

Barbara Roos

Address: University of Tübingen, Department of Mathematics, Auf der Morgenstelle 10, 72076 Tübingen, Germany

Email: barbara.roos@uni-tuebingen.de

Web: <https://www.math.uni-tuebingen.de/de/forschung/maphy/personen/barbararoos>

Academic Experience and Education

11/2023 –	PostDoc, University of Tübingen <i>Mentors:</i> Prof. Dr. Ángela Capel Cuevas, Prof. Dr. Stefan Teufel
09/2019 – 10/2023	PhD Student ISTA, Austria <i>Advisor:</i> Prof. Dr. Robert Seiringer
09/2017 – 04/2019	MSc Mathematics, ETH Zürich, Switzerland
09/2014 – 09/2017	BSc Mathematics, ETH Zürich, Switzerland

Awards and Fellowships

2015 – 2023	Member of the Swiss Study Foundation
2015	EIROForum - XFEL special donated prize at the European Union Contest for Young Scientists 2015 in Milan, Italy
2014	Bronze medal at the International Physics Olympiad 2014 in Astana, Kazakhstan
2014	Member of the Swiss team at the European Girls' Mathematical Olympiad 2014 in Antalya, Turkey

Publications and Preprints

- [1] **Two-Particle Bound States at Interfaces and Corners**
Barbara Roos, Robert Seiringer
[Journal of Functional Analysis 282, 109455](#) (2022), [arXiv:2105.04874](#)
- [2] **Boundary Superconductivity in the BCS Model**
Christian Hainzl, Barbara Roos, Robert Seiringer
[Journal of Spectral Theory 12 \(2022\), no.4, pp.1507-1540](#), [arXiv:2201.08090](#)
- [3] **Optimal steering of matrix product states and quantum many-body scars**
Marko Ljubotina, Barbara Roos, Dmitry A. Abanin, Maksym Serbyn
[PRX Quantum 3, 030343](#) (2022), [arXiv:2204.02899](#)
- [4] **Universality in low-dimensional BCS theory**
Joscha Henheik, Asbjørn Bækgaard Lauritsen, Barbara Roos
[Reviews in Mathematical Physics, 2360005](#) (2023), [arXiv:2301.05621](#)
- [5] **BCS Critical Temperature on Half-Spaces**
Barbara Roos, Robert Seiringer
Preprint, [arXiv:2306.05824](#)
- [6] **Enhanced BCS Superconductivity at a Corner**
Barbara Roos, Robert Seiringer
Preprint, [arXiv:2308.07115](#)

[7] **Linear Criterion for an Upper Bound on the Bardeen-Cooper-Schrieffer Critical Temperature**

Barbara Roos

[J. Math. Phys. 66, 011901 \(2025\)](#), [arXiv:2407.00796](#)

[8] **Macroscopic Thermalization for Highly Degenerate Hamiltonians**

Barbara Roos, Stefan Teufel, Roderich Tumulka, Cornelia Vogel

Preprint, [arXiv:2408.15832](#)

Talks

12/2024	SFB TRR 352 Junior Coffee Break, Tübingen and Munich (seminar talk)
11/2024	Statistical Mechanics seminar, University of Warwick (seminar talk)
10/2024	Disordered Systems seminar at King's College London (seminar talk)
10/2024	CQIF seminar, Cambridge (seminar talk)
09/2024	SMAQ seminar at GSSI, L'Aquila (seminar talk)
08/2024	SiQuMa24 Conference on Simulation of Quantum Matter, Schloss Dagstuhl (invited speaker)
07/2024	International Congress on Mathematical Physics 2024, Strasbourg (contributed talk)
03/2024	87. Jahrestagung der DPG, Berlin (contributed talk)
02/2024	QMATH Quantum Lunch, Copenhagen (seminar talk)
12/2023	Quantum and Dynamical Christmas 2023, Milan (invited speaker)
09/2023	Oberwolfach workshop "Many-Body Quantum Systems" (invited talk)
08/2023	Summer school on "Current Topics in Mathematical Physics", Warsaw (contributed talk)
01/2023	Oberseminar Mathematische Physik, University Tübingen (seminar talk)
11/2022	GAuS Seminar, online (seminar talk)
08/2022	Quantissima in the Serenissima IV, Venice (contributed talk)
06/2022	MCQM22, Como (contributed talk)
03/2022	INdAM Quantum Meetings IQM22 Workshop I, Politecnico di Milano (contributed talk)
02/2022	Second Austrian Day of Women in Mathematics, online (contributed talk)
05/2021	MathPhys Analysis Seminar, ISTA (seminar talk)

Teaching

Spring 2024	International Mathematics Competition (IMC) Training in Tübingen and team leader at IMC 2024 in Bulgaria
Fall 2023	Repetitorium Analysis II/Mathematics for Physicists III, Tübingen
Fall 2021	Teaching assistant Selected Topics in Analysis and Applications, ISTA
Fall 2016	Teaching assistant Complex Analysis, ETH Zürich

Extracurricular activities

2023 –	Founding member of the Association of Women in Mathematical Physics (AWMP). The AWMP supports women in the field of mathematical physics, establishing a network and meeting space for
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them, and aims at promoting diversity and equal opportunities for all individuals in mathematical physics.

- 2015 – Co-organizer Swiss Physics Olympiad: creating and marking exams, giving preparatory courses, website administration, awareness team
Leader at the International Physics Olympiad 2017 and at the European Physics Olympiad 2018 and 2019
- 2021 – Member of the Academic Committee at the European Physics Olympiad

Languages

Fluent: German, Polish, English

Intermediate: French