

Brooke E. Shipley
Curriculum vitae

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EXPERIENCE

UNIVERSITY OF ILLINOIS AT CHICAGO

Professor, 2007- ; Head, 2014-2022
Acting Head, Fall 2013
Visiting Director of WISEST, 2012-2013
Director of Graduate Studies, 2010-2012
Associate Professor, 2003-2007

PURDUE UNIVERSITY

Associate Professor, 2002-2003
Assistant Professor, 1998-2002

UNIVERSITY OF CHICAGO

Dickson Instructor of Mathematics, 1996-1998, 1999-2000
NSF Postdoctoral Research Fellow, 1996-1998

UNIVERSITY OF NOTRE DAME

NSF Postdoctoral Research Fellow, 1995-1996

AWARDS

NSF Insitute for Mathematical and Statistical Innovation, DMS - 1929348, \$15.5 million, co-PI, 2020 - 2025

Simons Foundation Travel Support for Mathematics 2023 - 2028

2022 Senior Berwick Prize, London Mathematical Society, joint with John Greenlees, for our 2018 paper in Journal of Topology

Simons Foundation Travel Support for Mathematics 2023 - 2028

Simons Foundation Fellowship at Isaac Newton Institute, Fall, 2018, Cambridge, U.K.

AMS Fellow, Class of 2015

ELATE Fellow, Drexel University, 2014 - 2015

NSF Research Grants DMS-9971953, DMS-0134938 (Career award), DMS-0417206, DMS-0706877, DMS-1104396, DMS-1406468, DMS-1811278

Conference travel grants: 2008, 2014, 2015, 2015, 2019; see conferences organized below.

Sloan Research Fellow, 2002 to 2004 (extended through 2006)

NSF ADVANCE 0546843, Women in Science and Engineering System Transformation (WISEST), \$3.3 million, co-PI 2009-2012, (grant duration: 2006-2012)

2001 Purdue University School of Science Outstanding Assistant Professor, for undergraduate teaching

NSF Postdoctoral Research Fellowship, September 1995 to July 1998

EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

PhD in Mathematics, May 1995, Thesis advisor: Prof. Haynes R. Miller

Thesis Title: Convergence of the homology spectral sequence of a cosimplicial space

HARVARD COLLEGE

A.B. in Mathematics, *magna cum laude*, Phi Beta Kappa, June 1990

PUBLICATIONS

- [1] *Pro-isomorphisms of homology towers*, Mathematische Zeitschrift **220** (1995), 257-271.
- [2] *Convergence of the homology spectral sequence of a cosimplicial space*, Amer. J. Math. **118** (1996), 179-207.
- [3] *Symmetric spectra*, with M. Hovey and J. Smith, J. Amer. Math. Soc., **13** (2000), 149–208.
- [4] *Algebras and modules in monoidal model categories*, with S. Schwede, Proc. London Math. Soc. **80** (2000), 491-511.
- [5] *Symmetric spectra and topological Hochschild homology*, K-theory, **19** No. 2, (2000), 155–183.
- [6] *Model categories of diagram spectra*, with M. Mandell, J. P. May, and S. Schwede, Proc. London Math. Soc. **82** (2001), 441-512.
- [7] *Simplicial structures on model categories and functors*, with C. Rezk and S. Schwede, Amer. J. Math. **123** (2001), 551-575.
- [8] *Monoidal uniqueness of stable homotopy theory*, Adv. in Math., **160** (2001), 217-240.
- [9] *A telescope comparison lemma for THH*, with M. Mandell, Top. Appl., **117** (2002), 161-174.
- [10] *An algebraic model for rational S^1 -equivariant stable homotopy theory*, Quart. J. Math., **53** (2002), 87-110.
- [11] *A uniqueness theorem for stable homotopy theory*, with S. Schwede, Math. Zeit., **239** (2002), 803-828.
- [12] *Equivalences of monoidal model categories*, with S. Schwede, Alg. Geo. Topology, **3** (2003), 287-334.
- [13] *Stable model categories are categories of modules*, with S. Schwede, Topology, **42** (2003), 103-153.
- [14] *K-theory and derived equivalences*, with D. Dugger, Duke J. Math. **124** (2004), no. 3, 587-617.
- [15] *A convenient model category for commutative ring spectra*, Contemp. Math. **346** (2004), 473-483.
- [16] *Postnikov extensions of ring spectra*, with D. Dugger, Alg. Geo. Topology **6** (2006) 1785-1829.
- [17] *Morita theory in stable homotopy theory*, “Handbook on tilting theory”, eds. L. Huegel, D. Happel and H. Krause, London Math. Soc. Lecture Notes Series **332** (2007), 393-409.
- [18] *HZ-algebra spectra are differential graded algebras*, Amer. J. Math. **129** (2007) 351-379.
- [19] *Topological equivalences of differential graded rings*, with D. Dugger, Adv. in Math. **212** (2007) 37-61.

- [20] L. Avramov, J. D. Christensen, W. Dwyer, M. Mandell, B. Shipley (Eds.) *Interactions between homotopy theory and algebra* (Chicago 2004), Contemp. Math. **436** (2007) Amer. Math. Soc., Providence RI, 334 pp.
- [21] *Enriched model categories and an application to additive endomorphism spectra*, with D. Dugger, Theory Appl. Categ. **18** (2007) 400-439.
- [22] *A curious example of triangulated-equivalent model categories which are not Quillen equivalent*, with D. Dugger, Algebr. Geom. Topol. **9** (2009) 135-166.
- [23] *An algebraic model for free rational G -spectra for connected compact Lie groups G* , with J. P. C. Greenlees, Math. Z., **269** (2011) 373–400.
- [24] *The cellularization principle for Quillen adjunctions* with J. P. C. Greenlees, Homology, Homotopy and Appl. **15** (2013), no.2, 173-184.
- [25] *The homotopy theory of coalgebras over a comonad* with K. Hess, Proc. of the London Math. Soc. **108** (2014) 484–516.
- [26] *An algebraic model for free rational G -spectra* with J. P. C. Greenlees, Bull. Lond. Math. Soc. **46** (2014), no. 1, 133–142.
- [27] *Fixed point adjunctions for equivariant module spectra* with J. P. C. Greenlees, Algebr. Geom. Topol. **14** (2014), no. 3, 1779–1799.
- [28] *Homotopy theory of modules over diagrams of rings* with J. P. C. Greenlees, Proc. Amer. Math. Soc. Ser. B **1** (2014), 89–104.
- [29] *Left-induced model structures and diagram categories* with M. Bayeh, K. Hess, V. Karpova, M. Kedziorek, and E. Riehl, Contemp. Math. **641** (2015) 49–81.
- [30] *Waldhausen K -theory of spaces via comodules* with K. Hess, Advances in Mathematics **290** (2016), 1079–1137.
- [31] *Rational $SO(2)$ -equivariant spectra* with D. Barnes, J. P. C. Greenlees, and M. Kedziorek, Algebr. Geom. Topol. **17** (2017) 983–1020.
- [32] *An algebraic model for commutative HZ -algebras* with B. Richter, Algebr. Geom. Topol. **17** (2017) 2013–2038.
- [33] *A necessary and sufficient condition for induced model categories* with K. Hess, M. Kedziorek, and E. Riehl, Journal of Topology **10** (2017), 324–369.
- [34] *Computational tools for topological coHochschild homology* with A.M. Bohmann, T. Gerhardt, A. Hogenhaven, and S. Ziegenhagen, Topol. Appl. **235** (2018) 185–213.
- [35] *An algebraic model for rational torus-equivariant spectra* with J. P. C. Greenlees, J. Topol. **11** (2018) 666–719.
- [36] *Coalgebras in symmetric monoidal categories of spectra* with M. Péroux, Homol., Homot., and Appl. **21** (2019) 1–18.
- [37] *Invariance properties of coHochschild homology* with K. Hess, J. Pure and App. Alg. **225** (2021) 106505
- [38] *Topological coHochschild homology and the homology of free loop spaces* with A.M.Bohmann, T.Gerhardt, Math. Z. **11** (2022) 1–44

CONFERENCE TALKS

Panel, Critical Issues in Mathematics Education 2022, MSRI, Berkeley, CA, March, 2022.

Speaker and mentor for Graduate Research Opportunities for Women (GROW), UIC, Chicago, IL, October, 2021.

Speaker for Young Scholars Program, UIC, Chicago, IL, June, 2021

Administrator Panel, Data in Mathematical Education Workshop, Lincoln, NE, June 2020.

Equivariant Topology and Derived Algebra, Trondheim, Norway, July, 2019.

Midwest Topology Seminar, East Lansing, MI, May, 2019.

Panel, Committee on Academic Sponsors, MSRI, Berkeley, CA, March, 2019.

Derived Algebraic Geometry, Connections for Women, MSRI, Berkeley, CA, January, 2019.

Cornell Topology Festival, Ithaca, NY, May, 2018.

Women in Topology workshop, MSRI, Berkeley, CA, November, 2017.

Panel participant and mentor for Graduate Research Opportunities for Women (GROW), Evanston, IL. October, 2017.

Homotopy theory: tools and applications, Urbana, IL, July, 2017.

(4 Lecture Series) Young Topologists Meeting, Stockholm, Sweden, July, 2017.

Plenary speaker and panel member, Nebraska Conference for Undergraduate Women in Mathematics, Lincoln, NE, February, 2017.

Panel participant and mentor for Graduate Research Opportunities for Women (GROW), Evanston, IL. October, 2016.

Women in Topology II, BIRS, Banff, Canada, April 2016.

Introductory Workshop: Algebraic Topology, MSRI, Berkeley, CA. January 2014.

(4 Lecture Series) Graduate Workshop on Algebraic Topology, MSRI, Berkeley, CA. June 2013.

Equivariant, Chromatic, and Motivic Homotopy Theory, Northwestern University. March 2013.

Implicit Bias Panel, NSF Advance Workshop, Alexandria, VA. March 2013.

Chicago Symposium Series: Excellence in Teaching Mathematics and Science: Research and Practice, UIC. February 2013.

Joint Mathematical Meetings, Special Session: Mentoring Graduate Students: Pathways to Success, San Diego, CA. January 2013.

JMM, Homotopy Theory and Commutative Algebra Session, San Diego, CA. January 2013.

Virginia Conference on Algebraic Topology, University of Virginia. June 2012.

Algebraic K-theory and Equivariant Homotopy Theory, BIRS, Banff, Canada. February 2012.

Midwest Topology Seminar (one day conference), Illinois State University. October 2011.

Homotopy Theory workshop, MFO, Oberwolfach, Germany. September 2011.

Structured Ring Spectra - TNG, Hamburg, Germany. August 2011.

Triangulated Categories and Applications, BIRS, Banff, Canada. June 2011.

NSF ADVANCE Panel Participant, Joint Math. Meetings, New Orleans, LA. January, 2011.

Topology Meeting, MFO, Oberwolfach, Germany. September 2010.

Main speaker (three lectures), Young Women in Topology, Bonn, Germany, June 2010.

Commutative Algebra: Connections with Algebraic Topology and Representation Theory, UNL, Lincoln, NE, May, 2008.

Women in Math: A celebration, MIT, Cambridge, MA, April, 2008.

Jean E. Rubin Memorial Lecture, Purdue University, November 2007.

Lecture Series (three lectures), Research Programme on Homotopy Theory and Higher Categories, Centre de Recerca Matemàtica, Barcelona, Spain, October 2007.

Complex Cobordism in Homotopy Theory, Baltimore, MD, March 2007

Wolfson Lecture Series, (five lectures), Manchester, England, January 2006
Midwest Topology Seminar, Purdue, October 2004; UIC, February 2002; U.Chicago, May 1996
Conference on Algebraic Topology, Arolla, Switzerland, August 2004; August 1999
Invited hour address, AMS Regional Meeting, Boulder, CO, October 2003
Northwestern University Colloquium, Evanston, IL, April 2003
Commutative Algebra: Interactions with Homological Algebra and Representation Theory, MSRI, CA, February 2003
University of Sheffield Colloquium, Sheffield, England, October 2002
Barcelona Conference on Algebraic Topology, Barcelona, Spain, July 2002; June 1998; June 1994
AMS Regional Meetings: Ann Arbor, MI, March 2002; Notre Dame, IN, April 2000; Wayne State, Detroit, MI, May 1997; Kent State University, Kent, OH, November 1995
University of Illinois at Chicago Colloquium, Chicago, IL, February 2002
Ontario Topology Seminar/Conference, London, Canada, October 2001
Union College Mathematics Conference, principal speaker, Schenectady, NY, September 2001
Wayne State University Colloquium, Detroit, MI, September 2000
Purdue University Colloquium, West Lafayette, IN, August 2000
Recent Progress in Homotopy Theory, Johns Hopkins University, Baltimore, MD, March 2000
AMS Summer Research Conferences, Boulder, CO, June 1999; Seattle, WA, July 1996
Workshop on Stable Homotopy and Algebraic K-theory, Bielefeld, Germany, February 1999
AMS Joint Mathematical Meetings, Baltimore, MD, January 1998; San Diego, CA, January 1997
Homotopy Theory Symposium, CMS Winter Meeting, Victoria, Canada, December 1997
Conference on Algebraic Topology, Kazimierz, Poland, June 1997
Purdue University Colloquium, W. Lafayette, IN, January 1997
Localization and Periodicity Summer School, CRM, Barcelona, Spain, September 1996
Fields Institute Stable Homotopy Emphasis Session, Toronto, Canada, January 1996
CMS Winter Meeting, Simon-Fraser University, Vancouver, Canada, December 1995
Brown University Colloquium, Providence, RI, February 1995
University of Kentucky Colloquium, Lexington, KY, February 1995
University of Illinois Colloquium, Urbana-Champaign, IL, January 1995
AWM Workshop, AMS Joint Mathematical Meetings, poster, San Francisco, CA, January 1995

RESEARCH INSTITUTE VISITS (ONE MONTH OR MORE)

Fields Institute for Research in Mathematical Sciences, Toronto, Canada, January 1996
Isaac Newton Institute for Mathematical Sciences, Cambridge, UK, October 2002
Institut Mittag-Leffler, Stockholm, Sweden, May 2006
Centre de Recerca Matemàtica, Barcelona, Spain, October 2007
Research Member, Mathematical Sciences Research Institute, Berkeley, US, Spring 2014
Isaac Newton Institute for Mathematical Sciences, Cambridge, UK, July 2018 and October 2018

TOPOLOGY SEMINAR TALKS

CRM, Barcelona, Spain, June 1998
EPFL, Lausanne, Switzerland, April 2010, April 2013
Indiana University, March 1999
MIT, April 1994, March 1995, April 1996, September 1997, April 2008

Newton Institute, Cambridge, England, October 2002, July 2018
 Northwestern University, November 1996, May 1998, May 1999, November 1999, May 2011
 Purdue University, April 1996, November 1997, October 1998, May 1999
 Universität Bielefeld, Bielefeld, Germany, August 1996
 University of Chicago, November 1996, February 1998, April 2000, May 2012
 University of Illinois at Chicago, November 1999
 University of Illinois (UIUC), March 1998, September 2002, March 2010, October 2011
 University of Manchester/MIST, Manchester, England, October 2002
 University of Notre Dame, September 1995
 University of Washington, December 1995
 University of Western Ontario, Canada, April 2011

GRADUATE STUDENTS (FIRST POSITION)

Jumpei Nogami (Postdoc, Universität Duisburg-Essen, Germany)	Ph.D. 2010
Marcy Robertson (Postdoc, University of Western Ontario, Canada)	Ph.D. 2010
Xing Gu (Postdoc, University of Melbourne, Australia)	Ph.D. 2017
H. Ozgur Bayindir (Postdoc, University of Haifa, Israel)	Ph.D. 2018
Tasos Moulinos (Postdoc, Université de Toulouse, France; MSRI, Berkeley, CA)	Ph.D. 2018
Maximilien Holmberg-Péroux (Postdoc, University of Pennsylvania)	Ph.D. 2020
Adam Pratt	current Ph.D. student
Lydia Holley	current Ph.D. student

DEPARTMENTAL SERVICE

MSCS Graduate Studies Committee	2008-2012, 2023-
MSCS Diversity Award Committee	2023-
MSCS Promotion Committee X	2023-
Young Scholars Program Co-Director (Four week workshop for high school students)	2023-
MSCS Head	2014-2022
MSCS Distinguished Lecture Series Organizer (Speaker: Hopkins)	March 5 - 7, 2014
MSCS Acting Head	Fall 2013
MSCS Advisory Committee	2006-2008, 2009-2011, (Chair 2010-2011), 2012-2014
MSCS Director of Graduate Studies	2010-2012
Implemented new assessment process to promote progress for students, organized first recruitment event for prospective students	
WISEST Facilitator for MSCS	2011-2012
MSCS Admissions, Fellowships, and Assistantships Committee	2007-2012
MSCS Hiring Committee	2004-2005, 2006-2007, 2008-2009
MSCS Post-doctoral Hiring Committee, Chair	2007-2008
MSCS Statistics Hiring Committee	2005-2006

MSCS Graduate Colloquium Co-Chair	2004-2005
MSCS Colloquium Co-Chair	2005-2006, 2006-2007
UIC-Association for Women in Mathematics Co-Chair	2004-2007, Faculty Advisor 2010-

UNIVERSITY SERVICE

Faculty Equity Status Committee, Co-Chair	2017-
Fifth year review of Director of Gender and Women's Studies, Chair	Fall 2017
Executive Advisory Board, Department of Education HSI-STEM program, UIC Latin@s Gaining Access to Networks for Advancement in Science (L@S GANAS)	2017 -
Classroom Scheduling Committee	Spring 2017
Dean of the Honors College Search Committee	Spring 2016
LAS IT Executive Director Search, interviews	Spring 2016
LAS Diversity Committee	2013-2014
Visiting Director of WISEST	2012-2013
Faculty program for 11 STEM departments (5 in LAS, 6 in Engineering), reported to the Vice Provost for Faculty Affairs	
WISEST Executive Committee	2004-2005, 2009-2013 (Chair 2012-2013)
UIC Researcher of the Year Award Natural Sciences and Engineering Selection Panel	2012
Liberal Arts and Sciences Dean Search Committee	2011-2012
Climate Task Force	2011-2012
Academic Directions Task Force	2010-2012
Graduate College Awards Committee	2010-2013
UIC Faculty Senate	2006-2016
Chancellor's Committee on the Status of Women, Co-Chair 2007-2009 ; Faculty concerns subcommittee, Co-Chair, 2005-2007	2005-2009
Chicago HERC (Higher Education Recruitment Consortium) Advisory Committee	2006
Ad Hoc Committee on Infant Care at UIC, reporting to Provost	2007-2008
UIC Accelerator Plan (ACE/Sloan Faculty Career Flexibility grant proposal) campus-wide ad-hoc advisory group	May 2006

PROFESSIONAL SERVICE

American Mathematical Society Committee on the Profession	2024-2027
Institute for Mathematical and Statistical Innovation, Board of Advisors	2020-
Graduate Research Opportunities for Women (GROW) Steering Committee	2020-
American Mathematical Society Council, Member at Large	2018-2021
American Mathematical Society Committee on Publications	2018-2021
Association for Women in Mathematics (AWM) Committee on Committees	2013-2016
American Mathematical Society (AMS) Simons Travel Grant Review Panel	2013-2016

Editorial board member <i>Proceedings of the American Mathematical Society</i> Average of 30 papers edited per year.	2009-2013
Editorial board member <i>Homology, Homotopy, and Applications</i>	2007-2010, 2013-
Editorial board member <i>Theory and Applications of Categories</i>	2005-2010
Editorial board member <i>Topology and its Applications</i>	2003-2012
External Assessment Committee, REGS program, UIUC NSF grant DMS 0838434 EMSW21-MCTP: Research Experience for Graduate Students.	October 4-5, 2011
AWM Noether Lecture Selection Committee	2009-2012
Coordinating Committee member, Midwest Topology Network NSF DMS-084429, Indiana University, \$200,000	2008-2011
AMS Joint Summer Research Conferences Committee	2004-2007
AMS Committee on Academic Freedom, Tenure and Employment Security	2003-2006
Mathematical Reviews for American Mathematical Society	1999-2007
Served on NSF review panels (six panels), referee for U.S., Canadian and Swiss research grant proposals, <i>Acta Math.</i> , <i>Adv. Math.</i> , <i>Alg. Geo. Topology</i> , <i>Amer. Math. Monthly</i> , <i>Duke J. Math.</i> , <i>Homology, Homotopy and Applications</i> , <i>Inventiones</i> , <i>Geo. Topology</i> , <i>J. Pure and App. Algebra</i> , <i>London Math Soc.</i> , <i>Math. Zeit.</i> , <i>Theory and App. Categories</i> , <i>Topology</i> , <i>Trans. Amer. Math. Soc.</i> , and various conference proceedings.	
Organized Topology seminar at University of Chicago 1996-97 and at Purdue 1998-1999.	

CONFERENCES CO-ORGANIZED

Midwest Topology Conference, Purdue University	November 10-11, 2001
Workshop on Topological Modular Forms, Munster, Germany	October 13 - 17, 2003
AMS Homotopy theory special session, Boulder, CO	October 2-4, 2003
“Interactions between homotopy theory and algebra” Summer school, Chicago, IL, Chair of organizing committee, 70 international attendees, supported by my NSF Career grant	July 26 - August 6, 2004
AMS Homotopy theory special session, Evanston, IL	October 23-24, 2004
Midwest Topology Conference, UIC	February 24, 2007
“Homotopical Group Theory and Topological Algebraic Geometry” June 16-20 in Copenhagen; June 23-27 in Bonn, 260 participants registered; PI of NSF DMS-0802491 travel grant through UIC for \$40,800	June 16-27, 2008
“Homotopy theory and applications”, University of Nebraska-Lincoln	April 3-5, 2009
Midwest Topology Conference, Northwestern University, scientific co-organizer	April 24, 2010
Homotopy and its Applications Session	September 17-18, 2011
AWM 40 Years and Counting Meeting, Providence, RI	
Midwest Women in Mathematics Symposium, UIC	April 20, 2013
Team Leader (with K. Hess) BIRS (Banff) Women in Topology Research group of one post-doc and three graduate students worked together remotely throughout 2012-2013, leading to one week intensive research workshop	August 2013

Connections for Women: Algebraic Topology workshop at MSRI January 23-24, 2014
 co-PI of NSA travel grant administered through MSRI for \$11,570.

AWM Workshop at Joint Math. Meetings, January 10-13, 2015
 Workshop for Women Graduate Students and Recent PhDs focused on Homotopy Theory
 co-PI of NSF DMS-1440016 travel grant for \$42,325

Midwest Topology Conference, UIC February, 2015
 Co-PI of Conference grant CRM, Barcelona, Spain Spring, 2015
 NSF DMS-1501399 travel grant for \$30,000 for semester research program

Team Leader (with T. Gerhardt) BIRS (Banff) Women in Topology 2 April 2016
 Research group of one assistant professor, one post-doc and one graduate student worked together
 remotely throughout 2015-2016, leading to one week intensive research workshop

Derived Algebraic Geometry and its Applications, Workshop, MSRI March, 2019
 “Equivariant topology and derived algebra” July 29 - August 2, 2019
 Norwegian University of Science and Technology, Trondheim, Norway
 PI of NSF DMS-1901120 conference grant for \$20,000

Team Leader (with A. M. Bohmann and M. Kedziorek) Women in Topology 3 August, 2019
 Research group of one post-doc and two graduate students working together remotely starting
 in November, 2018, leading to one week intensive research workshop (I worked with the group
 through July, 2019, then left the group due to time conflicts.)