

Prasit Bhattacharya

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Research Interests

algebraic topology, homotopy theory, classical geometry, chromatic homotopy theory, stable homotopy theory, equivariant stable homotopy theory, algebraic K-theory, motivic homotopy theory

Education

PhD in Mathematics, Indiana University at Bloomington, 2015. Advisor Michael A. Mandell.

Master in Mathematics, Indian Statistical Institute at Bengaluru, 2009.

Bachelor in Mathematics, Indian Statistical Institute at Bengaluru, 2007.

Employment

Assistant Professor, New Mexico State University August 2022 – current.

Visiting Assistant Research Professor, University of Notre Dame, June 2020 – May 2022.

Whyburn Instructor, University of Virginia, July 2017 – May 2020.

Visiting Assistant Professor, University of Notre Dame, July 2015 – June 2017.

Program Associate, Algebraic topology program, M.S.R.I., January 2013 – May 2013.

Awards

James P. Williams memorial Award, 2010

M.Math honors fellowship, 2007 – 2009

B.Math honors fellowship, 2004 – 2007

Preprints and publications

1. *On the periodic v_2 -self-map of A_1* , Prasit Bhattacharya, Philip Egger and Mark E. Mahowald. **Algebraic & Geometric Topology** 17 (2017), no. 2, 657 – 692.
2. *A class of 2-local finite spectra which admits v_2^1 -self-map*, Prasit Bhattacharya and Philip Egger. **Advances in Mathematics** 360 (2020), 106895, 40.

3. *On the E_2 -term of the bo Adams spectral sequence*, Agnes Beaudry, Mark Behrens, Prasit Bhattacharya, Dominic Culver and Zhouli Xu.
Journal of Topology 13 (2020) 356–415.
4. *Towards the $K(2)$ -local homotopy groups of Z* , Prasit Bhattacharya and Philip Egger.
Algebraic & Geometric Topology 20 (2020), no. 3, 1235–1277.
5. *The P_2^1 -Margolis homology of connective topological modular form*, Prasit Bhattacharya, Irina Bobkova and Brian Thomas.
Homology, Homotopy and Applications, Vol. 23 (2021), No 2, 379–402.
6. *The telescope conjecture at the height 2 and the tmf resolution*, Agnes Beaudry, Mark Behrens, Prasit Bhattacharya, Dominic Culver and Zhouli Xu.
Journal of Topology 14 (2021) no. 4, 1243–1320.
7. *The stable Adams conjecture and higher associative structures of Moore spectra*, Prasit Bhattacharya and Nitu Kitchloo.
Annals of Mathematics, 195 (2022), no. 2, 375–420.
8. *Higher associativity of Moore spectra*, Prasit Bhattacharya.
Advances in Mathematics, 402 (2022), 108319.
9. *An \mathbb{R} -motivic v_1 -self-map of periodicity 1*, Prasit Bhattacharya, Bertrand Guillou and Ang Li.
Homology, Homotopy and Applications Vol 24 (2022), No 1, 299–324.
10. *On realizations of the subalgebra $A^{\mathbb{R}}(1)$ of the \mathbb{R} -motivic Steenrod algebra*, Prasit Bhattacharya, Bertrand Guillou and Ang Li.
Transactions of the American Mathematical Society (Series B) 9 (2022), 700–732.
11. *On the EO-orientability of vector bundles*, Prasit Bhattacharya and Hood Chatham
Journal of Topology 15 (2022) no. 4, 2017–2044
12. *The stable Picard group of $A(2)$* , Prasit Bhattacharya and Nicolas Ricka.
<https://arxiv.org/abs/1702.01493>
13. *The structure of the v_2 -local algebraic tmf resolution*, Mark Behrens, Prasit Bhattacharya and Dominic Culver, Preprint (2021) <https://www3.nd.edu/~mbehren1/papers/algTMFres.pdf>
14. *Equivariant Steenrod operations*, Prasit Bhattacharya and Mingcong Zeng, Preprint (2021).
15. *The Atiyah Real stable Adams conjecture*, Prasit Bhattacharya and Hood Chatham, Preprint (2022).
16. *Equivariant orientations and Thom class for disconnected basespaces*, Prasit Bhattacharya and Foling Zou, Preprint (2022).
17. *Generalized Steenrod Operations*, Prasit Bhattacharya, Hood Chatham and Guchuan Li, Preprint (2022)
18. *An \mathbb{R} -motivic analog of the height 1 telescope conjecture*, Prasit Bhattacharya, Bertrand Guillou and Ang Li, Preprint (2022).

Outside Algebraic topology

19. *Fractal Sets as Final Coalgebras Obtained by Completing an Initial Algebra*, Prasit Bhattacharya, Lawrence S. Moss, Jayampati Ratnayake and Robert Rose, **Horizons of mind: A tribute to Prakash Panangaden, Lecture notes in computer science**, volume 8448, 2014, pp.146-167.
20. *The p-adic integers as final coalgebra*, Prasit Bhattacharya, **Logic, Language, Information, and Computation, Lecture Notes in Computer Science** volume 9160, 2015, pp.189-199

Invited Talks

Conference, workshop and colloquium talks

Colloquium talk –Las Cruces New Mexico State University Title: <i>Rabbit holes of spheres</i>	September 2022
Electronic Computational Homotopy theory https://s.wayne.edu/eht/ Title: <i>Equivariant Steenrod Operations</i>	February 2022
Colloquium talk –College Station Texas A&M University Title: <i>The Atiyah Real stable Adams conjecture</i>	October 2021
Workshop on Homotopy theory and group theory Centre de Recerca Matematica, Barcelona Title: <i>Equivariant cohomology operations</i>	July 2021
Spring Southeastern Sectional Meeting University of Virginia, Charlottesville Title: <i>On the EO-orientations of vector bundles</i>	March 2020
Joint math meetings – Denver Colorado Convention Center Title: <i>Revising Higher associativity of Moore spectra</i>	January 2020
Colloquium talk – Mumbai Tata Institute of Fundamental Research Title: <i>On the stable Adams Conjecture</i>	December 2019
Colloquium talk – Hawaii University of Hawaii Title: <i>Stable homotopy groups of spheres, finite CW-complexes and periodic self-maps</i>	December 2019
Electronic Computational Homotopy theory https://s.wayne.edu/eht/ Title: <i>On the EO-orientations of vector bundles</i>	January 2019
Chromatic homotopy theory- Journey to the frontier University of Colorado Title: <i>On beyond Zebras</i>	May 2018

Electronic Computational Homotopy theory https://s.wayne.edu/eht/ Title: <i>The $K(2)$-local homotopy of a type 2 complex Z</i>	October 2017
AMS Sectional Vanderbilt University Title: <i>The P_2^1-Margolis homology of tmf</i>	April 2017
AMS Sectional Indiana University Title: <i>A very nice type 2 spectrum</i>	April 2017
Graduate Student Topology and Geometry Conference University of Notre Dame Title: <i>Higher Associativity of Moore spectra</i>	April 2013
Workshop on motivic homotopy theory M.S.R.I. Title: <i>Etale cohomology and Fundamental groups</i>	March 2013

Seminar Talks

Geometry & Topology seminar – New Mexico State University Title: <i>Higher homotopy associativity or \mathbb{A}_n-structures</i>	November 2022
Topology seminar – University of Virginia Title: <i>Equivariant orientation and Thom class for disconnected base space</i>	October 2022
Topology seminar – University of California Los Angeles Title: <i>Equivariant Steenrod Operations</i>	June 2022
Topology seminar – Southern University of Science and Technology, China Title: <i>Equivariant Steenrod Operations</i>	November 2021
Geometry seminar – Texas A&M University Title: <i>Equivariant Steenrod Operations</i>	October 2021
Topology seminar – University of Notre Dame Title: <i>Equivariant Steenrod Operations</i>	September 2021
Chicagoland algebraic topology seminar – Univ of Chicago/Northwestern Univ Title: <i>The stable Adams conjecture</i>	January 2021
Topology seminar – Texas A&M University Title: <i>The stable Adams conjecture</i>	September 2020
Topology seminar – University of Chicago Title: <i>Revisiting stable Adams conjecture</i>	January 2020
Topology seminar – Northwestern University Title: <i>Revisiting stable Adams conjecture</i>	January 2020
Topology seminar – Johns Hopkins University Title: <i>A 2-local finite spectrum that admit 1-periodic v_2-self-map</i>	October 2019
Topology seminar – University of Kentucky Title: <i>Revisiting higher associativity of Moore spectra</i>	September 2019

Topology seminar – University of Colorado Title: P_2^1 -Margolis homology of tmf	December 2018
Topology seminar – Massachusetts Institute of Technology Title: A 2-local type 3 spectrum, its periodic v_3 -self-map, and its $K(3)$ -local homotopy groups	October 2018
Topology seminar – Princeton University Title: Stable Adams conjecture and higher associative structure on Moore spectra	April 2018
Algebraic topology seminar – University of Chicago Title: A very nice type 2 spectrum	January 2017
Topology seminar – University of Rochester Title: A very nice type 2 spectra	September 2016
Topology seminar – University of Virginia Title: A very nice type 2 spectra	September 2016
Topology seminar – Ohio State University Title: A finite spectra admitting 1-periodic v_2 -self-map	April 2016
Topology seminar – Wayne State University Title: A finite spectra admitting 1-periodic v_2 -self-map	March 2016
Topology seminar – University of Notre Dame Title: Higher associativity of Moore spectra	October 2015
Topology seminar – Purdue University Title: Higher associativity of Moore spectra	April 2016
Topology seminar – University of Chicago Title: Higher associativity of Moore spectra	October 2014
Topology seminar – Northwestern University Title: Higher associativity of Moore spectra	October 2014
Topology seminar – Johns Hopkins University Title: Higher associativity of Moore spectra	October 2014
Topology seminar – Indiana University Title: Higher associativity of Moore spectra	September 2014

Teaching experience

New Mexico State University

Topology I	Spring 2023
Calculus I	Fall 2022
Algebraic topology II	Fall 2022

University of Virginia

Calculus of Manifolds	Spring 2020
Linear Algebra	Spring 2020
Algebraic topology II	Fall 2019
Chromatic Homotopy Theory (topic course)	Spring 2019
Calculus III (2 sections)	Fall 2018
Calculus III (2 sections)	Spring 2018
Linear algebra	Fall 2017

University of Notre Dame

Linear algebra & Differential Equations (2 sections)	Spring 2017
Calculus III (2 sections)	Fall 2016
Calculus for Business major	Spring 2016
Finite Mathematics	Spring 2016
Calculus III	Fall 2015
Calculus I	Fall 2015

Indiana University Bloomington

Finite Mathematics	Summer 2015
Finite Mathematics	Fall 2014
Finite Mathematics (2 sections)	Fall 2012
Finite Mathematics (2 sections)	Spring 2012
Pre-calculus (2 sections)	Fall 2011
Finite Mathematics (1 sections)	Summer 2011

Mentorship*Undergraduate students*

Connor Malin	REU 2019
Trent Lucas	REU 2019
Edith Zhang	REU 2019
Yifan (Jasmine) Zao	2017 – 2018
Shirley (Qianshu) Liu	2017 – 2018

High school students

Hans Riess

2011 – 2013

Professional services*Refereed for Journals*

Proceedings of American Mathematical Society

Journal of American Mathematical Society

Algebraic & Geometric Topology

New York Journal of Math

*Reviewed papers (mathscinet) – 6***Co-organized**

Math problem of the month, New Mexico State University	current
NMSU Geometry & Topology seminar, New Mexico State University	current
Topology seminar, University of Notre Dame	Fall 2019 – Spring 2022
Arf-Kervaire invariant one problem (international reading course), eCHT	Fall 2020
Topology seminar, University of Virginia	Fall 2017 – Fall 2020
Topology seminar, University of Notre Dame	Fall 2015 – Fall 2017
Stable Equivariant Homotopy Theory (reading seminar), University of Virginia	Fall 2018
Computations in Stable homotopy theory (reading seminar), University of Virginia	Spring 2018
Equivariant Homotopy Theory (reading seminar), University of Notre Dame	Summer 2014
Graduate Student Topology Conference (G.S.T.C.), Indiana University	April 2012
Exotic spheres (reading seminar), Indiana University	Summer 2013
Student Topology Seminar, Indiana University	March 2010 - April 2013