

Hsiang (Robert) Chang

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CITIZENSHIP Canada

RESEARCH Mathematical physics, microlocal analysis, complex analysis, probability.
I study the asymptotic behavior of eigenstates on Riemannian or Kähler
manifolds as well as on Grauert tubes. Specific topics include quantum
chaos; nodal and critical sets; L^p norms; and spectral asymptotics.

EMPLOYMENT Visiting Assistant Professor, Reed College, 2022–present
Zelevinsky Research Instructor, Northeastern University, 2019–2022

EDUCATION Ph.D. in Mathematics, Northwestern University, June 2019
Advisor: [Steve Zelditch](#)
Thesis: [Random and Small-Scale Quantum Ergodicity](#)
B.A. in Mathematics, University of Pennsylvania, May 2013

Papers and preprints

1. Hamiltonian Grauert tubes for Schrödinger operators
In preparation
2. (WITH [A. MOLL](#)) Fractional Gaussian fields in geometric quantization and semi-classical
analysis of coherent states
In preparation
3. (WITH [P. ZHOU](#)) Slepian-type theorem for Toeplitz operators
In preparation
4. (WITH [A. RABINOWITZ](#)) Szegő kernel asymptotics and concentration of Husimi distribu-
tions of eigenfunctions
Submitted. [arXiv:2202.14013](#)
5. (WITH [A. RABINOWITZ](#)) Scaling asymptotics for Bergman kernels on Grauert tubes
J. Geom. Anal. **33** (2023), no. 2, paper no. 60. [arXiv:2107.05105](#)
6. (WITH [S. ZELDITCH](#)) Log-scale equidistribution of nodal sets in Grauert tubes
J. Math Pures Appl. (9) 129 (2019), 213–241. [arXiv:1803.03579](#)
7. (WITH [S. ZELDITCH](#)) Log-scale equidistribution of zeros of quantum ergodic eigensections
Ann. Henri Poincaré **19** (2018), no. 12, 3783–3814. [arXiv:1708.02333](#)
8. Quantum ergodicity of Wigner induced spherical harmonics
J. Spectr. Theory **8** (2018), no. 2, 523–540. [arXiv:1512.03138](#)

Invited talks

NOVEMBER 2023	Mathematical Sciences Colloquium, Lewis & Clark
NOVEMBER 2022	Bergman Kernels in Microlocal Analysis and Mathematical Physics, CIRM
JUNE 2022	Workshop on Complex Analysis and Geometry, Essen, Germany
JANUARY 2022	Tsinghua–BIMSA Analysis & PDE Seminar
JANUARY 2020	Northeastern Math Club
SEPTEMBER 2019	Analysis–Geometry Seminar, Northeastern University
JULY 2018	Banff International Research Station: Around Quantum Chaos
SEPTEMBER 2017	AMS Sectional Meeting: Global Harmonic Analysis and its Applications, University of Central Florida
JULY 2017	The Third Symposium on Scattering and Spectral Theory, Florianópolis, Brazil
AUGUST 2016	Probabilistic Methods in Spectral Geometry and PDE, Centre de Recherches Mathématiques
MAY 2016	Quantum Mechanics meets Symplectic Topology Workshop, Tel Aviv University
NOVEMBER 2015	Probability Seminar, Northwestern University
OCTOBER 2015	Probability Seminar, Northwestern University

Teaching (primary instructor at Reed)

SPRING 2024	Math 111: Calculus Math 311: Complex Analysis
FALL 2023	Math 321: Real Analysis
SPRING 2023	Math 112: Intro to Analysis Math 411: Topics in Advanced Analysis (Microlocal Analysis)
FALL 2022	Math 111: Calculus Math 321: Real Analysis

Teaching (primary instructor at Northeastern)

SPRING 2022	Math 2331: Linear Algebra
FALL 2021	Math 1342: Honors Calculus II for Sci/Engr Math 1342: Calculus II for Sci/Engr
SPRING 2021	Math 5102: Analysis II (graduate level)

FALL 2020 Math 1342: Honors Calculus II for Sci/Engr
 Math 1342: Calculus II for Sci/Engr

SPRING 2020 Math 5102: Analysis II (graduate level)

FALL 2019 Math 1341: Calculus I for Sci/Engr
 Math 1365: Intro to Math Reasoning

Teaching (teaching assistant at Northwestern)

SPRING 2019 Math 410: Analysis III (graduate level)
 Math 321: MENU¹ – Real Analysis III

WINTER 2019 Math 321: MENU – Real Analysis II
 Math 410: Analysis II (graduate level)

FALL 2018 Math 321: MENU – Real Analysis I
 Math 410: Analysis I (graduate level)

SUMMER 2017 Summer Northwestern Analysis Program

FALL 2016 Math 212: Single Variable Calculus I
 Math 321: MENU – Real Analysis I

WINTER 2016 Math 360: MENU – Applied Analysis II
 Math 382: Complex Analysis for ISP²

FALL 2015 Math 224: Calculus I
 Math 360: MENU – Applied Analysis I

WINTER 2015 Math 230: Calculus III

FALL 2014 Math 230: Calculus III
 Math 250: Differential Equations

Mentorship

2023–PRESENT Academic advisor for seven Reed College undergraduates

2022–PRESENT Thesis advisor for Reed College undergraduate senior thesis
 Advisee: Apollo Albright
 Topic: Classical Versus Quantum Phase Transitions of an
 Electron in a Saddle Potential (in progress)

¹ Mathematical Experience for Northwestern Undergraduates is the University's honors program.

² The accelerated Integrated Science Program combines mathematics and the natural sciences.

Advisee: Adam Cohen

Topic: Heat Kernels, Dirac Operators, and the Atiyah–Singer Index Theorem (in progress)

Advisee: Elle Wen

Topic: Implementation of Fuzzy Private Set Intersection in the Sharing of Satellite Orbit Data (in progress)

Advisee: Blaze Okonogi-Neth

Topic: An Introduction to Elliptic Curves, Modular Forms, and the Modularity Theorem

- 2021–2022 Mentor for Northeastern Math Department’s graduate student mentoring program
- 2020–2023 Mentor for [Bridge to Calculus](#), meeting Boston high school students twice a week for math enrichment, help with course work, college applications, etc. I wrote the BC Exam for [Calculus Field Day 2021](#).

Service

- Organized the Graduate School Panel and Career Panel at Reed (2023)
- Academic advising (2023)
- Wrote the Graduate Qualifying Examination in Analysis at Northeastern (2020, 2021)
- Referee for *Journal of Geometric Analysis* and *Bollettino dell’Unione Matematica Italiana*