

Bradley Dirks

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POSITIONS

Institute for Advanced Study <i>Member, School of Mathematics</i>	2024-2025 <i>Princeton, NJ</i>
Stony Brook University <i>Simons Instructor</i>	2023-2027 <i>Stony Brook, NY</i>
NSF Mathematical Sciences Postdoctoral Research Fellow <i>Stony Brook University</i>	2023-2027 <i>Stony Brook, NY</i>

EDUCATION

University of Michigan <i>PhD in Mathematics</i> <ul style="list-style-type: none">Thesis: Using Mixed Hodge Modules to Study Singularities	2018-2023 <i>Ann Arbor, MI</i>
University of California <i>BA and MA in Mathematics</i>	2014-2018 <i>Los Angeles, CA</i>

TEACHING EXPERIENCE

Instructor <i>Stony Brook University</i> <ul style="list-style-type: none">MAT310: Linear Algebra	Spring 2024 <i>Stony Brook, NY</i>
Graduate Student Instructor <i>University of Michigan</i> <ul style="list-style-type: none">Math 105 (Precalculus), Math 115 (Calculus I), Math 116 (Calculus II)	October 2018-Winter 2022 <i>Ann Arbor, MI</i>
Docent <i>LA Math Circle (now ORMC)</i>	2016 - 2018 <i>Los Angeles, CA</i>

ORGANIZING

AIM Workshop “Higher Du Bois and higher rational singularities” <i>American Institute of Mathematics. See website</i>	October 28 - November 1, 2024 <i>w/ Radu Laza</i>
Winter School on New Applications of Mixed Hodge Modules <i>Simons Center for Geometry and Physics. See website</i>	January 2024 <i>w/ Christian Schnell</i>
Student Algebraic Geometry seminar <i>University of Michigan</i>	Winter 2021-2023 <i>w/ Devlin Mallory in Winter 2021, w/ Saket Shah 2022-2023</i>
D-modules and Representation Theory Minicourse <i>University of Michigan</i>	Summer 2022
Mixed Hodge Theory Minicourse <i>University of Michigan</i>	Summer 2020 <i>w/ James Hotchkiss</i>
Variations of Hodge Structure Reading Group <i>University of Michigan</i>	Winter 2020 <i>w/ James Hotchkiss</i>

INVITED TALKS

JHU Algebraic Geometry Seminar <i>Minimal Exponent for LCI Subvarieties</i>	October 2024 Johns Hopkins University
Princeton University Algebraic Geometry Seminar <i>Minimal Exponent for LCI Subvarieties</i>	September 2024 Princeton University
Birational Geometry Seminar 2024 <i>Recent Results on Minimal Exponent for LCI Subvarieties</i>	May 2024 Online
CUNY Commutative Algebra and Algebraic Geometry Seminar <i>The minimal exponent for LCI subvarieties</i>	March 2024 Graduate Center of CUNY
University of Utah Algebraic Geometry Seminar <i>The minimal exponent for LCI subvarieties</i>	February 2024 University of Utah
Columbia University Algebraic Geometry Seminar <i>The minimal exponent for LCI subvarieties</i>	January 2024 Columbia University
Winter School on New Applications of Mixed Hodge Modules <i>V-filtration and Hodge filtration in higher codimension</i>	January 2024 Simons Center for Geometry and Physics
University of Toronto Algebraic Geometry Seminar <i>The minimal exponent for LCI subvarieties</i>	November 2023 University of Toronto
Harvard/MIT Algebraic Geometry Seminar <i>The minimal exponent for LCI Subvarieties</i>	October 2023 Harvard University
Birational Geometry Seminar 2023 <i>Higher du Bois and higher rational singularities for LCI varieties</i>	May 2023 Online
MAGGC <i>V-filtrations of \mathcal{D}-modules</i>	August 2022 UIC
Algebraic Geometry and Singularities Learning Workshop & Conference <i>Comparing V-filtration of an ideal with that of a general linear combination</i>	June 2022 UW Seattle
Algebraic Geometry Seminar <i>The Structure of Monodromic Mixed Hodge modules</i>	February 2022 Stony Brook University
DOCAS Seminar <i>Understanding the roots of b-functions</i>	August 2021 Online
UConn Algebra Seminar <i>Minimal Exponents and a Conjecture of Teissier</i>	April 2021 Online
Topology and Singularities Seminar in Madison <i>Minimal Exponents and a Conjecture of Teissier</i>	March 2021 Online

RESEARCH INTERESTS

Algebraic Geometry, Singularities, \mathcal{D} -modules, Hodge Theory

PREPRINTS

A Hodge theoretic generalization of \mathbb{Q} -homology manifolds
with Sebastián Olano and Debaditya Raychaudhury

- Submitted

Restrictions of Hodge modules using generalized V -filtrations
with Qianyu Chen and Sebastián Olano

- Submitted

Fourier transform and Radon transform for mixed Hodge modules

- Submitted

The minimal exponent of cones over smooth complete intersection projective varieties
with Qianyu Chen and Mircea Mustața

- Submitted

Some applications of Microlocalization for LCI subvarieties

- Submitted

Verdier specialization and restrictions of Hodge modules

with Qianyu Chen and Morihiko Saito

- Submitted

The minimal exponent and k -rationality for locally complete intersections

with Qianyu Chen and Mircea Mustață

- Submitted

PUBLICATIONS

Minimal exponents and V -filtrations of locally complete intersection singularities

with Qianyu Chen, Mircea Mustață and Sebastián Olanó

- To appear in Crelle's Journal

An introduction to V -filtrations *with Qianyu Chen and Mircea Mustață*

- To appear in Volume VII of Handbook of Geometry and Topology of Singularities

On V -filtration, Hodge filtration and Fourier Transform *with Qianyu Chen*

- To appear in Selecta Mathematica

Minimal exponents of hyperplane sections: a conjecture of Teissier *with Mircea Mustață*

- Accepted to Journal of European Mathematical Society

The Hilbert series of Hodge ideals of hyperplane arrangements *with Mircea Mustață*

- Published in Journal of Singularities

Upper bounds for roots of B -functions, following Kashiwara and Lichtin *with Mircea Mustață*

- To appear in Publications of RIMS

AWARDS

NSF Mathematical Sciences Postdoctoral Research Fellowship	National Science Foundation, 2023
Wirt and Mary Cornwell Prize	University of Michigan Mathematics Department, 2023
Rackham Predoctoral Fellowship	University of Michigan, Summer 2022-Winter 2023
Paul Daus Memorial Award	UCLA, 2018
Departmental Honors	UCLA Math Department, 2018
Summa Cum Laude	UCLA, 2018