Mona Merling

Basic Information

University of Pennsylvania
Department of Mathematics
209 South 33rd Street
Philadelphia, PA 19104-6395

Email: mmerling@upenn.edu
Webpage: math.upenn.edu/∼mmerling
Citizenship: Romania
Date of birth: 5 January 1986

Research Interests

Algebraic topology. In particular, algebraic K-theory and equivariant stable homotopy theory.

Academic appointments

University of Pennsylvania, Philadelphia, PA

Assistant Professor, July 2018 - present

Johns Hopkins University, Baltimore, MD

J.J. Sylvester Assistant Professor, July 2014 - June 2018

Education

University of Chicago, Chicago, IL

Ph.D. in Mathematics, June 2014
Advisor: Peter May

M.S. in Mathematics, June 2010

Bard College, Annandale, NY

B.A. in Mathematics, May 2009

Academic Visits

Max Planck Institute for Mathematics, Bonn, Germany

Research Guest, July-November 2018

Isaac Newton Institute, Cambridge, UK

Homotopy Harnessing Higher Strictures Program Guest, July 2018 (2 weeks)

Hausdorff Institute for Mathematics, Bonn, Germany

Junior Trimester Program Guest, September-October 2016

University of Copenhagen, Denmark

Invited Visitor, August 2013 (2 weeks)

Grants and awards

Principal Investigator, NSF grant DMS-1709461 "Groups, manifolds, and stable homotopy theory"	2017-0
Co-Principal Investigator, NSF grant DMS-1619569 "Mid-Atlantic Topology Symposium: New Directions" *Conference grant*	2016
AMS-Simons Travel Grant	2015-7
Lawrence and Josephine Graves Prize, University of Chicago *Excellence in undergraduate teaching*	2013
Distinguished Scientist Scholarship, Bard College *Full tuition scholarship*	2004-9

2009

M. Susan Richman Senior Project Award in Mathematics, Bard College
Senior student exhibiting the most mathematical creativity

2007-9

7 other prizes for mathematics, scholarship, and community service, Bard College

Volumes

New directions in homotopy theory, (co-edited with N. Kitchloo, J. Morava, E. Riehl, W. S. Wilson), *Contemporary Mathematics*, Volume 707, (2018).

Publications & preprints

Symmetric monoidal G-categories and their strictification, (with B. Guillou, J.P. May and A. Osorno), `arXiv:1809.03017`, submitted.

Equivariant infinite loop space theory, I. The space level story, (with J.P. May and A. Osorno), `arXiv:1704.03413`, submitted.

Equivariant A-theory, (with C. Malkiewich), `arXiv:1609.03429`, submitted.

A symmetric monoidal and equivariant Segal machine, (with B. Guillou, J.P. May and A. Osorno), `arXiv:1711.09183`, *Journal of Pure and Applied Algebra*, Volume 226 (6) (2018), pages 2425–2454.

Motivic homotopical Galois extensions, (with A. Beaudry, K. Hess, M. Kedziorek, and V. Stojanoska), *Topology and its Applications*, Volume 235 (2017), 290–338, `arXiv:1611.00382`.

Categorical models for equivariant classifying spaces, (with B. Guillou and J.P. May), *Algebraic and Geometric Topology*, 17-5 (2017), pages 2565–2602, `arXiv:1201.5178`.

Equivariant algebraic K-theory of G-rings, *Mathematische Zeitschrift*, 285(3), (2017), pages 1205–1248, `arXiv:1505.07562`.

Unbased calculus for functors to chain complexes, (with M. Basterra, K. Bauer, A. Beaudry, R. Eldred, B. Johnson and S. Yeakel), *Contemporary Mathematics*, Vol. 641 (2015), pages 29–48, `arXiv:1409.1553v2.`

Function fields with class number indivisible by a prime l, (with M. Daub, J. Lang, A. Pacelli, N. Pitiwan, M. Rosen), *Acta Arithmetica*, 150 (2011), pages 339–359, `arXiv:0906.3728`.

Gassmann equivalent dessins, (with R. Perlis), *Communications in Algebra*, Vol. 38, Issue 6 (2010), pages 2129–2137.

Other publications

G-manifolds and algebraic K-theory, *Oberwolfach reports*, Report No. 31, (2018), pages 37-40.

The User's Guide Project: Giving Experiential Context to Research Papers, (with C. Malkiewich, D. White, L. Wolcott, and C. Yarnall), *Journal of Humanistic Mathematics*, Volume 5 Issue 2 (July 2015), pages 186–188.

Teaching Experience

University of Pennsylvania, Instructor

Spring 2019 math 619 Algebraic Topology III (graduate)
Spring 2019 math 370 Abstract Algebra

Johns Hopkins University, Instructor

Spring	2018	math 106 Calculus I for biology
Fall	2017	math 727 Topics in Algebraic Topology (graduate)
Fall	2017	math 615 Algebraic Topology I (graduate)
Spring	2017	math 422 Representation Theory
Spring	2017	math 616 Algebraic Topology II (graduate)
Spring	2016	math 422 Representation Theory
Spring	2016	math 401 Advanced Algebra
Fall	2015	math 401 Advanced Algebra
Fall	2015	math 328 Non-Euclidean geometry (inquiry based learning style)
Spring	2015	math 107 Calculus II for biology
Fall	2014	math 328 Non-Euclidean geometry (inquiry based learning style)

University of Chicago, Instructor

Winter	2014	math 176 Geometry IBL (co-taught with John Boller)
Spring	2013	math 112 Studies in mathematics
Winter	2013	math 153 Calculus III
Fall	2012	math 152 Calculus II
Spring	2012	math 112 Studies in mathematics
Winter	2012	math 106 Precalculus II
Fall	2011	math 105 Precalculus I

University of Chicago, College Fellow

Spring	2011	math 256 Basic Algebra III (mentor: Liang Xiao)
Winter	2011	math 255 Basic Algebra II (mentor: Rina Anno)
Fall	2010	math 254 Basic Algebra I (mentor: David Constantine)

Bard College, mathematics tutor

PRESENTATIONS

Conference and Colloquium Talks

International Workshop on Algebraic Topology, Shanghai Center for Mathematical Sciences, Fudan University, August 2019

Four manifolds: Confluence of high and low dimensions, Fields Institute, Toronto, July 2019

AMS Sectional Meeting, Special Session on Equivariant Homotopy and Trace Methods, University of Hawaii, March 2019

Equivariant and Motivic Homotopy Conference (Homotopy Harnessing Higher Structures Program), Isaac Newton Institute, Cambridge, August 2018

Topologie, Oberwolfach, July 2018

Equivariant Homotopy Theory and K-theory, FU Berlin, June 2018

AMS Sectional Meeting, Special Session on Homotopy Theory, Vanderbilt University, Nashville, April 2018

Tetrahedral Geometry and Topology Seminar, Lancaster, April 2018

AMS Sectional Meeting, Special Session on Homotopy Theory, Ohio State University, Columbus, March 2108

Midwest Topology Seminar, Northwestern, Evanston, March 2018

Colloquium, Florida State University, December 2017

Colloquium, University of Pennsylvania, December 2017

Colloquium, Notre Dame University, December 2017

Colloquium, University of Melbourne, November 2017

Lloyd Roeling Conference, University of Louisiana, Lafayette, November 2017

AMS Sectional Meeting, Special Session on Algebraic Topology, Buffalo, September 2017

Cascade Topology Conference, University of British Columbia, Vancouver, May 2017

Colloquium, Reed, Portland, November 2016

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

Equivariant Derived Algebraic Geometry, Banff, Canada, February 2016

Faculty talk at Undergraduate Conference on Geometry and Topology, University of Texas, Austin, February 2016

Trace Methods Summer School, Regensburg, August 2015

Equivariant and Motivic Homotopy Theory, Reed, Portland, May 2015

AMW Workshop at AMS Joint Meetings, San Antonio, January 2015

Young Topologists Meeting, Copenhagen, June 2014 (contributed talk)

MSRI Connections for Women Workshop, MSRI, Berkeley, January 2014

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

AMS Special Session on Homotopy Theory and Algebraic K-theory, Riverside, November 2013

Graduate Student Topology Conference, Notre Dame, April 2013 (contributed talk)

AMS Joint meetings, Washington DC, January 2009 (contributed talk)

AMS Joint meetings, San Diego, January 2008 (contributed talk)

AMS Joint meetings, New Orleans, January 2007 (contributed talk)

Seminar Talks

Michigan State University Topology Seminar, April 2019

Princeton Topology Seminar, March 2019

MIT Topology Seminar, March 2019

University of Pennsylvania Topology Seminar, February 2019

Johns Hopkins Topology Seminar, February 2019

University of Münster Topology Seminar, November 2018

University of Wuppertal Topology Seminar, November 2018

École Polytechnique Federale de Lausanne Topology Seminar, October 2018

University of Bochum Topology Seminar, October 2018

University of Copenhagen Topology Seminar, September 2018

University of Regensburg Topology Seminar, July 2018

Penn State Altoona Topology Seminar, October 2017

Notre Dame Topology Seminar, March 2017

Maryland University Topology Seminar, January 2017

Wayne State Topology Seminar, November 2016

Rochester Topology Seminar, October 2016

Hausdorff Institute for Mathematics Seminar, Bonn, September 2016

University of Virginia Topology Seminar, October 2015

UIUC Topology Seminar, May 2015

UCSD Number Theory/Topology Seminar, March 2015

Johns Hopkins Topology Seminar, March 2015

MIT Topology Seminar, December 2014

Penn State Altoona Topology Seminar, May 2014

Northwestern Topology Seminar, December 2013

UIUC Topology Seminar, February 2013

SERVICE NSF panelist, Topology Panel

Founder and organizer, Directed Reading Program, Johns Hopkins, 2017-2018

Future Scholars Program (wrote yearly exam and selected the Baltimore high schoolers who can take math classes at JHU as part of the program), Johns Hopkins, 2016&2017

Volunteer, John Rurah Middle School Math Lab, Baltimore, Spring 2017

Co-organizer, Second Mid-Atlantic Topology Conference, Johns Hopkins, March 2016

Organizer, Johns Hopkins Algebraic Topology Seminar, Johns Hopkins, 2015-present

Co-organizer, Johns Hopkins Algebraic Topology Seminar, Johns Hopkins, 2014-2015

Speaker in the University of Chicago REU, (2 talks on *Social choice and topology*), July 2016

Author and co-editor in *The User's Guide Project: Giving Experiential Context to Research Papers*

Committee member and mentor for the Directed Reading Program, University of Chicago, 2012-2014

Co-organizer, Algebraic K-theory Student Seminar, University of Chicago, spring 2013

LANGUAGES

English, Spanish, German (Abitur 2005), French (proficient in reading), and Romanian (native language).