Curriculum Vitae

PERSONAL INFORMATION

Full name:	Douglas Björn Alexander Lundholm
Address:	Department of Mathematics Uppsala University Box 524, SE-751 20 Uppsala Sweden
Phone:	+46 18 471 3318
e-mail:	douglas.lundholm@math.uu.se
Date of birth:	August 31, 1982
Nationality:	Swedish
ORCID:	0000-0003-3456-5846
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DEGREES

2016	Docent in Mathematics (Habilitation), KTH Royal Institute of Technology, Sweden
2010	PhD in Mathematics, KTH Royal Institute of Technology, Sweden Title: Zero-energy states in supersymmetric matrix models, Advisor: Prof. Jens Hoppe
2006	MSc in Engineering Physics, KTH Royal Institute of Technology, Sweden

CURRENT POSITION

2022–	Associate Professor, Department of Mathematics, Uppsala University, Sweden

PREVIOUS POSITIONS

2019–2021	Researcher (20% teaching), Department of Mathematics, Uppsala University, Sweden
2019	Professor (W3, Vertretung), Mathematical Institute, LMU Munich, Germany
2013–2019	Researcher (75% external grant funded, 25% teaching), Department of Mathematics, KTH Royal Institute of Technology, Sweden
2010–2011	Postdoc, Dept. of Mathematical Sciences, University of Copenhagen, Denmark
2006–2010	PhD student, Dept. of Mathematics, KTH, Sweden
2006	Research Engineer, Dept. of Mathematics, KTH, Sweden

GRANTS, FELLOWSHIPS AND AWARDS

2022	Awarded a PhD project grant from the Center for Interdisciplinary Mathematics at Uppsala University (50% funding for 4 years)
2021	Awarded a Swedish Research Council (VR) Project Grant for the period 2022–2025 (3.7 MSEK $\approx$ 370 kEUR)
2018	Awarded a Göran Gustafsson Prize for Young Researchers (500 kSEK $\approx$ 50 kEUR)
2013	Awarded a Swedish Research Council (VR) Junior Researcher Project Grant for the period 2014–2017 (3.2 MSEK $\approx$ 320 kEUR)
2013	LabEx CARMIN Fellowship (7 months), IHÉS, Bures-sur-Yvette and IHP, Paris, France
2012	Research Fellowship (fall program), Institut Mittag-Leffler, Djursholm, Sweden
2011–2012	EPDI Fellowship, with: 2 months at IHÉS, Bures-sur-Yvette, France 7 months at FIM, ETH Zurich, Switzerland 3 months at INIMS, Cambridge, UK

Other research grants for fellowships, research visits, conferences, etc. have been awarded from:

- The funds of the Royal Swedish Academy of Sciences
- The Knut and Alice Wallenberg Foundation
- The Marie Curie Training Network ENIGMA
- The European Science Foundation activity MISGAM

SUPERVISION

2026	Local advisor for one visiting MSc student in Engineering Physics (George Scribano), UU
2025–	Supervisor for one MSc student in Quantum Technology (Filippa Getzner), UU
2022–	Main advisor for one PhD student in Interdisciplinary Mathematics (Ask Ellingsen), UU
2019	Local advisor for one visiting PhD student in Mathematics (Luca Oddis), LMU Munich
2017–2018	Supervisor for four BSc students in Engineering Physics with projects in Mathematics, KTH
2016–2017	Supervisor for one MSc student in Mathematics, KTH
2015–2019	Co-advisor for one PhD student in Mathematics (Simon Larson), KTH
2015–2016	Supervisor for three BSc students in Engineering Physics, KTH
2013–2014	Assisting advisor for one PhD student (Fabian Portmann), KTH

POSTDOCS

2022–2024	Dinh-Thi Nguyen, Uppsala University

TEACHING ACTIVITIES

2026–	Main Instructor for two undergraduate courses, Uppsala University
2024	Main Instructor for one PhD course, Uppsala University
2020–2022	Main Instructor for four undergraduate courses resp. Co-instructor/Teaching Assistant for one undergraduate course, Uppsala University
2019	Main Instructor for one master-level course and one BSc/MSc seminar course, LMU Munich
2017	Main Instructor for one master-level course and one undergraduate course, KTH
2015–2016	Main Instructor for one PhD course and one undergraduate course, KTH
2013–2015	Co-instructor/Teaching Assistant for 5 undergraduate courses, KTH
2010–2011	Co-instructor/Teaching Assistant for one undergraduate and one graduate course, University of Copenhagen
2006–2010	Main Instructor for one PhD course and Co-instructor/Teaching Assistant for 7 undergraduate courses, KTH

PEDAGOGICAL DEVELOPMENT

2016	Habilitation (Docent) with evaluation of teaching and supervision merits, KTH
2014	Completed course in Research Supervision, 3 ECTS credits, KTH
2013	Completed course in Learning and Teaching in Higher Education, 7.5 ECTS credits, KTH

ORGANIZATION OF SCIENTIFIC MEETINGS

2025	Co-organizer of the workshop “Anyons from small to large scales”, Institut Mittag-Leffler, Stockholm, Sweden
2023	Co-organizer of the conference “Correlations in Mathematical Quantum Mechanics” to celebrate the work of Jan Philip Solovej, University of Copenhagen, Denmark
2021	Main organizer of the workshop “Archipelagic perspectives on mathematics and physics”, Uppsala University / Djurö, Sweden
2019	Co-organizer of the workshop “Mathematical physics of anyons and topological states of matter”, NORDITA, Stockholm, Sweden
2016	Co-organizer of the Mathematical Physics session at the 27th Nordic Congress of Mathematicians, in Stockholm
2013	Organizer of a one-day conference in honor of the 65th birthday of Lars Svensson, KTH, Sweden
2013	Co-organizer of the Young Seminar series of the IHP trimester program “Variational and Spectral Methods in Quantum Mechanics”, IHP, Paris, France
2007	Co-organizer of the first bi-annual Problem Exchange Weekend for mathematics PhD students at KTH and Stockholm University, Sweden

INSTITUTIONAL RESPONSIBILITIES

2022–	MSc thesis examiner, Dept. of Mathematics, Uppsala University
2022–2024	Member of the Engineering Physics programme board, Uppsala University
2019	Diploma thesis examiner, Dept. of Mathematics, LMU Munich
2015–2019	Undergraduate and graduate student advisor, Dept. of Mathematics, KTH
2015–2019	Initiator and co-organizer of the learning seminar series "Talks in Mathematical Physics in the Stockholm area", KTH

COMMISSIONS OF TRUST

Regular reviewer for AMS Mathematical Reviews, with ca 4 assignments per year. Have refereed for the following journals and book publishers:

· Annales Henri Poincaré
· Calculus of Variations and Partial Differential Equations
· Journal of Mathematical Physics
· Journal of Spectral Theory
· Letters in Mathematical Physics
· Mathematical Physics, Analysis and Geometry
· MIT Press
· Nuclear Physics B
· Physics Letters B
· Quantum Studies: Mathematics and Foundations
· Rendiconti di Mathematica
· Reviews in Mathematical Physics

COOPERATION IN INTERNATIONAL NETWORKS

Participated in the following international research networks:

· The Marie Curie Training Network ENIGMA
· The European Science Foundation activity MISGAM
· The NordForsk Scandinavian networks "Analysis and applications" and "Random Geometry Network"

Member of the International Association of Mathematical Physics (IAMP) and the Swedish Mathematical Society (SMS).

RESEARCH INTERESTS

Mathematical physics, including: spectral theory of quantum mechanical systems (typically involving intermediate/fractional particle statistics — *anyons* — or supersymmetry, such as supermembrane matrix models), Clifford (geometric) algebras and their applications, quantum gravity and quantum geometry.

Publications

THESES AND MONOGRAPHS

[1] D. Lundholm, *Geometric (Clifford) algebra and its applications*, M.Sc. thesis, KTH, 2006, Trita-MAT. MA, ISSN 1401-2278; 2006:01, Supervisor: Lars Svensson, arXiv:math/0605280.

[2] D. Lundholm, *Zero-energy states in supersymmetric matrix models*, Ph.D. thesis, KTH, 2010, ISBN 978-91-7415-662-1, Supervisor: Jens Hoppe, Opponent: Jan Philip Solovej, http://urn.kb.se/resolve?urn=urn:nbn:se:kth:diva-12846.

PUBLICATIONS IN JOURNALS

[3] V. Bach, J. Hoppe, and D. Lundholm, *Dynamical symmetries in supersymmetric matrix models*, Doc. Math. **13** (2008), 103–116, http://www.math.uiuc.edu/documenta/vol-13/06.html.

[4] D. Lundholm, *On the geometry of supersymmetric quantum mechanical systems*, J. Math. Phys. **49** (2008), no. 6, 062101, doi.

[5] J. Hoppe, D. Lundholm, and M. Trzetrzelewski, *Octonionic twists for supermembrane matrix models*, Ann. Henri Poincaré **10** (2009), no. 2, 339–356, doi.

[6] J. Hoppe, D. Lundholm, and M. Trzetrzelewski, *Construction of the zero-energy state of* $\mathrm{SU}(2)$*-matrix theory: near the origin*, Nuclear Phys. B **817** (2009), no. 3, 155–166, doi.

[7] J. Hoppe, D. Lundholm, and M. Trzetrzelewski, *Spin(9) average of* $\mathrm{SU}(N)$ *matrix models*, J. Math. Phys. **50** (2009), no. 4, 043510, 7, doi.

[8] D. Lundholm, *Weighted supermembrane toy model*, Lett. Math. Phys. **92** (2010), no. 2, 125–141, doi.

[9] J. de Woul, J. Hoppe, and D. Lundholm, *Partial Hamiltonian reduction of relativistic extended objects in light-cone gauge*, J. High Energy Phys. **2011** (2011), no. 1, 31, doi.

[10] J. de Woul, J. Hoppe, D. Lundholm, and M. Sundin, *A dynamical symmetry for supermembranes*, J. High Energy Phys. **2011** (2011), no. 3, 134, 6, doi.

[11] D. Lundholm and J. P. Solovej, *Hardy and Lieb-Thirring inequalities for anyons*, Comm. Math. Phys. **322** (2013), 883–908, doi.

[12] D. Lundholm and J. P. Solovej, *Local exclusion principle for identical particles obeying intermediate and fractional statistics*, Phys. Rev. A **88** (2013), 062106, doi.

[13] D. Lundholm and J. P. Solovej, *Local exclusion and Lieb-Thirring inequalities for intermediate and fractional statistics*, Ann. Henri Poincaré **15** (2014), 1061–1107, doi.

[14] D. Lundholm, F. Portmann, and J. P. Solovej, *Lieb-Thirring bounds for interacting Bose gases*, Comm. Math. Phys. **335** (2015), no. 2, 1019–1056, doi.

[15] D. Lundholm, *Geometric extensions of many-particle Hardy inequalities*, J. Phys. A: Math. Theor. **48** (2015), 175203, doi.

[16] D. Lundholm and N. Rougerie, *The average field approximation for almost bosonic extended anyons*, J. Stat. Phys. **161** (2015), no. 5, 1236–1267, doi.

[17] D. Lundholm, P. T. Nam, and F. Portmann, *Fractional Hardy-Lieb-Thirring and related inequalities for interacting systems*, Arch. Ration. Mech. Anal. **219** (2016), no. 3, 1343–1382, doi.

[18] D. Lundholm and N. Rougerie, *Emergence of fractional statistics for tracer particles in a Laughlin liquid*, Phys. Rev. Lett. **116** (2016), 170401, doi.

[19] D. Lundholm, *Many-anyon trial states*, Phys. Rev. A **96** (2017), 012116, doi.

[20] M. Correggi, D. Lundholm, and N. Rougerie, *Local density approximation for the almost-bosonic anyon gas*, Analysis & PDE **10** (2017), 1169–1200, doi.

[21] S. Larson and D. Lundholm, *Exclusion bounds for extended anyons*, Arch. Ration. Mech. Anal. **227** (2018), 309–365, doi.

[22] D. Lundholm and R. Seiringer, *Fermionic behavior of ideal anyons*, Lett. Math. Phys. **108** (2018), 2523–2541, doi.

[23] M. Correggi, R. Duboscq, D. Lundholm, and N. Rougerie, *Vortex patterns in the almost-bosonic anyon gas*, EPL (Europhysics Letters) **126** (2019), 20005, doi.

[24] S. Larson, D. Lundholm, and P. T. Nam, *Lieb–Thirring inequalities for wave functions vanishing on the diagonal set*, Ann. Henri Lebesgue **4** (2021), 251–282, doi.

[25] E. Yakaboylu, A. Ghazaryan, D. Lundholm, N. Rougerie, M. Lemeshko, and R. Seiringer, *Quantum impurity model for anyons*, Phys. Rev. B **102** (2020), 144109, doi. (Editors' Suggestion)

[26] M. Brooks, M. Lemeshko, D. Lundholm, and E. Yakaboylu, *Molecular impurities as a realization of anyons on the two-sphere*, Phys. Rev. Lett. **126** (2021), 015301, doi.

[27] M. Brooks, M. Lemeshko, D. Lundholm, and E. Yakaboylu, *Emergence of anyons on the two-sphere in molecular impurities*, Atoms **9** (2021), no. 4, 106, doi.

[28] G. Lambert, D. Lundholm, and N. Rougerie, *Quantum statistics transmutation via magnetic flux attachment*, Prob. Math. Phys. **4** (2023), no. 4, 803–848, doi.

[29] A. Levitt, D. Lundholm, and N. Rougerie, *Magnetic Thomas-Fermi theory for 2D abelian anyons*, SciPost Phys. Core **9** (2026), no. 1, 018, doi.

[30] D. Lundholm and V. Qvarfordt, *Exchange and exclusion in the non-abelian anyon gas*, Complex Anal. Oper. Theory **20** (2026), no. 192, 1–95, doi.

[31] A. Ataei, A. Ellingsen, F. Getzner, T. Girardot, D. Lundholm, and D.-T. Nguyen, *Nonlinear Landau levels in the almost-bosonic anyon gas*, to appear in Physical Review A, 2026, arXiv:2510.14679.

PROCEEDINGS AND COLLECTIONS

[32] D. Lundholm, *Recent studies of anyons*, Many-Body Quantum Systems and Effective Theories (C. Hainzl, B. Schlein, and R. Seiringer, eds.), Oberwolfach Reports, vol. 13, 2016, pp. 2491–2493, doi.

[33] M. Correggi, D. Lundholm, and N. Rougerie, *Local density approximation for almost-bosonic anyons*, Proceedings of QMath13, Atlanta, October 8–11, 2016, Mathematical problems in quantum physics (F. Bonetto, D. Borthwick, E. Harrell, and M. Loss, eds.), Contemp. Math., vol. 717, 2018, pp. 77–92, doi.

[34] D. Lundholm, *Properties of 2D anyon gas*, Encyclopedia of Condensed Matter Physics (Second Edition) (T. Chakraborty, ed.), Academic Press, Oxford, 2nd ed., 2024, pp. 450–484, arXiv:2303.09544, doi.

[35] A. Ellingsen, D. Lundholm, and J.-P. Magnot, *"The six blind men and the elephant": An interdisciplinary selection of measurement features*, Geometric Methods in Physics XL (P. Kielanowski, D. Beltita, A. Dobrogowska, and T. Goliński, eds.), Springer Nature Switzerland, 2024, Proceedings of the XL Workshop on Geometric Methods in Physics, Bialowieza, 2023, pp. 275–307, arXiv:2310.17624, doi.

[36] D. Lundholm, *2D magnetic stability*, Int. J. Geom. Meth. Mod. Phys. **23** (2026), no. 06, 2540045, Proceedings of ICGTMP, Group33/35, held in Cotonou, Benin, July 15-19, 2024, arXiv:2410.24156, doi.

PREPRINTS AND OTHER ACADEMIC ARTICLES

[37] J. Hoppe and D. Lundholm, *On the construction of zero energy states in supersymmetric matrix models IV*, arXiv e-prints, 2007, arXiv:0706.0353.

[38] D. Lundholm and L. Svensson, *Clifford algebra, geometric algebra, and applications*, KTH graduate course textbook, 2009, arXiv:0907.5356.
2016 revision: http://www.mathematik.uni-muenchen.de/~lundholm/clifford.pdf

[39] D. Lundholm, *Some spectral bounds for Schrödinger operators with Hardy-type potentials*, arXiv e-prints, 2009, arXiv:0911.3386.

[40] D. Lundholm, *Anyon wave functions and probability distributions*, IHÉS preprint, IHES/P/13/25, 2013, http://preprints.ihes.fr/2013/P/P-13-25.pdf.

[41] D. Lundholm, *Methods of modern mathematical physics: Uncertainty and exclusion principles in quantum mechanics*, KTH graduate course textbook, 2018, arXiv:1805.03063.
2019 revision: http://www.mathematik.uni-muenchen.de/~lundholm/methmmp.pdf

[42] A. Ataei, D. Lundholm, and D.-T. Nguyen, *A generalized Liouville equation and magnetic stability*, arXiv e-prints, 2024, arXiv:2404.09332.

[43] A. Ataei, T. Girardot, and D. Lundholm, *Microscopic derivation of the stationary Chern-Simons-Schrödinger equation for almost-bosonic anyons*, arXiv e-prints, 2025, arXiv:2504.17488.

PATENT

[P] D. Lundholm, *A method and arrangement for protecting software*, PCT/SE2003/000276, WO2003071404 A1, US20050160049 A1, 2003, http://www.google.com/patents/WO2003071404A1.

Other scientific merits

SUPERVISED THESES

1. O. Weinberger, *The braid group, representations and non-abelian anyons*, BSc thesis, KTH, 2015, http://urn.kb.se/resolve?urn=urn%3Anbn%3Ase%3Akth%3Adiva-167993.
2. E. Jacobsen and E. Lind, *Triangles in particle interactions and applications of clifford algebra*, BSc thesis, KTH, 2016, http://www.math.kth.se/~dogge/files/KEX2016-jacobsen-lind.pdf.
3. E. Riedel Gårding, *Geometric algebra, conformal geometry and the common curves problem*, BSc thesis, KTH, 2017, http://urn.kb.se/resolve?urn=urn%3Anbn%3Ase%3Akth%3Adiva-210866.
4. V. Qvarfordt, *Non-abelian anyons: Statistical repulsion and topological quantum computation*, MSc thesis, KTH, 2017, http://urn.kb.se/resolve?urn=urn%3Anbn%3Ase%3Akth%3Adiva-207177.
5. G. Brage and E. Sönnerlind, *Braid group statistics and exchange matrices of non-abelian anyons, with representations in Clifford algebra*, BSc thesis, KTH, 2018, http://www.math.kth.se/~dogge/files/KEX2018-brage-sonnerlind.pdf.
6. J. Wiklund, *Braiding non-abelian anyons with representations in Clifford algebra*, BSc thesis, KTH, 2018, http://www.math.kth.se/~dogge/files/KEX2018-wiklund.pdf.
7. S. Larson, *Asymptotic and universal spectral estimates with applications in many-body quantum mechanics and spectral shape optimization*, Ph.D. thesis, KTH Royal Institute of Technology, 2019, http://urn.kb.se/resolve?urn=urn%3Anbn%3Ase%3Akth%3Adiva-249837.
8. L. Oddis, *Two-anyon Schrödinger operators*, Ph.D. thesis, Università di Roma, Sapienza, Facoltà di Scienze Matematiche, Fisiche e Naturali, 2020, https://phd.uniroma1.it/web/LUCA-ODDIS_nT1669369_EN.aspx.
9. F. Getzner, *Non-linear Landau levels: Density parametrization, energy optimisation and Berry phases*, Individual project in quantum technology, Uppsala University, 2025, https://urn.kb.se/resolve?urn=urn%3Anbn%3Ase%3Auu%3Adiva-570485.
10. G. Scribano, *The almost-bosonic anyon gas in an external magnetic field*, Master degree project in engineering physics, Politecnico di Milano, 2026.
11. F. Getzner, *Geometric phases in the almost bosonic anyon gas*, Master degree project in quantum technology, Uppsala University, 2026, https://urn.kb.se/resolve?urn=urn%3Anbn%3Ase%3Auu%3Adiva-597783.

SELECTED TALKS

49. 2025, December, "Nonlinear Landau levels in the almost-bosonic anyon gas", at the conference "Emergent phenomena in many-body quantum systems", CIRM, Marseille, France.

48. 2025, May, "Effective density functionals for the many-anyon gas", at the conference "Mathematics of Condensed Matter Systems", Milan, Italy.

47. 2024, July, "2D magnetic stability", at the conference ICGTMP, Group33/35, Cotonou, Benin.

46. 2024, May, "Towards density functional theories for anyons", JCMS series, Stockholm University / KTH / Nordita, Stockholm.

45. 2023, May, "Mathematical physics of the 2D anyon gas", ETH Zurich.

44. 2022, November, Colloquium: "Twisted perspectives on quantum mechanics", Uppsala University.

43. 2021, February, "Emergence of anyons from polarons and angulons" (zoom), at the conference MCMB, Beirut, Lebanon.

42. 2020, November, "Exchange and exclusion in the non-abelian anyon gas" (zoom), Bristol, UK.

41. 2019, July, "Exchange and exclusion for non-abelian anyons", Erlangen, Germany.

40. 2019, May, Colloquium: "Mathematical methods for uncertainty and exclusion in quantum mechanics", LMU Munich, Germany.

39. 2019, Febraury, "Spectrum and Ground States of Membrane Matrix Models", at the workshop "Space Time Matrices", IHES, Bures-sur-Yvette, France.

38. 2019, Febraury, "The art of being a fermion in a sea of many possibilities", at the workshop "DPP & Fermions", Lille, France.

37. 2019, January, "Exchange and exclusion for non-abelian anyons", Tübingen, Germany.

36. 2019, January, "Lieb-Thirring inequality for wave functions vanishing on the diagonal set", Institut Mittag-Leffler, Djursholm, Sweden.

35. 2018, September, "Anyons in the average-field approximation", University of Toronto, Canada.

34. 2018, September, "Exchange and exclusion for non-abelian anyons", at the "Workshop: Many-Body Quantum Mechanics", CRM Montreal, Canada.

33. 2018, August, "Anyons in the average-field approximation", at the conference "Solid Math 2018", McGill, Montreal, Canada.

32. 2018, May, "Fermionic behavior of ideal anyons", at the conference "Eigenvalues and Inequalities", Institut Mittag-Leffler, Djursholm, Sweden.

31. 2018, January, "Emergence of anyons and ground-state properties of the anyon gas", University of Oslo, Norway.

30. 2017, April, "A Thomas-Fermi model for magnetically self-interacting bosons", at the conference "Spectral Days 2017", University of Stuttgart, Germany.

29. 2017, January, "Ground-state properties of the anyon gas", IST Austria.

28. 2016, September, "Recent studies of anyons", at the workshop "Many-Body Quantum Systems and Effective Theories", MFO, Oberwolfach, Germany.

27. 2016, August, "Recent studies of anyons", at the "Conference on Methods of Modern Mathematical Physics, A Young Researcher Symposium on the occasion of the 70th Birthday of Barry Simon", Fields Institute, Toronto, Canada.

26. 2016, June, "Spectral properties of the (super)membrane matrix models", at the conference "Aspects of Membrane Dynamics", KTH / Nordita, Stockholm, Sweden.

25. 2015, October, "Energy bounds for interacting Bose gases", Statistical physics seminar, SISSA, Trieste.

24. 2015, September/October, "Anyons in the average field approximation", Quantum Lunch, University of Copenhagen, and Mathematical physics seminar, Roma Tre University, Rome.

23. 2015, July, "Rigorous studies of anyons", at the congress "ICMP 2015", Santiago.

22. 2015, April, "2D Coulomb gases and particles in magnetic fields", Talks in Mathematical Physics, KTH Stockholm.

21. 2015, January, "Lieb-Thirring bounds for interacting Bose gases", Mathematical physics seminar, Università di Roma "La Sapienza", Rome.

20. 2014, October, "Lieb-Thirring bounds for interacting Bose gases", at the workshop "Mathematical physics and quantum mechanics", ETH Zurich, Switzerland.

19. 2014, March, "The Golden-Thompson inequality and random matrix applications", Random Matrix Theory seminar, KTH Stockholm.

18. 2014, February, "Local exclusion and energy bounds for intermediate and fractional statistics", Theoretical physics seminar, LPMMC Grenoble.

17. 2014, January, "Lieb-Thirring inequalities for intermediate and fractional statistics", Analysis and Dynamical Systems seminar, KTH Stockholm.

16. 2013, June, "Local exclusion and Lieb-Thirring inequalities for intermediate and fractional statistics", at the conference "Mathematical properties of large quantum systems", IHP, Paris, France.

15. 2013, February, "Quantum mechanics for particles with exotic statistics", Short talk, IHÉS, France.

14. 2012, October, "Hardy and Lieb-Thirring inequalities for anyons" in the program "Hamiltonians in Magnetic Fields", Institut Mittag-Leffler, Djursholm, Sweden.

13. 2012, August, "Local exclusion and Lieb-Thirring inequalities for intermediate and fractional statistics", at the congress "ICMP 2012", Aalborg.

12. 2012, June, "Lieb-Thirring inequalities for intermediate and fractional statistics", at the workshop "Coarse graining and condensed matter physics", HIM Bonn, Germany.

11. 2012, March, "Zero-energy states in supermembrane matrix models", in the program "Mathematical Aspects of String and M-theory", INIMS Cambridge, UK.

10. 2011, November, "Local exclusion and Lieb-Thirring inequalities for anyons", Spectral theory seminar, KTH Stockholm, and Talks in mathematical physics, ETH Zurich.

9. 2011, September, "Hardy and Lieb-Thirring inequalities for anyons", at the conference "Partial differential equations and spectral theory", Imperial College London.

8. 2011, February, "Geometric extensions of many-particle Hardy inequalities", Spectral theory seminar, KTH Stockholm.

7. 2010, September, "Ground states of supersymmetric matrix models", at the conference "QMath11".

6. 2010, January, "Zero-energy ground states in supersymmetric matrix models", Geometry and analysis seminar, University of Copenhagen.

5. 2009, November, "Ground states of supersymmetric matrix models", Mathematical physics seminar, Harvard University and California Institute of Technology.

4. 2009, March, "Recent progress concerning zero energy states in supersymmetric matrix models, II", Talks in mathematical physics, ETH Zurich.

3. 2008, May, "On the geometry of supersymmetric quantum mechanical systems", at the conference "ICCA8", Campinas, Brazil.

2. 2007, June, "Dynamical symmetries in supersymmetric matrix models", at the conference "AMD", KTH Stockholm.

1. 2006, November, "Supersymmetric Matrix Models", University of Mainz, Germany.

ACTIVE PARTICIPATION IN NATIONAL AND INTERNATIONAL CONFERENCES

36. 2026, May, Polytopo training school: "Topological Textures: theory and mathematical analysis, simulation and experiment", Ruder Boskovic Institute, Zagreb, Croatia (invited speaker).

35. 2025, December, Emergent phenomena in many-body quantum systems, CIRM, Marseille, France (invited speaker).

34. 2025, July, Anyons from small to large scales, Institut Mittag-Leffler, Sweden (co-organizer).

33. 2025, May, Mathematics of Condensed Matter Systems, workshop in the Intensive Period "Quantum Mathematics at Polimi", Milan, Italy (invited speaker).

32. 2024, July, The 33rd/35th International Colloquium on Group Theoretical Methods in Physics (ICGTMP, Group33/35), Cotonou, Benin (plenary speaker).

31. 2024, June, International Congress of Mathematical Physics 2024, Strasbourg, France (contributing speaker).

30. 2023, July, Workshop on Geometric Methods in Physics, Bialowieza, Poland (plenary speaker).

29. 2023, June, Correlations in Mathematical Quantum Mechanics, Conference to celebrate the work of Jan Philip Solovej, University of Copenhagen (co-organizer).

28. 2021, February, Mathematics of Condensed Matter and Beyond, CAMS, American University of Beirut, Lebanon (invited speaker).

27. 2019, March, Workshop: Mathematical physics of anyons and topological states of matter, Nordita (organizer).

26. 2019, February, Workshop: DPP & Fermions, Lille, France (invited speaker).

25. 2019, February, Workshop: Space Time Matrices, IHES, France (invited speaker).

24. 2019, January, Kick-off Conference: Spectral Methods in Mathematical Physics, Institut Mittag-Leffler (invited speaker).

23. 2018, September, Workshop: Many-Body Quantum Mechanics, CRM Montreal, Canada (invited speaker).

22. 2018, August, Solid Math 2018 (Satellite of ICMP 2018), McGill, Montreal, Canada (invited speaker).

21. 2018, May, Eigenvalues and Inequalities, Institut Mittag-Leffler (invited speaker).

20. 2017, November, ICAMI 2017, San Andres, Colombia (contributing speaker).

19. 2017, April, Spectral Days 2017, University of Stuttgart, Germany (invited speaker).

18. 2016, September, Many-Body Quantum Systems and Effective Theories, MFO, Oberwolfach (invited speaker).

17. 2016, August, Conference on Methods of Modern Mathematical Physics, A Young Researcher Symposium on the Occasion of the 70th Birthday of Barry Simon, Fields Institute, Toronto (invited speaker).

16. 2016, June, Aspects of Membrane Dynamics, KTH / Nordita, Stockholm (invited speaker).

15. 2016, March, The mathematical physics session at the 27th Nordic Congress of Mathematicians, Stockholm (session organizer).

14. 2015, July, International Congress of Mathematical Physics 2015, Santiago, Chile (contributing speaker).

13. 2014, October, Mathematical physics and quantum mechanics, workshop, ETH Zurich (invited speaker).

12. 2014, January, A one-day conference in honor of the 65th birthday of Lars Svensson, KTH Stockholm (organizer).

11. 2013, April-July, Variational and Spectral Methods in Quantum Mechanics, Trimester program at Institut Henri Poincaré, Paris (invited speaker and co-organizer of the Young Seminar series).

10. 2012, September-December, Hamiltonians in Magnetic Fields, Fall program at Institut Mittag-Leffler (program participant and contributing speaker in the regular seminars).

9. 2012, August, International Congress of Mathematical Physics 2012, Aalborg, Denmark (contributing speaker).

8. 2012, June, Coarse graining and condensed matter physics, Hausdorff Research Institute for Mathematics, Bonn (invited speaker).

7. 2012, January-March, Mathematical Aspects of String and M-theory, INIMS Cambridge, UK (program participant and contributing speaker in the regular seminars).

6. 2011, September, Partial differential equations and spectral theory, Imperial College London, UK (contributing speaker).

5. 2010, September, QMath11 Mathematical Results in Quantum Physics, Hradec Kralove, Czech Republic (contributing speaker).

4. 2008, October, ENIGMA 2008 Conference on Integrable Systems, Geometry, Matrix Models and Applications, SISSA, Trieste, Italy (contributing with a poster).

3. 2008, May, The 8th International Conference on Clifford Algebras (ICCA8) and their Applications in Mathematical Physics, IMECC - UNICAMP, Campinas, Brazil (contributing speaker).

2. 2007, June, ENIGMA Conference on Mathematical Physics, KTH, Sweden (assisting the organizers).

1. 2007, June, Midsummer School: Aspects of Membrane Dynamics, KTH, Sweden (invited speaker and assisting the organizers).

Teaching

2026 fall: "1MA010 Mathematics base course", full course responsibility (lectures and examination) for BSc students of numerous programs, Uppsala University.

2026 spring: "Mathematics of the 2D anyon gas", mini-course, Polytopo training school, Croatia.

2025 spring: "Mathematics of the 2D anyon gas", mini-course, Politecnico di Milano, Italy.

2024 spring: "TN24V007 Clifford algebra, spinors and applications in analysis", full course responsibility (lectures and examination) for MSc and PhD students of Mathematics and Physics, Uppsala University.

2022 fall: "1MA187 Geometry and Analysis I", full course responsibility (lectures and examination) for BSc students of Physics, Uppsala University.

2021 spring: "1MA239 Special Course in Mathematics II", full course responsibility (lectures and examination) for BSc students of Mathematics, Uppsala University.

2020–21 winter: "1MA226 Real Analysis", full course responsibility (lectures and examination) for BSc students of Mathematics, Uppsala University.

2020 spring: "1MA239 Special Course in Mathematics II", full course responsibility (lectures and examination) for BSc students of Mathematics, Uppsala University.

2020 spring: "1MA013 Single Variable Calculus", lectures/exercises for BSc students of Chemistry, Uppsala University.

2019 summer: "16072 Mathematische Quantenmechanik II (MQM2)", full course responsibility (lectures and examination) for Master students of Mathematics and Physics, and TMP program, LMU Munich.

2019 summer: "16096 Clifford algebra, geometric algebra, and applications", full course responsibility (seminar examination) for BSc/MSc students of Mathematics and Physics, and TMP program, LMU Munich.

2017 fall: "SF1625 Calculus in One Variable", full course responsibility (lectures, exercises, seminars) for first-year students of electrical engineering and industrial engineering and management.

2017 spring: "SF2724 Topics in mathematics IV: Methods of modern mathematical physics", full course responsibility, lectures and literature for a master-level course.

2016 fall: "SF1626 Calculus in several variables", exercises and seminars for second-year students in information and communications technology.
Inspirational lecture for students from elementary school.

2016 spring: "SF3608 Clifford algebra, geometric algebra, and applications", full course responsibility, lectures and literature for a PhD-level course.
Inspirational lecture for high-school students about "Identical particles".

2015 fall: "SF1626 Calculus in several variables", course responsibility (lectures, exercises, seminars) for second-year students in information and communications technology.

2014 fall: "SF1602 Differential and integral calculus in one variable", exercises for first-year students in engineering physics and second-year students in mathematics teaching.
"SF1604 Linear algebra", exercises for first-year students in engineering physics and second-year students in mathematics teaching.

2014 spring: "SF1633 Differential equations", exercises for first-year engineering students.

2013 fall: "SF1602 Differential and integral calculus in one variable", exercises for first-year students in engineering physics and second-year students in mathematics teaching.
"SF1604 Linear algebra", exercises for first-year students in engineering physics and second-year students in mathematics teaching.

2011 spring: "DiffFun2 - Differential Operators and Function Spaces II", exercises and lectures for graduate-level students in mathematics.

2010 fall: "LinAlgMat - Linear algebra in the mathematical sciences", lectures and exercises for a class of Danish mathematics students.

2009 fall: "SF1625 One-variable analysis", exercises for electrical engineering and media students.
"SF1612 Mathematics base course", small-size lectures for computer science students and students of the OPEN programme.
Graduate student seminar about "Spectral Theory of the Weighted Supermembrane Toy Model".

2009 spring: "5B5107 Clifford algebra", course design, lectures and course material for a PhD-level course, co-organized together with Lars Svensson.

2008 fall: "SF1612 Mathematics base course", small-size lectures for computer science students.

2008 spring: Graduate student seminar about "Refined Algebraic Quantization".

2007 fall: "SF1624 Algebra and geometry", exercises for electrical engineering students.
"SF1624 Algebra and geometry", exercises for IT and microelectronics students.

2007 spring: "5B1219 Vector analysis and complex functions", exercises for electrical engineering students.
Graduate student seminar about "Geometry of simple supersymmetric systems".

2006 fall: "5B1121 Mathematics base course", small-size lectures for computer science students.
"5B1109 Linear algebra", exercises for computer science students.

2006 spring: Graduate student seminar about "Conformal geometry using geometric algebra".