# Brooke E. Shipley
## Curriculum vitae

508 Science & Engineering Offices (SEO) m/c 249     Tel. (312) 996-3044

851 S. Morgan St., Chicago, IL 60607-7045     shipleyb@uic.edu

## 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 Fellowship at Isaac Newton Institute**, Fall, 2018, Cambridge, U.K.

**AMS Fellow**, Class of 2015

**ELATE Fellow**, Drexel University, 2014 - 2015

**NSF Current Research Grant DMS-1811278**

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

**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 monodical 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 Matematica, 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 Matematica, 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 |

## DEPARTMENTAL SERVICE

| | |
|---|---|
| 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

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|---|---|
| WISEST Facilitator for MSCS | 2011-2012 |
| MSCS Admissions, Fellowships, and Assistantships Committee | 2007-2012 |
| MSCS Graduate Studies Committee | 2008-2012 |
| 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- |

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 Commitee                                    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 Commitee                                                     2010-2013

UIC Faculty Senate                                                     2006-2016

Chancellor's Committee on the Status of Women,                                    2005-2009
Co-Chair 2007-2009 ; Faculty concerns subcommittee, Co-Chair, 2005-2007

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)       May 2006
campus-wide ad-hoc advisory group

PROFESSIONAL SERVICE

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 *Proceedings of the American Mathematical Society*       2009-2013
Average of 30 papers edited per year.

Editorial board member *Homology, Homotopy, and Applications*            2007-2010, 2013-

Editorial board member *Theory and Applications of Categories*                  2005-2010

Editorial board member *Topology and its Applications*                        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 | 2008-2011 |
| NSF DMS-084429, Indiana University, $200,000 | |
| 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, *Acta Math.*, *Adv. Math.*, *Alg. Geo. Topology*, *Amer. Math. Monthly*, *Duke J. Math.*, *Homology, Homotopy and Applications*, *Inventiones*, *Geo. Topology*, *J. Pure and App. Algebra*, *London Math Soc.*, *Math. Zeit.*, *Theory and App. Categories*, *Topology*, *Trans. Amer. Math. Soc.*, 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" | July 26 - August 6, 2004 |
| Summer school, Chicago, IL, Chair of organizing committee, | |
| 70 international attendees, supported by my NSF Career grant | |
| 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 16-27, 2008 |
| 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 | |
| "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 | August 2013 |
| Research group of one post-doc and three graduate students worked together remotely throughout 2012-2013, leading to one week intensive research workshop | |
| 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.)