Curriculum Vitae
Oscar Salomon Kivinen

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Date of Birth: October 22, 1992 (Helsinki, Finland)
Date of CV: December 1, 2025

Education & Employment

9/2023 –   **Assistant Professor**, *Aalto University.*
9/2021 – 8/2023   **Researcher**, *EPFL.*
9/2020 – 8/2021   **Postdoctoral fellow**, *University of Toronto.*
7/2019 – 8/2020   **Olga Taussky and John Todd Instructor in Mathematics**, *Caltech.*
9/2015 – 6/2019   **PhD**, Mathematics, *University of California, Davis.*
9/2012 – 6/2014   **MSc & BSc**, Engineering Physics, *Aalto University.*
9/2012 –   **Licentiate of Medicine** (Completed some coursework towards the degree), *University of Helsinki*

Scientific/Academic honors and grants

9/2024 – 8/2027   The Finnish Academy of Science and Letters project grant (150,000e)
9/2020 – 6/2021   The Finnish Academy of Science and Letters grant for postdoctoral research abroad (150,000e)
9/2016 – 6/2019   The Vilho, Yrjö and Kalle Väisälä Foundation of the Finnish Academy of Science and Letters grant (25,000e yearly grant for graduate studies)
9/2015 – 4/2018   Departmental fellowship, UC Davis
9/2015 – 6/2020   Fulbright Graduate Grant
5/2014   Aalto University fast graduation award (for completing a BSc+MSc in < 2 years)
7/2010, 7/2011, 7/2012 International Chemistry Olympiad, three medals (2 bronze, 1 silver)

Publications

Papers

1. **The Hilb-vs-Quot conjecture** (with Minh-Tam Trinh). *J. Reine Angew. Math. (Crelle's Journal)*, (2025).

2. **On the affine Springer fibers inside the invariant center of the small quantum group** (with Nicolas Hemelsoet and Anna Lachowska). Under a second review in *Representation Theory*, available at arXiv:2205.09700.

3. **The affine Springer fiber-sheaf correspondence** (with Eugene Gorsky and Alexei Oblomkov). *Advances in Math.*, 464 (2025).

4. Appendix to **Affine Springer fibers, Procesi bundles, and Cherednik algebras** (with Pablo Boixeda Alvarez, Ivan Losev). *Duke Math. J.*, 173.5 (2024).

5. **Algebra and geometry of link homology** (notes from the 2021 IHÉS summer school, with Eugene Gorsky and José Simental Rodríguez). *Bull. Lond. Math. Soc.*, 55(2):537–591, 2023.

6. **Unramified affine Springer fibers and isospectral Hilbert schemes**, *Selecta Mathematica (New Series)* 26, 61 (2020).

7. **Generalized affine Springer theory and Hilbert schemes on planar curves** (with Niklas Garner), *IMRN*, (8):6402–6460, 2023., (2022).

8. **Hecke correspondences for Hilbert schemes of reducible locally planar curves**, *Algebraic Geometry (Foundation Compositio Mathematica)* 6.5 (2019).

9. **Quadratic ideals and Rogers-Ramanujan recursions** (with Yuzhe Bai and Eugene Gorsky), *The Ramanujan Journal* (2018): 1-23.

Preprints

1. **Discriminants and motivic integration** (with Alexei Oblomkov and Dimitri Wyss). Submitted, available at arXiv:2503.18449.

2. **A Lie-theoretic generalization of some Hilbert schemes**. Preprint.

3. **Shalika germs for tamely ramified elements in GL_n** (with Cheng-Chiang Tsai). Submitted, available at arXiv:2209.02509.

4. **Computations for binomial edge ideals and Koszul duality**, December 2014. Available at arXiv:1412.3542.

Book chapters and manuscripts

1. **Proof of the Hard Lefschetz Theorem** (with Gurbir Dhillon), 2018. Chapter 18 of *Introduction to Soergel bimodules*, *RSME Springer Series*. (2020)

Theses

1. **Affine Springer fibers, Hilbert schemes and knots** PhD Thesis, UC Davis, 2019, 104 pages.

2. **Koszul algebras and resolutions** Master Thesis, Aalto University, 2014, 45 pages.

3. **Steady states in chemical reaction networks** Bachelor Thesis, Aalto University, 2014, 20 pages.

Students and postdocs

Postdocs:

- GyeongHyeon Nam (Postdoc, 2025-).

- Ikshu Neithalath (Postdoc based at the University of Helsinki, jointly with Kari Vilonen, 2024-).

- Lizao Ye (Postdoc, 2024-).

Graduate students:

- Emilia Takanen (PhD student, 2024-): Emilia is working on sheaf-theoretic Floer homology.

- Miika Rankaviita (PhD student, 2024-): Miika is working on Poisson and birational geometry.

Undergraduate students:

- Ville Uotila (MSc student based at the University of Helsinki, 2025)

- Corentin Vogin (Visiting MSc student from Université de Rennes, 2025)

- Mikko Palojärvi (BSc student & summer trainee, 2025): Gromov–Witten theory and virtual localization.

- Michael Yang (Summer trainee, 2024)

- Lassi Virtanen (MSc student, 2024)

- Lauri Karanko (BSc student, 2023): Cyclic sieving in rational q,t-Catalan combinatorics.

- Susanna Terron (MSc student, 2023): Dynamical Quantum Groups.

- Hana Ephremidze (BSc student, 2023): Algebraic closure of local fields in characteristic p>0. Hana's thesis won the Prix Junior Maryam Mirzakhani 2023.

Teaching experience

Aalto University

9/2025–12/2025 Lecturer for the course *Algebraic Geometry* (MS–E1145).
2/2025–4/2025 Lecturer for the course *Advanced topics in algebra: Modern Representation Theory*
9/2024–11/2024 Lecturer for the course *Differentiaali- ja integraalilaskenta 2* (MS–A0202).
2/2024–4/2024 Lecturer for the course *Algebraic Geometry I* (MS–EV0023).
9/2013–12/2015 TA for several courses.

EPFL

9/2022 – 12/2022 TA for the *Student seminar in knot theory* (MATH-563).
1/2022 – 6/2022 Lecturer for the course *Topics in algebraic geometry* (MATH-535).

University of Toronto

9/2020 – 4/2021 Lecturer for the course *Calculus and Linear Algebra for Commerce* (MAT 133Y).

Caltech

1/2020–4/2020 Lecturer for the course *Topics in representation theory* (Math 145b).
9/2019–12/2019 Lecturer for the course *Algebraic geometry I* (Math 130a).

UC Davis

10/2018–12/2018 Lecturer for the course *Calculus* (Math 21A).
10/2016-12/2016 TA for the course *Algebra* (Math 150A).
1/2016–3/2016 TA for the course *Calculus III* (Math 21C)
4/2016–6/2016 TA for the course *Ordinary differential equations* (Math 22B).
10/2015–12/2015 TA for the course *Calculus I* (Math 21A).

Invited talks

Over 50 invited talks at institutions and conferences including: Aalto, Academia Sinica, AIM, AMS Sectional Meetings, Caltech, EPFL, Harvard, HKUST, ICERM, IHÉS, IMJ-PRG, IST Austria, Johns Hopkins, Kansas State, Kyoto University (RIMS), Marseille, MIT, Northeastern, MPIM Bonn, MSRI/SLMath, QGM Aarhus, Roma Tor Vergata, Stanford, TSIMF, Université de Paris, UC Berkeley, UC Davis, UChicago, University of Edinburgh, UMD College Park, University of Melbourne, University of Michigan, University of Toronto, University of Vienna, UMass Amherst, Uppsala Universitet, Yale. *A complete list is available upon request.*

Professional activities

- Scientific committee member, Finnish Mathematical Days, University of Jyväskylä, 2026.
- Along with Anna Beliakova, Anna Lachowska, Louis-Hadrien Robert and Qi You, one of the main organizers of the biennial workshop "Quantum Topology Biennial" in Les Diablerets, Switzerland (first instance in January 2024)
- Along with Francesca Carocci and Sergej Monavari, one of the main organizers of the workshop "Categorified enumerative geometry and representation theory" at the Bernoulli Center, EPFL, September 2023.
- Along with Nicolle Gonzalez, Eugene Gorsky, Matthew Hogancamp, and Alexei Oblomkov, one of the main organizers of the AIM workshop "Algebra, Geometry, and Combinatorics of Link Homology", July 2023.
- Along with NG, EG, MH, AO, one of the main organizers of the AIM research community "Link homology", 2021–2023.
- TA for the course "Algebra and geometry of link homology" at the IHÉS summer school 2021 "Enumerative geometry, physics, and representation theory".
- Visiting researcher at *Institut Henri Poincaré* in Spring 2017. Participant in the program *Combinatorics and Interactions.*
- Referee for Duke, Advances, Crelle, Compositio, IMRN, JIMJ, Algebraic Geometry, Representation Theory, Transformation Groups, Ann. Sci. Fenn., ART, JCTA, PJM, QJM. Reviewer for zbMATH and MathSciNet.

Seminars

1/2024–	Organizer of the *Algebra and Discrete Math* seminar with Kaie Kubjas at Aalto University.
6/2021–6/2022	Co-organizer of the algebraic geometry seminar for the AIM research community "Link homology"
9/2020–4/2021	Main organizer of the University of Toronto Geometric Representation Theory seminar.
9/2019–6/2020	Main organizer of the Caltech Algebra & Geometry seminar.

Other skills

Languages	Finnish (native), English (fluent/C2), French (B2), Swedish (B1), Spanish (A2), Russian (A2), 中文 (A1)
Computer	Scala, Python, C, C++, MATLAB, Macaulay2, Sage, Singular, Mathematica, Maple, LaTeX