

Dominic Leon Culver

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Employment

J.L. Doob postdoctoral fellow, UIUC, August 2017-present

Areas of specialization

Stable homotopy theory • topological modular forms • chromatic homotopy theory

Education

Ph.D. in Mathematics
Advisor: Mark Behrens
University of Notre Dame
Received: August, 2017

B.A., Mathematics
University of California, Berkeley
Received: May, 2012

Papers, Preprints, & Papers in preparation

1. *A new basis for the complex K -theory cooperations algebra*, Topology and its applications, 234 (2017) 7-25.
2. *On the E_2 -term of the bo -based Adams spectral sequence*, with Mark Behrens, Agnès Beaudry, Prasit Bhattacharya, and Zhouli Xu, recommended for acceptance to J. Top, available at [arXiv:1702.00230](https://arxiv.org/abs/1702.00230).

3. *The $BP\langle 2 \rangle$ -cooperations*, Algebraic & Geometric Topology 19 (2019) 807-862, available at [arXiv:1708.03001](https://arxiv.org/abs/1708.03001)
4. *$BP\langle 2 \rangle$ -cooperations at odd primes*, accepted, To appear in the Journal of Pure and Applied Algebra, available at [arXiv:1809.06898](https://arxiv.org/abs/1809.06898)
5. *The Adams spectral sequence for 3-local tmf* , submitted, available at [arXiv:1902.04230](https://arxiv.org/abs/1902.04230)
6. *Complex motivic kq -resolutions*, with J.D. Quigley, submitted, available at [arXiv: 1905.11952](https://arxiv.org/abs/1905.11952)
7. *On the $K(1)$ -local homotopy of $tmf \wedge tmf$* , with Paul VanKoughnett, submitted, available at [arXiv:1908.01904](https://arxiv.org/abs/1908.01904)
8. *The topological Hochschild homology of $BP\langle 2 \rangle$ I: the case of ℓ coefficients*, with Gabe Angelini-Knoll, in preparation.

Teaching Experience

Math 417 (abstract linear algebra), instructor, UIUC (Fall 2019)
 Math 526 (second semester algebraic topology), instructor, UIUC (Fall 2019)
 Math 527 (Homotopy theory), Instructor, UIUC (Spring 2019)
 Math 402 (non-Euclidean geometry), Instructor, UIUC (Spring 2018, Spring 2019)
 Math 347 (intro to proofs), Instructor, UIUC (Fall 2017, Fall 2018)
 Calculus 2 Instructor, University of Notre Dame (Spring 2017)
 Calculus 3 TA, University of Notre Dame (Spring 2016)
 Calculus 2 Instructor, University of Notre Dame (Spring 2015)
 Calculus 2 TA, University of Notre Dame (Fall 2014)
 Calculus 3 TA, University of Notre Dame (Spring 2014)
 Calculus 1 TA, University of Notre Dame (Fall 2013)

Invited Talks

TBA,
 University of Rochester, February 2020
Towards the Topological Hochschild Homology of $BP\langle 2 \rangle$,
 JMM special session, Denver, Colorado, January 2020
 $K(1)$ -local co-operations for topological modular forms,
 University of Notre Dame, November 2019
Complex motivic kq -resolutions,
 Northwestern University, October 2019
Complex motivic kq -resolutions,
 AMS special session in Madison Wisconsin, September 2019

On the complex motivic kq -resolution,
 University of Virginia, March 2019
Towards a counterexample to the height 2 telescope conjecture,
 MSU, November 2018
On $BP\langle 2 \rangle$ -cooperations,
 eCHT seminar¹, April 2018
On $BP\langle 2 \rangle$ -cooperations,
 UIUC, September 2017
On $BP\langle 2 \rangle$ -cooperations,
 Wayne State University, January 24, 2017
On $BP\langle 2 \rangle$ -cooperations,
 University of Chicago, November 22, 2016
On $BP\langle 2 \rangle$ -cooperations,
 Northwestern University, November 21, 2016
On $BP\langle 2 \rangle$ -cooperations,
 University of Rochester, November 10, 2016

Contributed Talks

Modular Forms, European Talbot, 2017
Goerss-Hopkins Obstruction Theory, Talbot, 2017
Expository talk on hidden extensions, WCATSS, 2015
The Joyal model structure, Higher categories study group, HCM, 2015
Expository talk on duality in higher categories, WCATSS, 2014

Grants, honors & awards

Richard Sady Prize, University of Notre Dame, 2013
 McCarthy Science Fellowship, University of Notre Dame, 2013
 Dorothea Klumpke Roberts Prize in Mathematics, UC Berkeley, 2012
 Highest Honors, undergraduate, UC Berkeley, 2012

Conferences & Workshops

Elliptic Cohomology after Lurie, Oberwolfach Arbeitsgemeinschaft (April 2019)
 Homotopy Theory Summer Berlin (June 2018)

¹electronic Computational Homotopy Theory seminar

Midwest summer school on trace methods in algebraic K-theory, UIC (August 2017)
 European Talbot workshop (June 2017)
 Talbot Workshop (May 2017)
 West Coast Algebraic Topology Summer School, University of Oregon (July 2016)
 West Coast Algebraic Topology Summer School, University of Oregon (August 2015)
 Young Topologist Meeting 2015, EPFL (July 2015)
 West Coast Algebraic Topology Summer School, UBC, Canada (July 2014)
 Introductory Workshop: Algebraic Topology, MSRI (January 2014)
 Field theories, conformal nets and Kac-Moody groups, WWU Münster, Germany (October 2013)
 GAP XI: Higher Geometry and Quantum Field Theory, University of Pittsburgh (August 2013)
 11th Annual Graduate Student Topology & Geometry Conference, University of Notre Dame (March 2013)

Refereeing

Homotopy, Homology, and its Applications

Mentorship

Advised reading courses: Alexei Grinberg (Serre's *Linear Representations of Finite Groups*)
 Undergraduate Research Projects advised: *Decomposition Theorems for Spectra*, with Yichen Ding, Xiaomin Lin, and Chengyi Liu.

Service

Co-Organizer of JMM special session on geometric representation theory and equivariant elliptic cohomology (January 2020)
 Co-organizer of Midwest Topology seminar at UIUC (Winter 2019)
 Founding member of GLASSND (Graduate student LGBTQ and Ally Student Society at Notre Dame) (2014-2015)
 Co-organizer of graduate student topology seminar at Notre Dame (Fall 2014-Fall 2015)
 Organizer of the Graduate Student Seminar at Notre Dame (Fall 2013-Spring 2014)
 Organizer of "Homotopy theory problem seminar" (Summer 2013)

References

Mark Behrens, University of Notre Dame, mbehren1@nd.edu

Paul Goerss, Northwestern University, pgoerss@math.northwestern.edu

Charles Rezk, University of Illinois, Urbana-Champaign, rezk@illinois.edu

Vesna Stojanoska, University of Illinois, Urbana-Champaign vesna@illinois.edu

Karen Mortensen (Teaching), University of Illinois, Urbana-Champaign, kmortens@illinois.edu