynes Miller), 9/1/2012-9/1/2013, $45,500

NSF, CAREER: Arithmetic structure of homotopy theory, 7/1/2011-6/30/2017, $595,155

NSF, Collaborative Research: Homotopy theory: Applications and new dimensions (with H. Miller, C. Barwick, M. J. Hopkins, J. Lurie), 9/1/2009-8/31/2015, $1,624,205

NSF, EMSW21-RTG: Geometry and topology (with T. Mrowka, D. Auroux, P. Seidel, K. Wehrheim), 6/2010-5/31/16, $1,623,935

NSF, Conference grant: Current and classical themes in homotopy theory, 7/2009-7/2010, $25,000

MIT, NEC Corporation fund for research in computers and communications, 2008, $50,000

Alfred P. Sloan foundation, Research fellowship, 7/2007-9/2011, $45,000

NSF, Local and global methods in homotopy theory, 7/2006-6/2010, $139,445

NSF, Postdoctoral fellowship, 7/2003-6/2006, $108,000