

Ben Knudsen

CONTACT INFORMATION	Department of Mathematics Harvard University 1 Oxford St Cambridge, MA 02138	knudsen@math.harvard.edu scholar.harvard.edu/knudsen
EMPLOYMENT	Harvard University NSF Postdoctoral Fellow and Lecturer, 2016– Mentor: Michael Hopkins	
EDUCATION	Northwestern University Ph.D. in Mathematics, 2016 Advisor: John Francis Dissertation: <i>Higher enveloping algebras and configuration spaces of manifolds</i> Princeton University B.A. in Mathematics, 2011 Advisor: Zoltán Szabó Thesis: <i>On odd Khovanov homology and its mutation invariance</i>	
RESEARCH INTERESTS	Homotopy theoretic approaches to manifolds. Factorization homology and Goodwillie–Weiss manifold calculus. Applications to configuration spaces and related moduli spaces. Graph braid groups. Lie algebras and their homology. Stability phenomena. Stratified differential topology.	
JOURNAL ARTICLES	<i>Subdivisional spaces and graph braid groups</i> , with Byung Hee An and Gabriel C. Drummond-Cole. Doc. Math., to appear (2019). <i>Configuration spaces of products</i> , with William Dwyer and Kathryn Hess. Trans. Amer. Math. Soc., to appear (2018). <i>Higher enveloping algebras</i> . Geom. Topol. 22-7 (2018), 40143–4066. <i>Betti numbers of configuration spaces of surfaces</i> , with Gabriel C. Drummond-Cole. J. London Math. Soc. 96-2 (2017), 367–393. <i>Betti numbers and stability for configuration spaces via factorization homology</i> . Algebr. Geom. Topol. 17-5 (2017), 3137–3187.	
PREPRINTS	<i>A Künneth theorem for configuration spaces</i> , with Kathryn Hess. arXiv:1810.02249. <i>Edge stabilization in the homology of graph braid groups</i> , with Byung Hee An and Gabriel C. Drummond-Cole. arXiv:1806.05585.	
EXPOSITORY	<i>Configuration spaces in algebraic topology</i> . arXiv:1803.11165.	

- IN PREPARATION *The Lubin–Tate theory of configuration spaces*, with Lukas Brantner and Jeremy Hahn.
- On the constructible Grassmannian*, with Ingmar Saberi.
- Cup and shuffle products in the cohomology of configuration spaces*, with Byung Hee An and Gabriel C. Drummond-Cole.
- INVITED TALKS Indiana University algebra seminar (2019).
- “Arrangements at Western,” University of Western Ontario (May 2019).
- “Graduate Student Topology and Geometry Conference,” UIUC (March 2019).
- University of Michigan topology seminar (March 2019).
- Connectivity and growth in the homology of graph braid groups*. University of Louisiana at Lafayette topology seminar (January 2019).
- How to build a surface of genus six*. University of Louisiana at Lafayette colloquium (January 2019).
- Configuration spaces and Lie algebras away from characteristic zero*. “Manifolds,” Isaac Newton Institute (December 2018).
- Configuration spaces of manifolds and graphs*. Special seminar, Northeastern University (November 2018).
- Connectivity and growth in the homology of graph braid groups*. “Upstate New York Topology Seminar,” SUNY Albany (November 2018).
- Connectivity and growth in the homology of graph braid groups*. University of Massachusetts at Amherst geometry and topology seminar (November 2018).
- Toward the cohomology of the pure elliptic braid group*. MIT topology seminar (October 2018).
- Connectivity and growth in the homology of graph braid groups*. University of Georgia topology seminar (October 2018).
- Connectivity and growth in the homology of graph braid groups*. Isaac Newton Institute (July 2018).
- Edge stabilization in the homology of graph braid groups*. SUNY Albany topology seminar (May 2018).
- Edge stabilization in the homology of graph braid groups*. University of Minnesota topology seminar (May 2018).
- Homology of surface and graph braid groups*. AMS Special Session “Arrangements of hypersurfaces,” Northeastern University (April 2018).
- Edge stabilization in the homology of graph braid groups*. University of Chicago topology and geometry/topology joint seminar (April 2018).

Edge stabilization in the homology of graph braid groups. Northwestern topology seminar (April 2018).

Homology of surface and graph braid groups. Brandeis topology seminar (February 2018).

Homology of surface and graph braid groups. Oberwolfach workshop "Topology of Arrangements and Representation Stability" (January 2018).

Subdivisional spaces and graph braid groups. MPIM topology seminar (January 2018).

Subdivisional spaces and graph braid groups. University of Oregon topology seminar (December 2017).

Subdivisional spaces and graph braid groups. MIT topology seminar (November 2017).

Higher enveloping algebras. "Lie Theory and Mathematical Physics," MIT (July 2017).

Configuration spaces of products. IBS Center for Geometry and Physics (June 2017).

Homology of surface and graph braid groups. ICMS workshop "Braids in algebra, geometry and topology" (May 2017).

Subdivisional spaces and graph braid groups. University of Pennsylvania mathematical physics seminar (March 2017).

From Lie algebras to configuration spaces. EPFL topology seminar (February 2017).

A local-to-global approach to configuration spaces. Heidelberg University physical mathematics seminar (February 2017).

Higher enveloping algebras and configuration spaces of manifolds. MIT topology seminar (November 2016).

Higher enveloping algebras. AMS Special Session "Quantum field theories and geometric representation theory," University of St. Thomas (October 2016).

Higher enveloping algebras and configuration spaces of manifolds. "Midwest Topology Seminar," Purdue University (September 2016).

Betti numbers of configuration spaces of surfaces. Purdue topology seminar (September 2016).

Higher enveloping algebras. Oberwolfach workshop "Factorization Algebras and Functorial Field Theories" (May 2016).

Higher enveloping algebras and configuration spaces of manifolds. IBS Center for Geometry and Physics seminar (April 2016).

Configuration spaces, Lie algebras, and factorization. University of Copenhagen topology and algebra seminar (January 2016).

Rational homology of configuration spaces via factorization homology, Ohio State University K-theory and homotopy theory seminar (November 2015)

Rational homology of configuration spaces via factorization homology. University of Chicago topology and geometry/topology joint seminar (November 2015)

Rational homology of configuration spaces via factorization homology. Notre Dame topology seminar (October 2015)

Rational homology of configuration spaces via factorization homology. Johns Hopkins topology seminar (September 2015)

Rational homology of configuration spaces via factorization homology. University of Virginia topology seminar (September 2015)

Rational homology of configuration spaces via factorization homology. University of Illinois at Urbana-Champaign topology seminar (April 2015)

Rational homology of configuration spaces via factorization homology. IBS Center for Geometry and Physics (March 2015)

An algebraic approach to configuration spaces. UIC homotopy algebras seminar (February 2015)

Rational homology of configuration spaces via factorization homology. Northwestern topology seminar (February 2015)

Rational homology of configuration spaces via factorization homology. Purdue topology seminar (October 2014)

Rational homology of configuration spaces via factorization homology. Stanford topology seminar (September 2014)

Rational homology of configuration spaces via factorization homology. University of Wisconsin topology seminar (September 2014)

CONTRIBUTED
TALKS

Homology of surface and graph braid groups. ICM Satellite Conference “Braid groups, configuration spaces and homotopy theory,” Federal University of Bahia (July 2018).

Subdivisional spaces and graph braid groups. Topology Ecuador, Galapagos Science Center (August 2017).

Subdivisional spaces and graph braid groups. Homotopy Theory: Tools and Applications, UIUC (July 2017).

Higher enveloping algebras and configuration spaces of manifolds. Young Researchers in Homotopy Theory and Categorical Structures, Max Planck Institute, Bonn (February 2017).

Betti numbers of configuration spaces of surfaces. Union College Mathematics Conference (December 2016).

Configuration spaces and higher enveloping algebras. Young Topologists Meeting, Center for Symmetry and Deformation, Copenhagen (July 2016).

Higher enveloping algebras and configuration spaces of manifolds. Topology of Manifolds, University of Lisbon (June 2016).

Configuration spaces in characteristic zero. Young Topologists Meeting, Center for Symmetry and Deformation, Copenhagen (July 2014)

Factorization homology and the rational homology of configuration spaces. Manifolds, K-theory, and Related Topics, Inter-University Center, Dubrovnik (June 2014)

Factorization homology and configuration spaces. Graduate Student Topology and Geometry Conference, University of Texas at Austin (April 2014)

TEACHING

2019 Lecturer, Classical geometry, Harvard
2018 Lecturer, Calculus, series, and differential equations, Harvard
2018 Lecturer, Linear algebra and differential equations, Harvard
2017 Lecturer, Configuration spaces in algebraic topology, Harvard
2015 Teaching Assistant, Linear algebra, Northwestern
2015 Teaching Assistant, Combinatorics, Northwestern
2015 Teaching Assistant, Differential calculus, Northwestern
2014 Teaching Assistant, Linear algebra, Northwestern
2014 Teaching Assistant, Integral calculus, Northwestern
2014 Teaching Assistant, Differential calculus, Northwestern
2013 Teaching Assistant, Differential Calculus, Northwestern
2013 Teaching Assistant, Foundations of Mathematics, Northwestern
2013 Teaching Assistant, Integral Calculus, Northwestern
2012 Teaching Assistant, Multivariable Calculus, Northwestern
2012 Teaching Assistant, Integral Calculus, Northwestern

HONORS
AND AWARDS

2016 Mathematical Sciences Postdoctoral Research Fellowship
National Science Foundation

2016 Departmental thesis prize
Northwestern University

2014 Departmental teaching award
Northwestern University

SHORT TERM
VISITS

2018 “Homotopy Harnessing Higher Structures” program
Isaac Newton Institute for Mathematical Sciences

2015 “Homotopy Theory, Manifolds, and Field Theories” program
Hausdorff Research Institute for Mathematics

ORGANIZATION AND SERVICE	2020	“Configuration spaces of graphs” workshop American Institute of Mathematics Organizer
	2018–19	“Thursday” seminar Harvard University Organizer
	2018–19	Qualifying exam committee Harvard University Member
	2017–	zbMATH Reviewer
	2016–	Compos. Math., Math. Ann., Adv. Math., Notices Am. Math. Soc., Algebr. Geom. Topol., Homol. Homotopy Appl. Referee
	2016	Winter Midwest Topology Seminar Northwestern University Organizer
	2015	Departmental topology seminar Northwestern University Organizer
	2015	Graduate buddy program Northwestern University Big buddy
	2014	West Coast Algebraic Topology Summer School Pacific Institute for the Mathematical Sciences Graduate student organizer
	2010–12	Summer Science Program New Mexico Institute of Mining and Technology Teaching assistant and counselor

REFERENCES

Michael Hopkins (supervisor), Harvard University, mjh@math.harvard.edu

John Francis (advisor), Northwestern University, jnkf@math.northwestern.edu

Jameel Al-Aidroos (teaching), Harvard University, jameel@math.harvard.edu

Benson Farb, University of Chicago, bensonfarb@gmail.com

Kathryn Hess, EPFL, kathryn.hess@epfl.ch

Haynes Miller, MIT, hrm@math.mit.edu