Otte Heinävaara

Curriculum Vitae

September 20, 2024

California Institute of Technology
Division of Physics, Mathematics and Astronomy
1200 E California Blvd
Pasadena, CA 91125, USA

oeh@caltech.edu
Phone: +1 609 5982867

Education

Doctor of Philosophy, Mathematics, Princeton University, 5/2024.

Master of Arts, Mathematics, Princeton University, 11/2020.

Master of Science, Mathematics, University of Helsinki, 5/2018.

Bachelor of Science, Mathematics, University of Helsinki, 9/2017.

Work experience

Division of Physics, Mathematics and Astronomy, Caltech

Scott Russell Johnson Postdoctoral Scholar Teaching Fellow in Mathematics, 9/2024 –

Department of Mathematics and Statistics, University of Helsinki

Doctoral Student, 2/2019 – 8/2019

Department of Mathematics, Princeton University

Visiting Student Research Collaborator, 9/2018 – 1/2019

Department of Mathematics and Statistics, University of Helsinki

Research Assistant, 6/2016 – 12/2018

Department of Computer Science, University of Helsinki

Research Assistant, 6/2015 – 5/2016

Teaching

Division of Physics, Mathematics and Astronomy, Caltech

Lecturer	Analysis	Fall 2024

Department of Mathematics, Princeton University

Grader	Multivariable Analysis and Linear Algebra I	Fall 2020
	Linear Algebra with Applications	Spring 2021
	Introduction to Real Analysis	Fall 2021
	Linear Algebra with Applications	Spring 2022
	Complex Analysis with Applications	Spring 2023, Spring 2024
	Complex Analysis	Fall 2023
Teaching Assistant	Calculus I	Fall 2022

Department of Mathematics and Statistics, University of Helsinki
Instructor, math circle for high school students, 9/2016 – 5/2019

Training division, Finnish Mathematical Society
Instructor, high school math competition training, 9/2016 – 5/2018

MAFY-valmennus (Mathematics/Science-training)
Instructor, Training high school students mathematics and physics for the Finnish matriculation examinations, 2/2015 – 5/2015

Other work experience

Finnish Cancer Registry
Research assistant, Helping to verify research data, 6/2014 – 1/2015

Finnish military service
Conscription, 7/2013 – 12/2013

Publications

Articles

Tracial joint spectral measures
Preprint, 2023

(With D. Bilyk, A. Chang, R. W. Matzke and S. Steinerberger) A random line intersects $\mathbb{S}^2$ in two probabilistically independent locations.
Preprint, 2023

Planes in Schatten-3.
J. Funct. Anal., 287(2) 110469, 2024

Characterizing matrix monotonicity of fixed order on general sets.
Preprint, 2019

Local characterizations for the matrix monotonicity and convexity of fixed order.
Proceedings of the American Mathematical Society 146(9), pp.3791-3799, 2018

(With J. Leppä-Aho, J. Corander, and A. Honkela) On the inconsistency of ℓ_1-penalised sparse precision matrix estimation. *BMC bioinformatics*, 17(16), pp.99-107, 2016

Theses

Tracial joint spectral measures. PhD thesis, Pricneton University, 2024.
Availabe at `https://www.its.caltech.edu/~oeh/thesis_final.pdf`
Matrix monotone functions. Master's thesis, University of Helsinki, 2018.
Available at `https://www.cs.helsinki.fi/u/othe/gradu.pdf`.

Talks/presentations

Tracial joint spectral measures
Thesis defense,
Princeton University, 5/2024
Tracial joint spectral measures
Spaces of Analytic Functions and their Operators,
Saarland University, 5/2024
Tracial joint spectral measures
Analysis Seminar,
Washington University in St. Louis, 4/2024
Tracial joint spectral measures
SEAM 40,
University of Florida, 3/2024
Tracial joint spectral measures
Operator Algebra Seminar,
Purdue University, 3/2024
Planes in Schatten-p, and a Problem of Ball, Carlen and Lieb (Poster).
Lluís Santaló School: Linear and non-linear analysis in Banach spaces,
Santander, 7/2023
Planes in Schatten-p, and a Problem of Ball, Carlen and Lieb (Poster).
Recent Advances in Applications of Harmonic Analysis to Convex Geometry,
North Dakota State University, 4/2023
Planes in Schatten-3
Geometric and Functional Analysis Seminar, University of Helsinki, 1/2023
New look on Loewner's Theory of Matrix Monotone Functions
SEAM 38, Online, 3/2021
Matrix Monotone Functions
Graduate Student Seminar, Princeton University, 9/2019
Matrix Monotone Functions on General Sets
Geometric and Functional Analysis Seminar, University of Helsinki, 4/2019
Matrix Monotone Functions on General Sets
Special Analysis Seminar, California Institute of Technology, 11/2018
Matrix Monotone Functions
Analysis Near the Pole, Svalbard, 8/2017
Matrix Monotone Functions
Geometry in May, University of Helsinki, 5/2017

Merits

Ernst Lindelöf Prize
Prize for Finnish Master's Thesis in Mathematics, 2018
International Collegiate Programming Contest (ICPC)
Contestant, 2016, 2017

International Mathematical Contests for University Students (IMC)
Contestant, 2014 (First prize category)

International Mathematical Olympiad (IMO)
Contestant, 2012 (Silver medal), 2013 (Silver medal)

Languages and Skills

Finnish (native), English (fluent), German (basic), Swedish (basic)
Python (intermediate), C++ (intermediate), Java (intermediate)