

CONTACT  
INFORMATION

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RESEARCH  
INTERESTS

Algebraic Topology, Geometric Topology, Homotopy Theory

## EMPLOYMENT

**Brown University**, Providence, RI USA

Tamarkin Assistant Professor of Mathematics, July 2021 - Present

NSF Postdoctoral Fellow, July 2021 - Present

## EDUCATION

**Northwestern University**, Evanston, IL USA

Ph.D., Mathematics, September 2015 - June 2021

Dissertation Defense: April 2021

Qualifying Exam: June 2017

Advisor: John Francis

**Northwestern University**, Evanston, IL USA

M.A., Mathematics, June 2020

**Massachusetts Institute of Technology**, Cambridge, MA USA

B.S., Mathematics, June 2015

Advisors: Mark Behrens, Haynes Miller

## PAPERS

*Duality and vanishing theorems for topologically trivial families of smooth  $h$ -cobordisms*  
arXiv preprint arXiv:2111.03188 (2021)

HONORS AND  
AWARDS

2022 - Institute Mittag-Leffler Junior Fellowship

2021 - Northwestern Mathematics Department Best Thesis Award

2021 - NSF Mathematical Sciences Postdoctoral Research Fellowship

2015 - National Science Foundation Graduate Research Fellowship Program: Honorable Mention

2011 - First Place IEEE Computer Society Team Award, Intel ISEF

2011 - Recipient of the \$100,000 Proton Onsite Scholarship

2010 - Regional Finalist in Siemens Competition in Math, Science and Technology

## SERVICE

2018 Fall–2021 Fall: **MIT Talbot Workshop** - Organizer

The yearly MIT Talbot Workshop invites two expert faculty members in algebraic topology and nearby fields to work with nearly thirty-five graduate students and postdocs on a topic of contemporary interest. Participants give talks and discuss the material, all the while living, working, and eating together in a remote and picturesque setting. Responsibilities include applying for grants, soliciting faculty mentorship, advertising to and selecting participants, event coordination, and editing notes produced at the workshop.

2019 Winter-2020 Spring: **NUMath Directed Reading Program** - Founder and Organizer

This program pairs undergraduate students with graduate student mentors to read mathematics outside of the traditional classroom setting. Responsibilities include reading undergraduate applications, recruiting graduate student mentors, and tailoring syllabi for individual projects.

2017 Fall–2019 Spring: **Northwestern Math Graduate Student Seminar** - Organizer

The weekly graduate student seminar invites graduate students to speak on ongoing research and topics of interest. Responsibilities include recruiting speakers and scheduling talks.

#### SEMINAR TALKS

*Topologically Trivial Families of Smooth  $h$ -Cobordisms*

MIT Topology Seminar

2022 May

*Topologically Trivial Families of Smooth  $h$ -Cobordisms*

Higher Algebraic Structures in Algebra, Topology, and Geometry semester program

Institute Mittag-Leffler

2022 January

*Topologically Trivial Families of Smooth  $h$ -Cobordisms*

Brandeis University Topology Seminar

2021 October

*Fiberwise Poincaré–Hopf Theory and Exotic Smooth Structures on Manifold Bundles*

University of Chicago Topology Seminar

2021 January

*Fiberwise Poincaré–Hopf Theory and Exotic Smooth Structures on Manifold Bundles*

University of Texas at Austin Junior Geometry Seminar

2020 December

*Fiberwise Poincaré–Hopf Theory and Exotic Smooth Structures on Manifold Bundles*

Johns Hopkins University Topology Seminar

2020 December

*Fiberwise Poincaré–Hopf Theory and Exotic Smooth Structures on Manifold Bundles*

Northwestern University Topology Seminar

2020 October

#### CONFERENCES ATTENDED

2022 Higher Algebraic Structures in Algebra, Topology, and Geometry - Institute Mittag-Leffler

2021 Talbot Workshop, Ambidexterity in Chromatic Homotopy Theory - Plymouth, MA

2021 Viva Talbot! Workshop

2019 HCM Workshop Automorphisms of Manifolds - Hausdorff Center for Mathematics

2019 Four Manifolds, Confluence of High and Low Dimensions - Fields Institute

2019 Talbot Workshop, Moduli Spaces of Manifolds - Brady, Texas

2018 Homotopy Harnessing Higher Structures Program - Newton Institute, University of Cambridge

2018 Young Topologists Meeting - University of Copenhagen

2018 Séminaire de mathématiques supérieures, Derived Geometry and Higher Categorical Structures in Geometry and Physics - Fields Institute

2017 Topological and Geometric Methods in QFT - Montana State University

2017 Floer Homology and Homotopy Theory Summer School + Conference - UCLA

2016 Talbot Workshop, Equivariant Stable Homotopy Theory and the Kervaire Invariant - Utah  
2016 Young Topologists Meeting - University of Copenhagen

TEACHING  
ASSISTANTSHIPS

2016 Fall - Differential Calculus of One Variable Functions (two discussion sections)  
2017 Winter - Integral Calculus of One Variable Functions (two discussion sections)  
2017 Spring - Integral Calculus of One Variable Functions  
2017 Spring - Abstract Algebra  
2017 Fall - Differential Calculus of Multivariable Functions (two discussion sections)  
2019 Winter - Real Analysis  
2019 Winter - Introduction to Topology  
2019 Spring - Accelerated Mathematics for Mathematics Methods in Social Sciences  
2019 Fall - Single Variable Calculus III  
2019 Fall - Foundations of Higher Mathematics  
2020 Winter - Introduction to the Theory of Numbers  
2020 Winter - Introduction to Topology

REFERENCES

**John Francis** (thesis advisor)  
Northwestern University  
Associate Professor of Mathematics  
[jnkf@math.northwestern.edu](mailto:jnkf@math.northwestern.edu)

**Paul Goerss**  
Northwestern University  
Professor of Mathematics  
[pgoerss@math.northwestern.edu](mailto:pgoerss@math.northwestern.edu)

**Kiyoshi Igusa**  
Brandeis University  
Professor of Mathematics  
[igusa@brandeis.edu](mailto:igusa@brandeis.edu)

**Ursula Porod** (teaching mentor)  
Northwestern University  
Associate Professor of Instruction  
[u-porod@northwestern.edu](mailto:u-porod@northwestern.edu)