

Curriculum Vitae

Bernd Rosenow

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Education

Cologne University
Habilitation in Theoretical Physics, 2002
Title: "Interacting Mesoscopic Systems"

Würzburg University
Ph.D. in Theoretical Physics, *summa cum laude*, 1998
Dissertation title: "Quantum Phase Transitions in Disordered Systems"

State University of New York at Stony Brook
M.A. in Physics, 1993

Professional affiliations and activities

University of Leipzig, Institute for Theoretical Physics
Full Professor (W3), 2010 – present

Weizmann Institut, Department of Condensed Matter Physics
Rosi and Max Varon Visiting Professorship, November 2018-March 2019

Harvard University, Department of Physics
Sabbatical stay, August 2013-March 2014

Max-Planck Institute for Solid State Research
Group leader, 2008 – 2010

Harvard University, Department of Physics
Visiting scholar, 2005 – 2008

Cologne University, Institute for Theoretical Physics
Privatdozent, 2003 - 2010
Research Associate, 1998 –1999, and 2000 – 2005

Harvard University, Department of Physics
Post-doctoral fellow, 1999 – 2000

Max-Planck Institute of Nuclear Physics, Heidelberg
Post-doctoral fellow, 1997–1998

Grants

German Research Council, PI in Research Training Group 2522 *Strong Dynamics and Criticality in Quantum and Gravitational Systems*, 2019-2024
German Research Council, Grant Ro2247/10-1 *Reorganization of Edge Modes: Quantum Phase Transitions and Textures*, 2019-2022
German Research Council, Grant Ro2247/10-1 *Particle Partition Entanglement After a Quantum Quench*, 2017/18
German Research Council, SFB 762, PI in project B6 *Spin-dependent Tunneling in Oxidic Heterostructures*, 2016-2019
German Research Council, Grant Ro2247/8-1 *Engineering the coherency of fractional and non-abelian electronic interferometers*, 2014-2018
German Research Council, Grant Ro 2247/7-1 *Phase Relaxation and Counterflow Dissipation in Bilayer Quantum Hall Systems*, 2013/14
Federal Ministry of Research, Grant 01BM0900 *Untersuchungen zum topologischen Quanten-Computing (TQC)*, 2009-2013
Heisenberg Fellowship, German Research Council, 2005-2008 and 2008-2010
German Research Council, *Disorder and quantum fluctuation in effective field theories of highly correlated materials*, project D4 in SFB 608 together with T. Nattermann
German Research Council, “Reduced Dimensionality, Disorder, and Interactions”, Grant Ro 2247/1-1, 1999-2000

Awards

Rosi and Max Varon Visiting Professorship, November 2018-March 2019, Weizmann Institute of Science, Israel
“Röntgenpreis der Fakultät für Physik”, Universität Würzburg, 2000
“Unterfränkische Gedenkjahrsstiftung” Dissertation Award, 2000
German National Academic Foundation, Dissertation Scholarship, 1995-1997
German National Academic Foundation, Scholarship, 1992-1994
Bavarian Government, Scholarship for Highly Gifted Students, 1988-1994

Conference Organization

Minisymposium *Unconventional Superconductivity*, University of Leipzig, September 30 - October 1, 2015, supported by graduate school BuildMoNa

Conference on *Non-equilibrium Dynamics of Low-Dimensional Electronic Systems*, University of Leipzig, January 12-15, 2015. More than 50 international participants, supported by ICAM. Co-organized with Yuval Gefen and Natan Andrei.

Minisymposium *Quantum Coherence in Nanostructures*, University of Leipzig, October 4-5, 2012, supported by graduate school BuildMoNa

Selected Publications

1. Thamm M., Rosenow B., *Machine Learning Optimization of Majorana Hybrid Nanowires*, Phys. Rev. Lett. **130**, 116202 (2023).
2. Staats M., Thamm M., Rosenow B., *Boundary between noise and information applied to filtering neural network weight matrices*, Phys. Rev. E **108**, L022302(2023).
3. Kühn M., Rosenow B., *Correlated Noise in Epoch-Based Stochastic Gradient Descent: Implications for Weight Variances*, preprint arXiv:2306.05300 (2023).
4. Thamm M., Staats M., Rosenow B., *Random matrix analysis of deep neural network weight matrices*, Phys. Rev. E **6**, 054124 (2022).
5. Richert F., Worschech R., Rosenow B., *Soft mode in the dynamics of over-realizable online learning for soft committee machines*, Phys. Rev. E **105**, L052302 (2022).
6. Zirnstern H-G, Refael G, Rosenow B. *Bulk-boundary correspondence for non-Hermitian Hamiltonians via Green functions*, Physical Review Letters **126** , 216407 (2021).
7. Rosenow B, Levkivskiy IP, Halperin BI., *Current correlations from a mesoscopic anyon collider*, Physical Review Letters **116**, 156802 (2016).
8. Zocher B, Rosenow B. *Modulation of Majorana-induced current cross-correlations by quantum dots*, Physical Review Letters **111**, 036802 (2013).
9. Levin M, Halperin BI, Rosenow B., *Particle-hole symmetry and the Pfaffian state*, Physical review letters **99**, 236806 (2007).
10. Plerou V, Gopikrishnan P, Rosenow B, Amaral LAN, Stanley HE., *Universal and nonuniversal properties of cross correlations in financial time series*, Physical Review Letters **83**, 1471 (1999)

Invited Talks at International Conferences

Workshop *XIX Brunel - Bielefeld Workshop on Random Matrix Theory and Applications*, Bielefeld, December 2023.

Workshop *Condensed Matter meets Quantum Information*, ICTS Bengaluru, October 2023.

Workshop *Non-Hermitian Topology: from Classical Optics to Quantum Matter*, Dresden, August 2023.

Conference *QHEdge-Grenoble, Quantum Hall edge: new results and old questions*, Grenoble, July 2023.

Conference *Nobel Symposium on anyons - from idea to reality*, Stockholm, June 2023.

Capri Spring School *New trends in electron interferometry*, May 2023

Theory Winter School *Electron Correlations in Fractional Quantum Hall effects and Moiré materials*, National High Magnetic Field Lab in Tallahassee, January 2023.

Workshop *Machine learning for Quantum Control and Quantum Computing*, Nordita, Aug 2022.

Workshop *Quantum Hall Effect: Status Report*, Simons Center for Geometry and Physics, May 2021.

Virtual Science Forum *Observing Anyons*, Panelist, October 2020.

Workshop *Frontiers of Quantum Matter*, Weizmann Institute of Science, December 2019.

Conference *Strongly-Interacting Field Theories 2019*, University of Jena, November 2019.

Workshop *Topological Quantum Matter From Low Temperature Physics to Non-Equilibrium Dynamics*, Nordita Stockholm, August 2019.

Workshop *Edge dynamics in topological phases*, ICTS Bangalore, June 2019.

Workshop *Edge Reconstruction: Topology and Quantum Phase Transitions*, IBS Center for Theoretical Physics of Complex Systems, Daejeon, South Korea, June 2018.

Conference *Topological matter and flat bands*, University of Leipzig, August 2017.

Conference *Frontiers in Quantum Hall Physics*, Niels Bohr Institute Copenhagen, July 2017.

Symposium *Celebrating Physics with a good excuse*, Paul-Scherrer Institute, July 2017.

Workshop *Majorana 2016*, Schloss Waldthausen, February 2016.

Winter School *Topological Quantum Matter*, Harish-Chandra Research Institute at Allahabad, February 2015.

Workshop *Topological Phenomena in Low-Dimensional Quantum Systems*, University of Oslo, December 2014.

Workshop *Topology and Entanglement in Correlated Quantum Systems*, Max-Planck Institute for Complex Systems Dresden, July 2014.

Conference *Emergent Phenomena in Quantum Hall Systems 5*, Weizmann Institute of Science, July 2014.

Workshop *Topological matter, Superconductivity and Majorana*, Institute for Advanced Study, Hong Kong university, January 2014.

Workshop *Disorder, Dynamics, Frustration and Topology in Quantum Condensed Matter*, Aspen Center for Physics, June 2013.

Workshop *Workshop on Interferometry and Interactions in Non-Equilibrium Meso- and NanoSystems*, ICTP Trieste, April 2013.

Workshop *The Science of Nanostructures: New Frontiers in the Physics of Quantum Dots*, Chernogolovka, September 2012.

Workshop *Quantum Transport in Correlated Systems*, KIAS Soul, August 2012.

Conference *Quantum Matter from the Nano- to the Macroscale*, Max-Planck Institute for Complex Systems Dresden, July 2012.

Workshop *Advanced Working Group on p-wave states of matter and the related quest for non-Abelian quasiparticles*, Royal Holloway, University of London, March 2012.

Workshop *Quantum Information and Condensed Matter Physics*, NUI Maynooth, September 2011.

Workshop on *Low Dimensional Topological Matter*, Aspen Center for Physics, July 2010.

Conference *Correlated Phenomena in Low-Dimensional Systems*, Max-Planck Institute for Complex Systems Dresden, July 2010.

Conference *50 years of the Aharonov-Bohm Effect*, Tel Aviv University, October 2009.

Dutch national condensed matter gathering in Twente, October 2008.

Microsoft Project Q meeting, University of California at Santa Barbara, June 2008.

APS March Meeting New Orleans, Invited Talk, March 2008.

Conference on *Disorder, Fluctuations, and Universality*, Cologne University, January 2008.

Microsoft Project Q meeting, University of California at Santa Barbara, June 2007.

Workshop *Spin and Charge Flow in Nanostructures*, Centre for Advanced Study of the Norwegian Academy of Science and Letters, May 2007.

DPG Summer School on Dynamics of Socio-Economic Systems: A Physics Perspective, Lecture Series, Physikzentrum Bad Honnef, September 2005

Third Nikkei Econophysics Symposium, Tokyo, November 2004

Workshop on Volatility of financial markets, Lorentz Center, Leyden University, October 2004.

First International Winter School on Physics of Socio-Economic Systems, Lecture Series, University of Konstanz, February 2004.

DAAD Summerschool on Traffic and Econophysics, Lecture Series, August 2003.

Nikkei Symposium on Application of Econophysics, Tokyo, November 2002.

International Econophysics Conference, Bali, August 2002

Workshop on Mesoscopic Physics and Electron Interaction, ICTP Trieste, July 2002.

Conference "Horizons in Complex Systems", Messina (Italy), December 2001.

Conference “Empirical Science of Financial Fluctuations”, Tokyo, November 2000.

Jyväskylä summer school, lecture series, Jyväskylä (Finland), August 2000.

March Meeting of the American Physical Society, invited talk, March 2000.

Extended Research Workshop on Disorder, Chaos and Interaction in Mesoscopic Systems, ICTP Trieste, August 1998.