

Ikshu Neithalath

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EMPLOYMENT

2024–2027	Postdoctoral Researcher, University of Helsinki Supervisor: Kari Vilonen. Research mentor: Oscar Kivinen (Aalto University)
2021–2024	Postdoctoral Researcher, Center for Quantum Mathematics, University of Southern Denmark Mentor: Vivek Shende

EDUCATION

2021	Ph.D. in Mathematics, University of California, Los Angeles Thesis: $SL(2, \mathbb{C})$ Floer homology for knots and knot surgeries Advisor: Ciprian Manolescu
2015	B.S. in Mathematics and B.S. in Physics, Stanford University

TEACHING

Instructor of record

Autumn 2026	Algebra IIb: Rings, Modules, and Galois Theory University of Helsinki (MAST30302); 28 lecture hours
Spring 2026	Algebraic Topology University of Helsinki (MAST31023); 56 lecture hours
Spring 2023, 2024	Topology and Complex Analysis University of Southern Denmark (MM549); 64 lecture hours each year

Teaching assistant, University of California, Los Angeles

2018–2019	Algebraic Topology; Differential Geometry; Differential Topology
2015–2017	Linear Algebra and Applications; Differential Equations

ADVISING AND MENTORING

2026–2027	Alexander Saunders, master's student in mathematics, University of Helsinki Reading course in low-dimensional topology (Autumn 2026), followed by master's thesis (topic TBD)
Autumn 2026	Cristian Ionita, bachelor's student, Aalto University Bachelor's thesis on Khovanov homology and the Rasmussen s -invariant
Spring 2025	Directed reading course in algebraic geometry, University of Helsinki Hartshorne, Chapters II–III; student continued to the M.Sc. program at the University of Bonn
Spring 2024	Directed reading course in algebraic geometry, University of Southern Denmark Hartshorne, Chapters I–II

OUTREACH

Oct. 2026	Lesson on knot theory, Aalto Math Camp, a weekend camp for about 30 high school students, Aalto University
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PUBLICATIONS

- 2023 *SL(2, $\mathbb{C}$) Floer homology for surgeries on some knots.*
Michigan Mathematical Journal. arXiv:2002.04103
- 2022 *On the sheaf-theoretic SL(2, $\mathbb{C}$) Casson–Lin invariant* (with Laurent Côté).
Journal of the Mathematical Society of Japan. arXiv:1907.02593
- 2022 *Skein lasagna modules for 2-handlebodies* (with Ciprian Manolescu).
Journal für die reine und angewandte Mathematik (Crelle’s Journal). arXiv:2009.08520

INVITED TALKS

Sheaf-theoretic SL(2, $\mathbb{C}$) Floer homology for knots and their surgeries

University of Helsinki (2024); University of Southern Denmark; University of Kansas (2021)

Skein lasagna modules for 2-handlebodies

University of Hamburg; Annual Meeting of the German Mathematical Society; University of Oregon (2022); Georgia Topology Conference; University of Kansas; UCLA; Caltech; Instituto Superior Técnico, Lisbon; University of Virginia; Boston College; University of Southern California; University of Iowa; Joint Mathematics Meetings (2021); Max Planck Institute for Mathematics (2020)

Other talks

An introduction to skein lasagna modules, University of Edinburgh (2020); *Sheaf-theoretic SL(2, $\mathbb{C}$) Floer homology for knots and the Casson–Lin invariant*, Park City Mathematics Institute (2019); *Sheaf-theoretic SL(2, $\mathbb{C}$) Floer homology*, University of Missouri–St. Louis (2019)

SERVICE

- 2026 Master’s thesis examination committee, University of Helsinki
- 2021–2024 Organized learning seminars at the University of Southern Denmark
Seiberg–Witten invariants (2024); classical homotopy theory (2024); Floer homology and the Fukaya category (2022–23); microlocal sheaf theory, with Bingyu Zhang (2022–23); J-holomorphic curves (2021–22)
- 2021 Referee, *Algebraic & Geometric Topology*

AWARDS

- 2016 Horn–Moez Prize for Excellence in First-Year Graduate Studies, UCLA
For passing all three qualifying exams upon entry to the program
- 2015 Graduate Dean’s Scholar Award, UCLA

LANGUAGES

Spanish (fluent); Danish (conversational); Finnish (beginner)