

## Jeff Hicks

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## Appointments and Education

<b>University of Edinburgh</b> School of Mathematics, EPSRC Postdoctoral Fellow	<i>Fall 2022 - Present</i>
<b>University of Edinburgh</b> School of Mathematics, Research Associate <b>Supervisor:</b> Nick Sheridan	<i>Fall 2021 - Spring 2022</i>
<b>University of Cambridge</b> Department of Mathematics, Research Associate <b>Supervisor:</b> Mark Gross	<i>Fall 2019 - Spring 2021</i>
<b>ETH Zürich</b> Department of Mathematics, Visiting Scholar <b>Sponsor:</b> Paul Biran	<i>Fall 2018</i>
<b>University of California, Berkeley</b> Department of Mathematics, PhD <b>Advisor:</b> Denis Auroux <b>Thesis:</b> Tropical Lagrangians and Homological Mirror Symmetry	<i>Fall 2013-Spring 2019</i>
<b>University of California, Los Angeles</b> Department of Mathematics, BSc, MA	<i>Fall 2009-Spring 2013</i>

## Research Activities

### Publications and Preprints

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<i>Relating cat. dim. in topology and symp. geo. (w. A. Hanlon, O. Lazarev)</i> Preprint at <a href="https://arxiv.org/abs/2303.03763">arXiv:2303.03763</a>	<i>2023</i>
<i>Reverse isoperimetric ineq. for Lag. int. Floer th. (w. J.-P. Chassè, Y.J. Nho)</i> Submitted; Preprint at <a href="https://arxiv.org/abs/2306.04761">arxiv:2306.04761</a>	<i>2023</i>
<i>Resolutions of toric subvar. by line bundles and app. (w. A. Hanlon, O. Lazarev)</i> Submitted; Preprint at <a href="https://arxiv.org/abs/2303.03763">arXiv:2303.03763</a>	<i>2023</i>
<i>Resolutions of toric subvar. by line bundles and app. (w. A. Hanlon, O. Lazarev)</i> Submitted; Preprint at <a href="https://arxiv.org/abs/2303.03763">arXiv:2303.03763</a>	<i>2023</i>
<i>Some cute app. of Lag. cob. towards examples in quant. symp. geo. (w. Cheuk Yu Mak)</i> Submitted; Preprint at <a href="https://arxiv.org/abs/2208.14498">arXiv:2208.14498</a>	<i>2022</i>
<i>Lagrangian cobordisms and Lagrangian surgery</i> Accepted to <i>Commentarii Mathematici Helvetici</i>	<i>2022</i>
<i>Wall-Crossing transformations from Lagrangian cobordisms</i> To appear in <i>Algebraic and Geometric Topology</i>	<i>2022</i>

<i>Realizability in tropical geometry and unobstructedness of Lagrangian submanifolds</i> Submitted; Preprint at <a href="https://arxiv.org/abs/2204.06432">arXiv:2204.06432</a>	2022
<i>Functoriality and homological mirror symmetry for toric varieties (w. Andrew Hanlon)</i> <i>Advances in Mathematics</i> , <b>401</b>	2022
<i>Observations on disks with tropical Lagrangian boundary</i> <i>2019-20 MATRIX Annals</i>	2021
<i>Tropical Lagrangians in del-Pezzo surfaces</i> <i>Selecta Mathematica</i> , <b>27</b>	2021
<i>Tropical Lagrangian hypersurfaces are unobstructed</i> <i>Journal of Topology</i> , <b>13</b>	2020

### Conference talks

American Institute of Mathematics, <i>Syzygies and Mirror Symmetry</i> Resolutions Through the Mirror	September 2023
Universität Hamburg, <i>Higher Categorical Methods in Algebra and Geometry</i> Generation of Toric Subvarieties By Line Bundles	March 2023
Simons Foundation, <i>2022 Simons Coll. on Hom Mirror Symmetry Annual Meeting</i> Floer Theory and Lagrangian Cobordisms	November 2022
University of Warwick, <i>3CinG:Symp. Vs Alg. Geometry</i> Realization in Tropical Geometry and Unobstructedness of Lagrangian Submanifolds	May 2022
U. Uppsala & U. Nantes, <i>Workshop on Lagrangian Cobordisms and Floer Theory</i> Speculation on Floer Theory of Lagrangian Cobordisms via Decomposition	October 2021
Uppsala Universitet (Virtual), <i>Braids, Mutations and Twists in Algebra and Geometry</i> Lagrangian Cobordisms and Mutations	May 2021
Simons Collab. on HMS (Virtual), <i>Floer-Th. and Alg.-Geo. Asp. of SYZ Mirror Sym.</i> Revisiting HMS for Toric Varieties	September 2020
MATRIX, <i>Tropical Geometry and Mirror Symmetry</i> Sample Computations for Tropical Lagrangians	December 2019
Chicheley Hall, <i>Fano Varieties and Mirror Symmetry II</i> Lagrangian Mutations for Tropical Lagrangians	September 2019
Fields Institute, <i>New Structures in Alg. Geo. and Their Symp. Interpretations</i> Tropical Lagrangian Tori in $\mathbb{C}P^2 \setminus E$	August 2019
Université du Québec à Montréal, <i>Current Trends in Symplectic Geometry</i> Tropical Lagrangians in Mirror Symmetry	July 2019
Università Statale degli Studi di Milano, <i>Seminario Di Natale</i> Tropical Lagrangian Submanifolds from Lagrangian Cobordisms	December 2018

### Lecture Series

PIMS, <i>Summer School on Floer Homotopy Theory</i> 3 Courses on: Applications of Floer Theory	July 2022
ETH Zürich, 5 Courses on: Lagrangian Submanifolds in Toric Fibrations	January 2020

### Seminar Talks

University College London , <i>Geometry Seminar</i> Resolutions in Floer Cohomology	May 2023
LA GATROS (Virtual), <i>Latin American Geometria Algebraica Real Y TrOpical Seminar</i> Realizability Criteria in Tropical Geometry from Symplectic Geometry	September 2022
Louisiana State University (Virtual), <i>Geometry and Topology Seminar</i> Cute Constructions from Lagrangian Cobordisms	September 2022

University of Edinburgh, <i>Hodge Club</i> An Introduction to $A_\infty$ Algebras	June 2022
University of Nottingham (Virtual), <i>Nottingham Online Algebraic Geometry Seminar</i> Realizing Tropical Curves via Mirror Symmetry	April 2022
University of Edinburgh, <i>Hodge Club</i> An Introduction to Tropical Geometry	December 2021
U. Geneva & U. Neuchâtel, <i>GeNySys</i> The Support of the Lagrangian Lift of a Tropical Hypersurface	November 2021
University of Edinburgh, <i>Hodge Seminar</i> Symplectic to Tropical to Complex Geometry	September 2021
Tel Aviv University (Virtual), <i>Geometry and Dynamics Seminar</i> Decompositions of Lagrangian Cobordisms	June 2021
Hebrew University, <i>Topology and Geometry Seminar</i> Realizability and Obstruction in Tropical Geometry	June 2021
Boston University (Virtual), <i>Geometry and Physics Seminar</i> Lagrangian Submanifolds in Almost Toric Fibrations	November 2020
Northwestern University (Virtual), <i>NU Geometry and Physics Seminar</i> Lagrangian Surgery, Antisurgery, and Dimers	November 2020
University College London (Virtual), <i>Symplectic Cut</i> Almost Toric Base Diagrams and HMS	November 2020
Stanford University (Virtual), <i>Symplectic Geometry Seminar</i> Generating the Mirror to a Toric Variety	June 2020
Online Seminar Series (Virtual), <i>West. Hemisphere Symplectic Geo. Sem.</i> Lagrangian Cobordisms and Lagrangian Surgeries	May 2020
Rutgers University (Virtual), <i>Seminars on Geometry, Symmetry, and Physics</i> Wall Crossings and Lagrangian Cobordisms	April 2020
King's College London, <i>KCL/UCL Geometry Seminar</i> Manipulating Lagrangian Cobordisms in Lefschetz Fibrations	October 2019
Imperial College, <i>London Geometry and Topology Seminar</i> The Support of a Lagrangian	October 2019
ETH Zürich, <i>Symplectic Geometry Seminar</i> Counting Disks on Lagrangian Cobordisms	September 2019
Université du Québec à Montréal, <i>Séminaire Symplectique</i> Wall Crossing and Lagrangian Cobordisms	March 2019
Stanford University, <i>Symplectic Geometry Seminar</i> Floer-Theoretic Support of Tropical Lagrangians	February 2019
Cambridge University, <i>Differential Geometry and Topology Seminar</i> Tropical Lagrangians and Mirror Symmetry	November 2018
Edinburgh University, <i>EDGE Seminar</i> Dimers and Tropical Lagrangians	November 2018
Uppsala University, <i>Geometry and Topology Seminar</i> Tropical Lagrangians and Mutations	October 2018
ETH Zürich, <i>Symplectic Geometry Seminar</i> Tropical Lagrangians from Lagrangian Cobordisms	October 2018
Columbia University, <i>Symplectic, Gauge Theory, and Categorification Seminar</i> Tropical Lagrangians and Mirror Symmetry	September 2018
MSRI, <i>EGN Symplectic Geometry and Mirror Symmetry Seminar</i> Tropical Lagrangians and Mirror Symmetry	May 2018

## Teaching and Mentoring

### Course Instructor

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University of Edinburgh, <i>MATH11145: Interactions in Algebra, Geometry, and Topology</i>	Spring 2023
Coinstructor with Prof. Clark Barwick	
UC Berkeley, <i>Math 32: Precalculus</i>	Spring 2019
UC Berkeley, <i>Math 191: Introduction to Research with Combinatorial Topology</i>	Spring 2017
UC Berkeley, <i>Math 191: Introduction to Research with Combinatorial Topology</i>	Spring 2015

### Discussions and Supervisions

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University of Edinburgh, <i>Sev. Var. Calc. and Diff. Eq.</i>	Fall 2022
King's College, <i>Supervisions: Real Analysis</i>	Winter 2021
University of Cambridge, <i>Examples: Symplectic Topology</i>	Winter 2021
King's College, <i>Supervisions: Algebraic Topology</i>	Fall 2020
King's College, <i>Supervisions: Real Analysis</i>	Winter 2020
University of Cambridge, <i>Examples: Symplectic Topology</i>	Winter 2020
UC Berkeley, <i>Math 53: Multivariable Calculus</i>	Fall 2017
UC Berkeley, <i>Math 53: Multivariable Calculus</i>	Spring 2016
UC Berkeley, <i>Math 53: Multivariable Calculus</i>	Fall 2014
UC Berkeley, <i>Math 54: Linear Algebra and Differential Equations</i>	Spring 2014
UC Berkeley, <i>Math 1B: Single Variable Calculus II</i>	Fall 2013

### Other Teaching and Mentoring

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Summer Research Projects, *Research Advisor*

Daniel Holmes	<i>Aff. Dimers from Char. Polygons.</i> The PUMP J. of UG R., 5	2021
Diana Bergerová	<i>Enumerating Toric Hyperplane Arrangements</i>	2023
Sophie Bleau	<i>Moduli Spaces of Flowlines in Discrete Morse Theory</i>	2023

Canada-USA Mathcamp, *Mentor* 2014-2016

Developed and taught week-long courses for talented highschool students, as well as overseeing student-led projects.

Berkeley Mathematics Directed Reading Program, *Mentor*

Elliot Stahnke	<i>Drawing Graphs and Laplacians</i>	2017
Har'el Fishbein	<i>Khovanov Homology: Overview of the Jones Polynomial</i>	2017
Melissa Chien	<i>History of the Linking Number</i>	2016
Xindi Ai	<i>A Quick Proof of Leray-Hirsch via Hypercohomology</i>	2015
Brianna Grado-White	<i>Geometry &amp; the Universe: an Exploration of CY-Manifolds</i>	2014

Prison University Project at San Quentin State Prison, *Course Instructor* Fall 2017

Co-taught Intermediate Algebra.

Los Angeles Math Circle, *Instructor* 2010-2013

Developed and taught course materials for grades 4 through 6.

Other Outreach, *Instructor/Assistant*

Julia Robinson Mathematics Festival (2017), HMP Whitemoor (2019), LMS Undergraduate Summer School (2022)

## Administration and Service

### Program Administration

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Canada-USA Mathcamp, <i>Academic Coordinator</i>	Summer 2018
Designed academic program, invited speakers and mentored graduate students.	
Berkeley Mathematics Directed Reading Program, <i>Co-Founder and Organizer</i>	2014-2017
Coordinated admissions and presentations, as well as securing program funding to gift textbooks to undergraduates.	
Splash at UCLA, <i>Co-Founder and President</i>	2010-2012
Worked with LearningU development tools to create an opportunity for undergraduates to teach courses to high school students.	

### Seminars Organized

University of Edinburgh, <i>Hodge and EDGE Seminar</i>	2021-2023
Co-organizer	
UC Berkeley, <i>Student Symplectic Geometry Seminar</i>	Fall 2016
Co-organizer	
UC Berkeley, <i>Student SFT Seminar</i>	Fall 2016
Co-organizer	
UC Berkeley, <i>First Year Graduate Student Seminar</i>	Fall 2013
Co-organizer	

### Service

King's College, <i>Associate of Senior Common Room</i>	2019-2021
Graduate Student Assembly, <i>Math Department Representative</i>	2017-2018
Introduced resolution to secure funding for Berkeley Connect, a program providing graduate fellowships for undergraduate mentorship.	
UC Berkeley, <i>Advising Council</i>	2017-2018
Graduate Student Representative	
MIT, <i>Directed Reading Program Workshop 2018</i>	May 2018
Discussion Group Leader	
Scientific Review Activities,	
"Adv. in Math", "Ann. Henri Lebesgue", "Forum of Math., Sigma", "Mathematica Slovaca", "J. of Fixed Point Th. and App.", "J. of Symplectic Geometry", "J. of Top", "SIGMA"	

## Awards and Funding

### Funding

EPSRC Postdoctoral Fellowship (EP/V049097/1) (£313,067)	2022
AIM SQuaRE Funding	2019
DRP Collegium Funding (7000 USD)	2016

### Awards

Outstanding Graduate Student Instructor Award	2017
Daus Memorial Award	2013
NSF GSRFP Honorable Mention	2013
Departmental Scholar in Mathematics	2012
Highest Honors at Budapest Semesters in Mathematics	2011
Knapp Scholarship	2011
Les and Betty Knesel Scholarship	2010
Regent's Scholar at UCLA	2009

## References

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