

William Balderrama

Contact information

Address: Department of Mathematics
University of Illinois at Urbana-Champaign
1409 W. Green Street
Urbana, IL 61801
Office: B3 Coble Hall
Email: balderr2@illinois.edu
Website: <https://faculty.math.illinois.edu/~balderr2/>

Research interests

Algebraic topology, homotopy theory, category theory, and related topics.

Education

University of Illinois at Urbana-Champaign
Ph.D. in Mathematics 2015–2021 (expected)
Advisor: Charles Rezk

University of California, Los Angeles
B.S. in Mathematics 2013–2015

Preprints

Algebraic theories of power operations (77 pages) 2020
<https://faculty.math.illinois.edu/~balderr2/papers/theories.pdf>

Approximating higher algebra by derived algebra (46 pages) 2020
<https://faculty.math.illinois.edu/~balderr2/papers/approximations.pdf>

Definability and decidability in expansions by generalized Cantor sets (15 pages) 2017
With Philipp Hieronymi
<https://arxiv.org/abs/1701.08426>

Honors / awards (UIUC)

Philippe Tondeur Dissertation Prize 2020

On the List of Teachers Ranked as Excellent 2019, 2020

GAANN Fellowship recipient 2015, 2017, 2018

Sloan Scholar, Alfred P. Sloan Foundation's Minority Ph.D. Program 2015

Teaching experience

†: ranked excellent
by students

Grader	Math 570 Mathematical Logic	Fall 2020
Grader	Math 225 Introductory Matrix Theory	Fall 2020
Grader	Math 125 Elementary Linear Algebra	Fall 2020
Teaching assistant	Math 231 Calculus II	†Spring 2020
Teaching assistant	Math 221 Calculus I	†Fall 2019

Teaching assistant	Math 231 Calculus II	Spring 2019
Head TA	Math 221 Calculus I	Fall 2018
Teaching assistant	Math 221 Calculus I	Fall 2017
Teaching assistant	Math 221 Calculus I	Fall 2016
Grader	Math 213 Discrete mathematics	Fall 2015
Grader	Math 241H Honors Calculus III	Fall 2015

Mentoring experience **Illinois Geometry Lab** 2019, 2020
Graduate team leader
 Helped lead a group of five undergraduates in a project about operads.

Research talks **University of Virginia Topology Seminar** October 2020

Chicagoland Topology seminar September 2020

electronic Algebraic Topology Employment Network September 2020
 Video submission, available at <https://youtu.be/mINWe40476s>

Hopkins Topology Seminar, John Hopkins University September 2020

Topology Seminar, University of Kentucky September 2020

The Transatlantic Transchromatic Homotopy Theory Conference II
Warm-up conference August 2020

Topology Seminar, UIUC March 2020

Selected graduate seminar talks **Graduate Student Homotopy Theory Seminar** August 2020
Koszul Algebras

Graduate Student Algebraic Geometry Seminar October 2019
Deformations of the Frobenius

Graduate Student Homotopy Theory Seminar September 2019
Modeling higher algebra with product-and-loop theories

Graduate Student Homotopy Theory Seminar September 2019
Algebraic theories and homotopy theory

Graduate Student Homotopy Theory Seminar April 2019
Mapping space spectral sequences

Graduate Geometry and Topology Seminar April 2019
A pointless alternative to topological spaces

Graduate Student Homotopy Seminar October 2018
Power operations in complex K-theory

Graduate Geometry/Topology Seminar March 2018
Operations in complex K theory

Graduate Student Homotopy Seminar February 2018
Thom Spectra

Graduate Student Homotopy Seminar October 2017
Cohomology operations for Landweber exact spectra

Graduate Geometry/Topology Seminar
Stable Phenomena in Algebraic Topology

April 2017

**Conferences
and workshops
attended**

Midwest Topology Seminar Wayne State University, virtual conference	October 2020
The Transatlantic Transchromatic Homotopy Theory Conference II online warm-up conference Universität Regensburg, virtual conference	August 2020
Midwest Topology Seminar Wayne State University, virtual conference	May 2020
Mayday 2019 University of Chicago	October 2019
Homotopy Type Theory 2019 Carnegie Mellon University	August 2019
Elliptic Cohomology Days University of Illinois at Urbana-Champaign	June 2019
Midwest Topology Seminar Michigan State University	May 2019
Graduate Student Topology and Geometry Conference University of Illinois at Urbana-Champaign	March 2019
Workshop on Functor Calculus Ohio State University	March 2019
Arizona Winter School 2019: Topology and Arithmetic The Southwest Center for Arithmetic Geometry	March 2019
Chromatic Homotopy Theory: Journey to the Frontier University of Colorado Boulder	May 2018
Midwest Topology Seminar University of Illinois at Urbana-Champaign	February 2019
Midwest Topology Seminar University of Kentucky	September 2018
Midwest Topology Seminar Northwestern University	March 2018
Homotopy Theory: tools and applications University of Illinois at Urbana-Champaign	July 2017
Midwest Topology Seminar University of Chicago	May 2017
MidWest Model Theory Day University of Illinois at Chicago	April 2016