Personal Details

Name:	**Prof. Dr. Rudolf Gross**
	Director at Walther-Meißner-Institute (BAdW)
	Full Professor for Technical Physics (TUM)
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Education and Scientific Career

1976 – 1982	Study of Physics, University of Tübingen
1983	Diploma Degree in Physics, University of Tübingen
1987	Ph.D. Degree in Physics, University of Tübingen
1987	Visiting Scientist, Electrotechnical Laboratory, Tsukuba, Japan
1988 – 1989	Postdoctoral Research Associate, University of Tübingen
1989 – 1990	Visiting Scientist, IBM T.J. Watson Research Center, Yorktown Heights, New York, USA
1990 – 1993	Postdoctoral Research Associate, University of Tübingen
1993	Habilitation, University of Tübingen
1993 – 1995	Assistant Professor, University of Tübingen
1996 – 2000	Full Professor, Chair for Applied Physics, Institute of Physics II, University of Cologne
	Principal Investigator and Board Member of the DFG Collaborative Research Center (CRC) 341 on "*Physics of Mesoscopic and Low Dimensional Metallic Systems"* (Cologne, Aachen, Jülich)
since 2000	Full Professor, Chair for Technical Physics (E 23), Technical University of Munich
	Director of the Walther-Meißner-Institute for Low Temperature Research of the Bavarian Academy of Sciences and Humanities
2004 – 2010	Principal Investigator of the DFG Research Unit 538 on "*Doping Dependence of Phase Transitions and Ordering Phenomena in Copper-Oxygen Superconductor*""
2003 – 2015	Spokesman of the DFG Collaborative Research Center (CRC) 631 on "*Solid State Quantum Information Processing: Physical Concepts and Material Aspects*"'
2006 – 2019	Member of the Cluster of Excellence "*Nanosystems Initiative Munich (NIM)"*, Executive Board Member and Coordinator of Research Area 1 on "*Quantum Nanosystems"*

since 2019	Spokesperson (together with Immanuel Bloch and Ignacio Cirac) of the Cluster of Excellence "*Munich Center for Quantum Science and Technology (MCQST)"*, coordinator or Research Unit C (*Quantum Comupting*)
2021 – 2023	Member and principal investigator of the Munich Quantum Valley e.V., Coordinator of Consortium QTPE (*Quantum Technology Park and Entrepreneurship*)
since 2023	Scientific Director of the Munich Quantum Valley (MQV) and Managing Director of MQV e.V.

Fellowships, Awards and Services to the Community

1984	Prof. Dr. Friedrich-Förster Award of the University of Tübingen
2002	Member of the Bavarian Academy of Sciences and Humanities
2007	Heinz Maier-Leibnitz Medal of the Technical University of Munich
2015	Silver Order of Merit of the Bavarian Academy of Sciences and Humanities
2015	Leibniz Medal of IFW Dresden
2020	Member of the National Academy of Science and Engineering (acatech)
1999 – 2001	Member of the Scientific Advisory Board of the Institut für Schicht- und Ionentechnik and the Institut für Schichten und Grenzflächen, Forschungszentrums Jülich
2001 – 2008	Member of the Scientific Advisory Board of the Max Planck Institute of Plasma Physics, Garching
2001 – 2013	Member of the Board of Editors of the European Physical Journal B
2004 – 2006	Elected referee (Fachgutachter) for Condensed Matter Physics for the German Research Foundation
2005 – 2007	Member of the selection committee of the Walter Schottky Prize of the German Physical Society
2008 – 2012	Member of the Board of Trustees of the Physik Journal
2008 – 2012	Spokesman of the Low Temperature Physics Division of the German Physical Society
2012 – 2015	Deputy spokesman of the Low Temperature Physics Division of the German Physical Society
2008 – 2015	Member of the Scientific Advisory Board of the Leibniz Institute for Solid State and Materials Research, Dresden
2010 – 2017	Member and spokesman (since 2015) of the selection committee of the Stern-Gerlach Medal of the German Physical Society
2004 – 2021	Course leader at the Ferienakademie of the Universities Munich (TUM), Stuttgart and Erlangen-Nuremberg
since 2013	Member of the TUM Appointment and Tenure Board
since 2015	Member of the Committee for the allocation of Alexander von Humboldt Foundation Research Awards
since 2015	Member of the Munich Quantum Center

since 2016	Member and vice-spokesman of the Scientific Advisory Board of the Bavarian Research Institute of Experimental Geochemistry and Geophysics (BGI) Bayreuth
since 2016	Member of the Scientific Advisory Board of the Institut de Ciència de Materials de Barcelona
since 2018	Member of the “Forum Technologie” of the Bavarian Academy of Sciences and Humanities
since 2019	Member of the Advisory Board “Matter and Light” of the German Science Museum, Munich
2004, 2006, 2009	Organizer of the International School and Workshop on “Solid State Quantum Information Processing”, Herrsching, Bavaria
2013, 2015, 2017	Co-organizer of the International Conference on “Resonator QED”, Munich, Germany
2019 - 2023	Co-organizer of the “Munich Conference on Quantum Science & Technology”, Germany

Areas of Research

- superconductivity and superconducting devices
- quantum science and technology: solid-state quantum systems, quantum information science and technology, superconducting quantum circuits, microwave quantum communication and sensing
- magnetism, spin electronics, spin dynamics and spin caloritronics
- mesoscopic systems and nanotechnology
- thin film technology for superconducting and magnetic materials

Important Research Projects (most recent)

- "*Munich Quantum Valley e.V*. (MQV)" (since 01.10.2021), principal investigator, coordinator of consortium QTPE (Quantum Technology Park & Entrepreneurship). Scientific Director of Munich Quantum Valley (since 01.08.2023)
- Cluster of excellence "*Munich Center for Quantum Science and Technology* (MCQST)" (since 01.01.2019), spokesperson and coordinator or Research Unit C (Quantum Computing).
- MQV Lighthouse Project "*Networked Quantum Systems* (NeQuS)" (since 01.01.2023), PI. Partners: WMI, MPQ, LMU, TUM.
- MQV Lighthouse Project "*Integrated Spin Systems for Quantum Sensors* (IQSense)" (since 01.01.2023), PI.
  Partners: University of Würzburg (coordination), WMI, TUM.
- BMBF Joint Project "*Storage of Microwave Quantum Tokens in Electron and Nuclear Spin Ensembles* (QuamToMe)", FKZ 16KISQ036 (since 01.11.2021), PI.
  Coordination and three sub-projects by WMI.
- BMBF Joint Project "*QUAntenRAdarTEam* (QUARATE)", FKZ 13N15380 (since 01.02.2021), PI.
  Project partners: Rohde & Schwarz GmbH & Co. KG (coordinator), WMI, DLR, TUM.
- Cluster of excellence "*Nanosystems Initiative Munich* (NIM)" (01.11.2008-31.12.2018), PI, executive board member and coordinator of Research Area I (Quantum Nanophysics).
- EU Quantum Flagship Project "*Quantum Microwave Communication and Sensing* (QMiCS)" (01.10.2018-30.09.2021), with several groups from the EU, PI.
- EU Collaborative Project (H2020-FETOPEN) "*Magnetomechanical Platforms for Quantum Experiments and Quantum Enabled Sensing Technologies* (MaQSens)" (01.01.2017-21.10.2020), with several groups from the EU, PI.
- International PhD program "*Exploring Quantum Matter* (ExQM)" within the Elite Network of Bavaria (1.6.2014-31.5.2024), 12 groups from Munich, PI.
- DFG Collaborative Research Center 631 "*Solid State Quantum Information Processing*" (1.7.2003-30.6.2015), spokesperson and PI.
- Marie Curie Network on "*Circuit and Cavity Quantum Electrodynamics* (CCQED)" (01.12.2010-30.11.2014), in collaboration with European partners, PI.
- EU Collaborative Project (STREP) on "*Quantum Propagating Microwaves in Strongly Coupled Environments*" (01.12.2010-30.06.2015), with 10 groups from the EU, PI.

Selected Publications

1. **Experimental quantum teleportation of propagating microwaves**
   K. G. Fedorov, M. Renger, S. Pogorzalek, R. Di Candia, Q. Chen, Y. Nojiri, K. Inomata, Y. Nakamura, M. Partanen, A. Marx, **R. Gross**, F. Deppe
   Science Advances **7**, eabk0891 (2021).
2. **Echo Trains in Pulsed Electron Spin Resonance of a Strongly Coupled Spin Ensemble**
   S. Weichselbaumer, Ch.W. Zollitsch, M.S. Brandt, **R. Gross**, H. Huebl
   Physical Review Letters **125**, 137701 (2020).
3. **Secure Quantum Remote State Preparation of Squeezed Microwave States**
   S. Pogorzalek, K. G. Fedorov, M. Xu, A. Parra-Rodriguez, M. Sanz, M. Fischer, E. Xie, K. Inomata, Y. Nakamura, E. Solano, A. Marx, F. Deppe, **R. Gross**
   Nature Communications **10**, 2604 (2019).
4. **Parity-engineered light-matter interaction**
   Jan Goetz, Frank Deppe, Kirill G. Fedorov, Peter Eder, Michael Fischer, Stefan Pogorzalek, Edwar Xie, Achim Marx, **R. Gross**
   Phys. Rev. Lett. **121**, 060503 (2018).
5. **Observation of the spin Nernst effect**
   S. Meyer, Yan-Ting Chen, S. Wimmer, M. Althammer, S. Geprägs, H. Huebl, D. Ködderitzsch, H. Ebert, G.E.W. Bauer, **R. Gross**, S.T.B. Goennenwein
   Nature Materials **16**, 977-981 (2017).
6. **Photon Statistics of Propagating Thermal Microwaves**
   J. Goetz, S. Pogorzalek, F. Deppe, K. G. Fedorov, P. Eder, M. Fischer, F. Wulschner, E. Xie, A. Marx, **R. Gross**
   Phys. Rev. Lett. **118**, 103602 (2017).
7. **Slowing, advancing, and switching of microwave signals using circuit nanoelectromechanics**
   X. Zhou, F. Hocke, A. Schliesser, A. Marx, H. Huebl, R. Gross, and T. J. Kippenberg
   Nature Physics **9**, 179-184 (2013).
8. **High Cooperativity in Coupled Microwave Resonator Ferrimagnetic Insulator Hybrids**
   H. Huebl, Ch. Zollitsch, J. Lotze, F. Hocke, M. Greifenstein, A. Marx, S. T. B. Goennenwein, **R. Gross**
   Phys. Rev. Lett. **111**, 127003 (2013).
9. **Spin Hall Magnetoresistance Induced by a Non-Equilibrium Proximity Effect**
   H. Nakayama, M. Althammer, Y.-T. Chen, K. Uchida, Y. Kajiwara, D. Kikuchi, T. Ohtani, S. Geprägs, M. Opel, S. Takahashi, **R. Gross**, G. E. W. Bauer, S. T. B. Goennenwein, E. Saitoh
   Phys. Rev. Lett. **110**, 206601 (2013).
10. **Circuit quantum electrodynamics in the ultrastrong-coupling regime**
    T. Niemczyk, F. Deppe, H. Huebl, E. P. Menzel, F. Hocke, M. J. Schwarz, J. J. Garcia-Ripoll, D. Zueco, T. Hümmer, E. Solano, A. Marx, and **R. Gross**,
    Nature Physics **6**, 772-776 (2010).
11. **Two-photon Probe of the Jaynes-Cummings Model and Controlled Symmetry Breaking in Circuit QED**
    F. Deppe, M. Mariantoni, E. Menzel, A. Marx, S. Saito, K. Kakuyanagi, H. Tanaka, T. Meno, K. Semba, H. Takayanagi, E. Solano, **R. Gross**
    Nature Physics **4**, 686 - 691 (2008).
12. **Hidden Pseudogap and Superconductivity in Electron Doped High-Temperature Superconductors**
    L. Alff, B. Welter, Y. Krockenberger, **R. Gross**, D. Manske, M. Naito
    Nature **422**, 698 (2003).

More than 410 publications are listed in the Web of Science in August 2023 with more than 16.000 citations (h-index 66). Google scholar: > 23.000 citations (h-index 79).

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