Jesse Wolfson

Curriculum Vitae

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Department of Mathematics
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EMPLOYMENT AND VISITING POSITIONS

2017-present Assistant Professor, University of California – Irvine, USA

2014-2017 L.E. Dickson Instructor, University of Chicago, USA

2013-2014 Visitor, IPMU, Japan

EDUCATION

2014 Ph.D. in Mathematics, Northwestern University
Thesis: "Descent for n-Bundles, Tate Objects in Exact Categories, and the Index Map and Reciprocity Laws".
Advisor: Ezra Getzler

2009 M.A.St. in Mathematics (Part III), University of Cambridge, with distinction

2008 M.S. in Mathematics, Yale University

2008 B.S. in Mathematics and Literature, Yale University

FELLOWSHIPS AND AWARDS

2019 NSF Grant DMS-1856737 – Arithmetic Topology (Conference Grant), Submitting PI, $27,000

2018 NSF Grant DMS-1811846 - Euler Products and Homological Densities via Factorization Homology, PI, $152,995

2015 MacArthur Award for Creative and Effective Institutions: Roosevelt Institute Campus Network, MacArthur Foundation, $750,000.

2014 NSF Mathematical Sciences Post-Doctoral Research Fellow, sponsoring scientist: Alexander Beilinson, University of Chicago.

2008 NSF Graduate Research Fellow, Northwestern University.

2007 Keasbey Scholar, St. John's College, University of Cambridge.

PUBLICATIONS

2019 "Derived \ell-adic zeta functions, "with Jonathan Campbell and Inna Zakharevich, *Advances in Mathematics, to appear.*

"Hochschild coniveau spectral sequence and the Beilinson residue," with Oliver Braunling, *Pacific Journal of Mathematics*, vol. 300, no. 2, 2019, pp. 257-329.

"Coincidences of homological densities, predicted by arithmetic," with Benson Farb and Melanie Wood, *Advances in Mathematics,* vol. 352 (2019), pp. 670-716.

2018 "On the A-infinity structure of the index map," with Oliver Braunling and Michael Groechenig. *Annals of K-Theory*, vol. 3 (2018), No. 4, pp. 581-614.

"Etale homological stability and arithmetic statistics," with Benson Farb. *Quarterly Journal of Mathematics,* vol. 69, no. 3, 2018, pp. 951-974.

"On the normally ordered tensor product and duality for Tate objects," with Oliver Braunling, Michael Groechenig and Aron Heleodoro. *Theory and Applications of Categories,* vol. 33, 2018, pp. 296-349.

"The Index Map in Algebraic K-Theory," with Oliver Braunling and Michael Groechenig. *Selecta Mathematica,* vol. 24, no. 2, 2018, pp. 1039-1091.

2017 "Topology and Arithmetic of Resultants II: the resultant=1 hypersurface," with Benson Farb (with an appendix by C. Cazanave). *Algebraic Geometry,* vol. 4, no. 3, 2017, pp. 337-352.

"Relative Tate Objects and Boundary Maps in the K-Theory of Coherent Sheaves," with Oliver Braunling and Michael Groechenig. *Homology, Homotopy and Applications*, vol. 19, no. 1, 2017, pp. 341-369.

"Modular Operads of Embedded Curves," with Satoshi Kondo and Charles Siegel. *Geometry & Topology*, vol. 21, no. 2, 2017, pp. 903-922.

2016 "Operator Ideals in Tate Objects," with Oliver Braunling and Michael Groechenig. *Mathematical Research Letters*, vol. 23, no. 6 (2016), pp. 1565-1631.

"Geometric and Analytic Structures on the Higher Adeles," with Oliver Braunling and Michael Groechenig, *Research in the Mathematical Sciences, Special Collection in Celebration of the Research of Fedor Bogomolov on the Occasion of his 70th Birthday,* vol. 3, no. 1 (2016), article 22.

"Topology and Arithmetic of Resultants, I" with Benson Farb, *New York Journal of Mathematics,* vol. 22 (2016), pp. 801-821.

"Tate Objects in Exact Categories," with Oliver Braunling and Michael Groechenig (with an appendix by J. Stovicek and J. Trlifaj), *Moscow Mathematical Journal,* vol. 16, no. 3 (2016), pp. 433-504.

"Descent for n-Bundles," *Advances in Mathematics*, vol. 288 (2016), pp. 527-575.

PREPRINTS

2019 "Tschirnhaus transformations, after Hilbert." Available at https://jpwolfson.com/articles-and-pre-prints/.

"Essential Dimension of Congruence Covers," with Benson Farb and Mark Kisin. Preprint: arXiv:1901.09013. Submitted for publication.

2018 "Resolvent degree, Hilbert's 13th problem, and geometry," with Benson Farb. Preprint: arXiv:1803.04063. Submitted for publication.

2014 "A Generalized Contou-Carrere Symbol and its Reciprocity Laws in Higher Dimensions," with Oliver Braunling and Michael Groechenig. Pre-print: arXiv:1410.3451. Submitted for publication.

WORKSHOPS/SUMMER SCHOOLS

2019 "Arithmetic Topology", co-organizer with Alejandro Adem, Craig Westerland and Melanie Wood. PIMS, June 10-14.

"Braids, Resolvent Degree and Hilbert's 13th Problem," co-organizer with Benson Farb, Eriko Hironaka, Mark Kisin and Zinovy Reichstein. IPAM, Feb. 19-21.

2018 NSF RTG/PIMS Summer School on Geometry and Topology – "The Roots of Topology - The roots of topology: miracles of algebraic geometry, braids, and Hilbert's (still open) 13th problem" co-organized with Benson Farb. 70+ participants, June 11-14, University of Chicago.

LECTURE SERIES

2018 Jornadas de geometria algebraica en Oaxaca – "Resolvent degree, Hilbert's 13th problem and geometry", Oaxaca, Mexico, Sept. 17-19.

PUBLIC TALKS

2015 Choreography & Fractal Symmetry: a conversation with choreographer Reggie Wilson & mathematics faculty member Jesse Wolfson, Gray Center Labs, University of Chicago, May 12.

SELECTED RESEARCH TALKS

2019 UIC Colloquium – Braids, Polynomials and Hilbert's 13th Problem, Aug. 30

IPAM – Braids, Polynomials and Hilbert's 13th Problem, Feb. 19-21

After Abel, Feb. 19, 2019
Resolvent Degree and Classical Solutions, Feb. 19
Resolvent Degree and the Search for Lower Bounds, Feb. 21

Tufts Colloquium – Braids, Polynomials and Hilbert's 13th Problem, Feb. 1

Michigan Topology Seminar – Topological Invariants of Algebraic Functions, Jan. 10.

2018 USC Colloquium – Braids, Polynomials and Hilbert's 13th Problem, Sept. 26.

Stanford Topology Seminar – The Theory of Resolvent Degree, after Hamilton, Klein, Sylvester, Hilbert and Brauer, May 22.

UCLA Algebra Seminar – The Theory of Resolvent Degree, after Hamilton, Klein, Sylvester, Hilbert and Brauer, May 18.

University of Chicago Colloquium – Braids, Polynomials and Hilbert's 13th Problem, Apr. 11.

Harvard Number Theory Seminar – The Theory of Resolvent Degree, after Hamilton, Klein, Hilbert and Brauer, Mar. 7.

Harvard Informal Geometry and Dynamics Seminar – The Geometry of Hilbert's 13th Problem, Mar, 7.

Kempner Colloquium – Algebraic Topology and Hilbert's 13th Problem(s), Boulder, CO, Jan. 30.

Oberwolfach Workshop "Topology of Arrangements and Representation Stability" – The theory of resolvent degree, after Hamilton, Sylvester, Hilbert, Segre and Brauer, Oberwolfach, Germany, Jan. 14-20.

2017 No Boundaries – Groups in Algebra, Geometry and Topology – The theory of resolvent degree, after Hamilton, Sylvester, Hilbert, Segre and Brauer – Chicago, USA, Oct. 26-29.

Manifolds and Groups – Coincidences of homological densities, predicted by arithmetic – Regensburg, Germany, Sept. 25-29.

UCLA Number Theory Seminar, "Coincidences of homological densities, predicted by arithmetic," Los Angeles, CA, Jan. 25.

2016 Oberwolfach Topology Meeting 2016, "Coincidences of homological densities, predicted by arithmetic," Oberwolfach, Germany, July 21.

27th Nordic Congress of Mathematicians, Geometry and Topology Session, "Counting Problems and Homological Stability," Stockholm, Sweden, Mar. 17.

Wayne State Colloquium, "Polynomials, Counting Problems and Algebraic Topology," Detroit, MI, Feb. 22.

IBS-CGP Conference on Homotopical Methods in Quantum Field Theory, "Higher Determinants and Double Loop Groups," Pohang, Korea, Jan. 13.

2015 AMS Summer Institute in Algebraic Geometry, "Topology and Arithmetic of Resultants," Salt Lake City, UT, July 27.

Yale Geometry, Symmetry and Physics Seminar, "The Index Map and Reciprocity Laws for Contou-Carrere Symbols," New Haven, CT, Feb. 2.

2014 MIT Topology Seminar, "The Index Map and Reciprocity Laws," Cambridge, MA, Nov. 17.

University of Tokyo Topology Seminar, "The Index Map and Reciprocity Laws for Contou-Carrere Symbols," Tokyo, Japan, July 22.

TEACHING AND ADVISING

University of California, Irvine

2019 Active Learning Certified

Graduate Teaching

2018-2019 Graduate Algebraic Topology, 250ABC (yearlong sequence)

2017-2018 Honors Graduate Algebra Sequence, 230ABC (yearlong sequence)

Directed Reading – Algebraic Topology and Geometry (3 students, Winter/Spring)

2018-2019 Graduate Algebraic Topology, 250ABC (yearlong sequence, taught IBL)

Graduate Advising

Alex Sutherland (candidacy May 2019, expected PhD 2021)
Hannah Knight (expected PhD 2022)

Undergraduate Teaching

2019 Modern Geometry, Math 161

Undergraduate Advising

2018 - 2019 Directed reading in topology, Jazieel Lopez de la Luz

2015 - 2016 Advisor, University of Chicago Careers in STEM

University of Chicago
Graduate Advising
Member of thesis committee:

Victoria Akin, 2017, Thesis - "Uniqueness of the Point-Pushing Subgroup"
Nir Gadish, 2019, Thesis - Representation stability for families of linear subspace arrangements

Topics examination committee member for 7 students

SERVICE
Department Service

2018-2019 Geometry and Topology Seminar – co-organizer
Distinguished Visitor Committee
Algebra Qualifying Exam Committee

2017-2018 Geometry and Topology Seminar – co-organizer
Colloquium Committee
Algebra Qualifying Exam Committee

Professional Service
Referee for *Advances in Mathematics; Algebraic & Geometric Topology; Geometry & Topology*; *Homology, Homotopy and Applications; International Mathematical Research Notices; Mathematische Annalen; Proceedings of the AMS, Theory and Applications of Categories, Transactions of the AMS.*

PROFESSIONAL MEMBERSHIPS
American Mathematical Society; Association for Women in Mathematics

OTHER EXPERIENCE
Fist and Heel Performance Group
2016-present Member, Advisory Council

2012-2014 Consultant – *Moses(es)*
Assisted choreographer Reggie Wilson and his dancers to understand and work with the formal structures they encounter as they engage with African and Africanist performance cultures.

Roosevelt Institute Campus Network
2015-2018 Member, Alumni Committee

2006 Executive Director

2005 Guest Editor, *Review of Policy Research, Vol. 22, Issue 6*

2004 Co-Founder