# Joshua Wang

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## Employment

**Institute for Advanced Study** and **Princeton University**, Princeton, NJ — 2024 – 2027
Veblen Research Instructor and NSF Postdoctoral Fellow
Postdoctoral mentor: Peter Ozsváth

**Massachusetts Institute of Technology**, Cambridge, MA — 2023 – 2024
NSF Postdoctoral Fellow
Postdoctoral mentor: Tomasz Mrowka

## Education

**Harvard University**, Cambridge, MA — 2018 – 2023
Ph.D. in Mathematics
Advisor: Peter Kronheimer

**Princeton University**, Princeton, NJ — 2014 – 2018
A.B. in Mathematics, Highest Honors
Senior Thesis advisor: Zoltán Szabó

## Publications and Preprints

8. A minimality property for knots without Khovanov 2-torsion
   with Onkar Singh Gujral
   arXiv:2310.06163
7. The Gysin sequence and the sl(N) homology of T(2,m)
   *Proceedings for "Frontiers in Geometry and Topology"*, accepted
6. Colored sl(N) homology and SU(N) representations I: the trefoil and the Hopf link
   arXiv:2211.08409
5. Split link detection for sl(P) link homology in characteristic P
   *Journal of Topology* 16(2):806-821 (2023)
4. On sl(N) link homology with mod N coefficients
   *Quantum Topology*, accepted
3. Link Floer homology also detects split links
   *Bulletin of the London Mathematical Society* 53(4):1037-1044 (2021)
2. The cosmetic crossing conjecture for split links
   *Geometry & Topology* 26(7):2941-3053 (2022)
1. A combinatorial proof of invariance of double-point enhanced grid homology
   with Timothy Ratigan and Luya Wang
   arXiv:1810.03202

## Awards and Fellowships

NSF Mathematical Sciences Postdoctoral Research Fellowship — 2023 – 2026
Merit Research Fellowship, *Harvard University* — 2022 – 2023
Derek C. Bok Award, *Harvard University* — 2022
Certificate of Distinction in Teaching, *Harvard University* — 2021
NSF Graduate Research Fellowship Program — 2019 – 2022
George B. Covington Prize in Mathematics, *Dept of Mathematics, Princeton University* — 2018
Peter A. Greenberg '77 Prize, *Dept of Mathematics, Princeton University* — 2017
Shapiro Prize for Academic Excellence, *Princeton University* — 2016

## Conference and Workshop Talks

AMS Special Session on Gauge Theory and Low-Dimensional Topology — Sep 2023
Simons Collaboration workshop: Merging Categorification, Gauge Theory, and Physics — Sep 2023
AIM workshop: Algebra, Geometry, and Combinatorics of Link Homology — Aug 2023
CMI Gauge Theory and Topology — July 2023
RTG Summer School in Low-Dimensional Topology and Symplectic Geometry — July 2023
ICTP Frontiers in Geometry and Topology Research Conference — Aug 2022
FRG Workshop on Gauge Theory in Miami, Florida — Apr 2022
AMS Special Session on Gauge Theory, Geometric Analysis, and Low-Dimensional Topology — Mar 2022
BIRS Workshop — Mar 2022
Interactions of gauge theory with contact and symplectic topology in dimensions 3 and 4
ICERM Foam Evaluation Workshop — Nov 2021
JMM AMS Special Session on Low Dimensional Topology, I — Jan 2021

## Invited Seminar Talks

UC Berkeley, Topology Seminar — Oct 2023
California Institute of Technology, Geometry & Topology Seminar — Apr 2023
Princeton University, Topology Seminar — Mar 2023
UC Davis, Algebraic Geometry Seminar — Mar 2023
Columbia University, Symplectic Geometry, Gauge Theory, and Categorification Seminar — Feb 2023
University of Georgia, Topology Seminar — Apr 2022
Boston College, Geometry/Topology/Dynamics Seminar — Feb 2022
University of Oregon, Topology/Geometry Seminar — Feb 2022
University of Warsaw, Knot Theory Seminar — Dec 2021
Stony Brook University/Simons Center for Geometry and Physics — Nov 2021
Low-Dimensional Topology, Gauge Theory, and Symplectic Geometry Seminar
Boston Graduate Topology Seminar — Nov 2021
Princeton University, Topology Seminar — Sep 2021
Gauge Theory Virtual Seminar — Apr 2021
Washington University in St. Louis, Geometry and Topology Seminar — Apr 2021
UC San Diego, Topology Seminar — Mar 2021
Stanford University, Topology Seminar — Oct 2020
Michigan State University, Geometry and Topology Seminar — Oct 2020
Virginia Commonwealth University, Geometry and Topology Seminar — Oct 2020
Max Planck Institute for Mathematics, Topology Seminar — Jun 2020

## Teaching

Multivariable calculus, *Harvard University* — Fall 2021
Taught one class in a coordinate course, overall student evaluation: 4.88/5
MSRI Summer Graduate School: Gauge Theory in Geometry and Topology — Summer 2021
Served as a teaching assistant for a course taught by Boyu Zhang
Tutorial: Low-dimensional manifolds, *Harvard University* — Spring 2021
Designed the course, prepared and gave 24 lectures
Tutorial: Differential forms in algebraic topology, *Harvard University* — Summer 2020
Designed the course, prepared and gave 24 lectures
Tutorial: Knot invariants and category theory (with Morgan Opie), *Harvard University* — Summer 2019
Co-designed the course, prepared and gave 6 lectures

## Service and Organization

Refereeing: *Compositio Mathematica*, *Journal of the European Mathematical Society* 2021 – Present

MIT Geometry and Topology Seminar, co-organizer 2023 – Present

Directed Reading Program at MIT, co-organizer 2023 – Present

Harvard University Gauge Theory and Topology Seminar, co-organizer 2022 – 2023

Directed Reading Program at Harvard University 2018 – 2022
Co-founder and co-organizer, mentored five reading projects with undergraduates

Nearly Carbon Neutral Geometric Topology Conference (NCNGT) 2021
Co-organized a session titled "Recent techniques in Floer and Khovanov homology"