Johannes M. Fink

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Career

Professor, Institute of Science and Technology Austria, 2021 – present
Assistant Professor, Institute of Science and Technology Austria, 2016 – 2021
Visiting Associate Faculty, California Institute of Technology, 2016 – 2017
Senior Staff Scientist, Thomas J. Watson, Sr., Laboratory of Applied Physics, Caltech, 2015 – 2016
Postdoctoral Research Scholar, Institute for Quantum Information and Matter, Caltech, 2012 – 2015
Postdoctoral Research Fellow, Department of Physics, ETH Zurich, 2011 – 2012
Research Associate and Teaching Assistant, Department of Physics, ETH Zurich, 2006 – 2010
Mechanical Engineer, Liebherr Aerospace and Doppelmayr, accumulated 8.5 months

Education

Ph.D. Physics, ETH Zurich, 2010, awarded with the ETH Medal
Thesis: *Quantum Nonlinearities in Strong Coupling Circuit QED*
Advisor / Examiner: Prof. Andreas Wallraff / Prof. Ataç Imamoglu

M.S. Physics, University of Vienna, 2007, with distinction
Thesis: *Single Qubit Control and Observation of Berry's Phase in a Superconducting Quantum Circuit*
Advisor / Examiner: Prof. Andreas Wallraff / Prof. Anton Zeilinger

Matura, HTL Bregenz – School of Engineering, 2001
Thesis: *Heat-dissipation by Convection at Cylindrical Bodies* with Liebherr Aerospace

Research Topics

quantum optics, superconducting circuits, quantum information, hybrid quantum systems and interfaces, circuit quantum electrodynamics (QED), cavity electro- and optomechanics, nano- and silicon photonics, photonic crystals, nonlinear optics and cavity electro-optics, microwave photonics, precision measurements and metrology, low temperature physics, micro- and nanofabrication

Selected Distinctions

2018 - Fritz Kohlrausch prize
2017 - ERC Starting grant
2012 - IQIM fellowship
2010 - ETH Medal
2009 - CSF award
2004 - Joint Study fellowship

Active Grants

NOMIS Foundation research grant, Protected States of Quantum Matter, Co-Investigators: G. Katsaros, A. Higginbotham (IST Austria), 2022-2026

EC Horizon 2020 **FET Open**, SuperQuLAN: Quantum Local Area Networks with superconducting qubits, Co-Investigators: Peter Rabl (TU Vienna), Juan Jose Garcia-Ripoll (CISC), Andreas Wallraff (ETH Zurich), Ignacio Cirac (MPQ), Zurich Instruments AG, 2020-2023

EC Horizon 2020 **FET Open**, QUARTET: Quantum readout techniques and technologies, Co-Invesigators: Stefan Pirandola (York), Stefano Mancini (Camerino), Tobias Gehring (Denmark Technical University), NKT Photonics A/S, Ivano Ruo Berchera (INRIM), Gheorghe Sorin Paraoanu (Aalto), 2019 – 2022

FWF special research program (**SFB**), BeyondC: Quantum Information Systems Beyond Classical Capabilities, Co-Investigators: Hans Briegel, Caslav Brukner, Ignacio Cirac, Gerhard Kirchmair, Barbara Kraus, Wolfgang Lechner, Thomas Monz, Christian Roos, Rupert Ursin, Frank Verstrate, Philip Walther, Gregor Weihs, 2018 – 2022

ERC Starting Grant 2017, QUNNECT: A Fiber Optic Transceiver for Superconducting Qubits, 2018-2023

Teaching

Lectures and seminars at IST Austria: Physics track core course (2016/2017), Superconducting Microwave Resonators: Modeling, Fabrication and Characterization (2016/2017), Physics track core course (2017/2018), Microwave Quantum Circuits (2018/2019), Quantum Optics with Circuits and Atoms (2019/2020), Quantum Optics with Circuits and Atoms (2020/2021)

Teaching assistant at ETH Zurich, 2007 – 2012: 3x Physics I (classical mechanics and electrodynamics), 1x Physics III (optics, quantum mechanics, statistical mechanics and atomic physics), 3x Physics IV (quantum mechanics), 1x Advanced Solid State Physics.

Current Supervision of Students and Postdocs

Postdocs: Liu Qiu (Electrooptics), Yuan Chen (Optomechanics), Martin Zemlicka (Circuit QED).

PhD students: Thomas Werner (Circuit QED), Andrea Trioni (High impedance circuits), Riya Sett (Microwave quantum optics), Rishabh Sahu (Electrooptics), Farid Hassani (Protected qubits), Georg Arnold (Optical interconnects), Elena Redchenko (Circuit QED).

Selected Invited Talks

1. *Realizing a quantum-enabled interface between microwave and optical light* (invited talk), J.M. Fink. 12th International Conference on Advanced Materials and Devices (ICAMD 2021), Korea, December 6-10, 2021
2. *Enhancing quantum phase fluctuations in qubits with geometric superinductance* (invited talk), J.M. Fink, M. Peruzzo, A. Trioni, F. Hassani. Chalmers University, Sweden, September 2, 2021
3. *Surpassing the Resistance Quantum with a Geometric Superinductor* (online talk and live discussion), M. Peruzzo, A. Trioni, F. Hassani, M. Zemlicka, and J. M. Fink. *Physical Review* Journal Club, February 9, 2021
4. *Quantum microwave photonics: optical interfaces, nonreciprocity and entanglement* (invited talk), J. M. Fink. Fourth year colloquium, IST Austria, September 14, 2020

5. *Microwave two-mode squeezing and quantum illumination* (invited web talk), J. M. Fink. Quantum Radar Workshop at the Applied Research Laboratory for Intelligence and Security (ARLIS) at the University of Maryland, College Park, Maryland, USA, July 15-16, 2020
6. *From mechanical entanglement generation to microwave quantum illumination* (invited web seminar), J. M. Fink. 3. Physics Institute, University of Stuttgart, July 07, 2020
7. *Microwave quantum technology: Optical interfaces and quantum illumination* (invited web colloquium), J. M. Fink. Department of Optics, Palacky University, Olomouc, Czechia, May 26, 2020
8. *Chip-scale optomechanical conversion between microwave and telecom light* (invited talk), J. M. Fink. Conference on quantum micro-mechanical systems, Obergurgl, Austria, February 10 – 14, 2020
9. *Chip-scale radiation-pressure mediated transduction between microwave and telecom light* (invited talk), J. M. Fink. OMT – HOT 2020 annual conference, Gstaad – Saanen, CH, January 19-23, 2020
10. *Transduction and entanglement generation with silicon nanobeam oscillators* (conference talk), J. M. Fink. Joint Annual Meeting of SPS and ÖPG, Zürich, CH, August 26 – 30, 2019
11. *Transduction and entanglement with silicon nanobeam oscillators* (conference talk), J. M. Fink. Conference on Hybrid Optomechanical Technologies (HOT), Monte Verita, CH, July 7-11, 2019
12. *Mechanical generation of stationary entangled radiation* (conference talk), J. M. Fink. 16th International Workshop of Nanomechanical Sensors (NMC2019), EPFL, Lausanne, June 19-21, 2019
13. *Circuit Quantum Electromechanics with Silicon Nanobeams* (conference talk), J. M. Fink. IMPRS–CoQuS workshop, Max Planck Institute for Quantum Optics, Garching, Germany, December 2-4, 2018
14. *Controlling Microwave Photons with Nanomechanical Oscillators* (conference talk), J. M. Fink. 2018 Annual Meeting of the Austrian Physical Society, Graz, Austria, September 13, 2018
15. *Stationary Entangled Radiation from Micromechanical Motion* (conference talk), J. M. Fink. Current trends in open and nonequilibrium quantum optical systems, Max Planck Institute for the Physics of Light, Erlangen, Germany, July 16-18, 2018
16. *Stopping and Routing Microwave Photons On-Chip* (conference talk), J. M. Fink. APS March Meeting, Microwave Photonics with Superconducting Circuits, Los Angeles, USA, March 5-9, 2018
17. *Dielectric mechanical oscillators as a tool for analog (quantum) signal processing* (conference talk), J. M. Fink. EQuS Annual Workshop, Hunter Valley, Australia, September 25-27, 2017
18. *Quantum electro-mechanics with dielectric oscillators* (conference talk) Quantum Interfaces with Nano-opto-electro-mechanical devices: Applications and Fundamental Physics, Erice, Italy, July 31 – August 5, 2016
19. *Integrated quantum electro-opto-mechanics on dielectric nanomembranes* (conference talk) Gordon Research Conference, Mechanical Quantum Systems: From Fundamental Physics to Real World Applications, Ventura, USA, March 6 – 11, 2016
20. *Optomechanical crystals for cavity opto- and electromechanics* (lecture series) Quantum Optomechanics and Nanomechanics Summer School, Les Houches, France, August, 2015
21. *Superconducting electromechanics on silicon nitride nanomembranes* (seminar talk) RWTH Aachen, Aachen, Germany, July 3, 2015
22. *Integrating acoustic, nanophotonic and superconducting quantum devices* (seminar talk) Harvard, School of Engineering and Applied Science, USA, May 2, 2014
23. *Integrating acoustic, nanophotonic and superconducting quantum circuits* (talk) Symposium: Selected Topics in Science and Technology, TU Munich, Germany, February 18, 2014
24. *Linear and nonlinear electromechanical coupling of narrow-gapped photonic and phononic crystal cavities* (conference talk) Frontiers of Opto- and Electro-mechanics workshop, Fai della Paganella, Italy, January 27 – 30, 2014
25. *Cavity QED with Microwave Photons and Superconducting Electronic Circuits* (seminar talk) Kavli Nanoscience Institute, Caltech, Pasadena, USA, January 17, 2012
26. *Quantum nonlinearities in strong coupling circuit QED* (seminar talk) Max Planck Institute for the Science of Light, Erlangen, Germany, July 21, 2011
27. *Quantum Optics Experiments with Multiple Qubits and Multiple Photons in Superconducting Electronic Circuits* (seminar talk) TCM seminar, Cavendish Laboratory, University of Cambridge, UK, December 04, 2009

28. *Quantum Optics Experiments with Multiple Qubits and Multiple Photons in Superconducting Electronic Circuits* (conference talk) MIDAS midterm research workshop, Capri, Villa Orlandi, Italy, September 30 – October 2, 2009
29. *Multi-Photon Cavity QED with Superconducting Circuits* (conference talk) Quantum Engineering, Centro Stefano Franscini, Monte Verita, TI, Switzerland, June 14 – 19, 2009

Publication List

Free manuscript access and bibliometrics on arXiv, Google Scholar, orcid and Publons.
* indicates equal contribution.

Preprints

1. **Magnetic-field resilience of 3D transmons with thin-film Al/AlOx/Al Josephson junctions approaching 1 T**
   J. Krause, C. Dickel, E. Vaal, M. Vielmetter, J. Feng, R. Bounds, G. Catelani, J. M. Fink, Yoichi Ando.
   arxiv.org/abs/2111.01115

2. **Quantum-enabled interface between microwave and telecom light**
   Rishabh Sahu, William Hease, Alfredo Rueda, Georg Arnold, Liu Qiu, Johannes Fink.
   arxiv.org/abs/2107.08303

Refereed Journal Articles

3. **PRX Quantum: Geometric superinductance qubits: Controlling phase delocalization across a single Josephson junction**
   Matilda Peruzzo, Farid Hassani, Gregory Szep, Andrea Trioni, Elena Redchenko, Martin Žemlička, Johannes Fink.
   PRX Quantum **2**, 040341 (2021). PRXQ, arXiv

4. **Thermal noise in electro-optic devices at cryogenic temperatures**
   Sonia Mobassem, Nicholas J. Lambert, Alfredo Rueda, Johannes M. Fink, Gerd Leuchs, Harald G. L. Schwefel.
   Quantum Sci. Technol. **6** 045005 (2021). QST, arXiv

5. **PRX Quantum: Bidirectional electro-optic wavelength conversion in the quantum ground state**
   W. Hease*, A. Rueda*, R. Sahu, M. Wulf, G. Arnold, H. G. L. Schwefel, J. M. Fink.
   PRX Quantum **1**, 020315 (2020). PRXQ, arXiv
   News coverage: ISTnews

6. **Surpassing the resistance quantum with a geometric superinductor**
   M. Peruzzo*, A. Trioni*, F. Hassani, M. Zemlicka, J. M. Fink.
   Physical Review Applied (Editors' suggestion) **14**, 044055 (2020). PRApplied, arXiv
   News coverage: Geometric Inductor Breaks Resistance Quantum "Limit", Physics **13**, 141 (2020)

7. **Nature Communications: Converting microwave and telecom photons with a silicon photonic nanomechanical interface**
   G. Arnold*, M. Wulf*, S. Barzanjeh, E. S. Redchenko, A. Rueda, W. J. Hease, F. Hassani, J. M. Fink.
   Nature Communications **11**, 4460 (2020). NatureCommun, SI, arXiv
   News coverage: ISTnews

8. **Efficient microwave frequency conversion mediated by the vibrational motion of a silicon nitride nanobeam oscillator**
   J. M. Fink, M. Kalaee, R. Norte, A. Pitanti, O. Painter.
   Quantum Sci. Technol. **5**, 034011 (2020). QST, arXiv

9. **Science Advances: Microwave quantum illumination using a digital receiver**
   S. Barzanjeh, S. Pirandola, D. Vitali and J. M. Fink.
   Science Advances **6**, eabb0451 (2020). Science Advances, arXiv, altimetric
   News coverage: MIT TechReview, PhysOrg, APA, Focus, ORF, pro-physik.de

10. **Electro-optic entanglement source for microwave to telecom quantum state transfer**
    Alfredo Rueda, William Hease, Shabir Barzanjeh, Johannes M. Fink.
    npj Quantum Information **5**, 108 (2019). npjQuantumInfo, arXiv

11. **Nature: Stationary Entangled Radiation from Micromechanical Motion**
    S. Barzanjeh, E. S. Redchenko, M. Peruzzo, M. Wulf, D. P. Lewis, G. Arnold and J. M. Fink.
    Nature **570**, 480–483 (2019). Nature, SI, arXiv, altimetric
    News covarge: ProPhysik, PhysOrg, Medium, innovationorigins, DiePresse

12. **Finite-size scaling of the photon-blockade breakdown dissipative quantum phase transition**
    A. Vukics, A. Dombi, J. M. Fink, P. Domokos.
    Quantum **3**, 150 (2019). Quantum, arXiv
    News coverage: Quantum Perspectives: Breaking barriers: photon-blockade breakdown from the few quanta to the thermodynamic limit

13. **Nature Nanotechnology: Quantum electromechanics of a hypersonic crystal**
    Mahmoud Kalaee, Mohammad Mirhosseni, Paul B. Dieterle, Matilda Peruzzo, Johannes M. Fink and Oskar Painter.
    Nature Nanotechnology **14**, 334–339 (2019). NatureNanotech, SI, arXiv
    News and Views: Quantum sound on a chip

14. **Nature Communications: Mechanical On-Chip Microwave Circulator**
    S. Barzanjeh, M. Wulf, M. Peruzzo, M. Kalaee, P. B. Dieterle, O. Painter, J. M. Fink.
    Nature Communications **9**, 953 (2017). NatureCommun, SI, arXiv, altimetric
    News coverage: APA (English), APA (German), Phys.org, EurekAlert

15. **Al transmon qubits on silicon-on-insulator for quantum device integration**
    Andrew J. Keller, Paul B. Dieterle, Michael Fang, Brett Berger, Johannes M. Fink, Oskar Painter.
    Applied Physics Letters **111**, 042603 (2017). ApplPhysLett, arXiv

16. **PRX: Observation of the photon-blockade breakdown phase transition**
    J. M. Fink, A. Dombi, A. Vukics, A. Wallraff, and P. Domokos.
    Physical Review X **7**, 011012 (2017). PhysRevX, arXiv, altimetric
    News coverage: derStandard.at, EurekAlert, Phys.org

17. **Nature Communications: Quantum electromechanics on silicon nitride nanomembranes**
    J. M. Fink, M. Kalaee, A. Pitanti, R. Norte, L. Heinzle, M. Davanço, K. Srinivasan, and O. Painter.
    Nature Communications **7**, 12396 (2016). NatureCommun, SI, arXiv

18. **Superconducting Cavity Electromechanics on a Silicon-On-Insulator Platform**
    Paul B. Dieterle, Mahmoud Kalaee, Johannes M. Fink, and Oskar Painter.
    Physical Review Applied **6**, 014013 (2016). PhysRevApplied, arXiv

19. **Optica: Efficient microwave to optical photon conversion: an electro-optical realization**
Alfredo Rueda, Florian Sedlmeir, Michele C. Collodo, Ulrich Vogl, Birgit Stiller, Gerhard Schunk, Dmitry V. Strekalov, Christoph Marquardt, Johannes M. Fink, Oskar Painter, Gerd Leuchs, and Harald G. L. Schwefel.
Optica **3**, 597 (2016). Optica, arXiv

20. **Strong opto-electro-mechanical coupling in a silicon photonic crystal cavity**
Alessandro Pitanti, Johannes M. Fink, Amir H. Safavi-Naeini, Chan U. Lei, Jeff T. Hill, Alessandro Tredicucci, Oskar Painter.
Optics Express **23**, 3196 (2015). OpticsExpress, arXiv

21. **PRL: Collective Suppression of Linewidths in Circuit QED**
Felix Nissen, Johannes M. Fink, Jonas A. Mlynek, Andreas Wallraff, and Jonathan Keeling.
Physical Review Letters **110**, 203602 (2013). PhysRevLett, arXiv

22. **Nature Physics: Correlations, indistinguishability and entanglement in Hong-Ou-Mandel experiments at microwave frequencies**
C. Lang, C. Eichler, L. Steffen, J. M. Fink, M. J. Woolley, A. Blais, and A. Wallraff.
Nature Physics **9**, 345 (2013). NatPhys, arXiv

23. **Nature: Experimental realization of non-Abelian non-adiabatic geometric gates**
A. A. Abdumalikov Jr, J. M. Fink, K. Juliusson, M. Pechal, S. Berger, A. Wallraff, and S. Filipp.
Nature **496**, 482 (2013). Nature, arXiv

24. **PRL: Observation of Entanglement between Itinerant Microwave Photons and a Superconducting Qubit**
C. Eichler, C. Lang, J. M. Fink, J. Govenius, S. Filipp, and A. Wallraff.
Physical Review Letters **109**, 240501 (2012). PhysRevLett, arXiv

25. **Demonstrating *W*-type entanglement of Dicke states in resonant cavity quantum electrodynamics**
J. A. Mlynek, A. A. Abdumalikov, J. M. Fink, L. Steffen, M. Baur, C. Lang, A. F. van Loo, and A. Wallraff.
Physical Review A **86**, 053838 (2012). PhysRevA, arXiv

26. **PRL: Geometric Phase and Nonadiabatic Effects in an Electronic Harmonic Oscillator**
M. Pechal, S. Berger, A. A. Abdumalikov, Jr., J. M. Fink, J. A. Mlynek, L. Steffen, A. Wallraff, and S. Filipp.
Physical Review Letters **108**, 170401 (2012). PhysRevLett, arXiv

27. **PRL: Observation of two-mode squeezing in the microwave frequency domain**
C. Eichler, D. Bozyigit, C. Lang, M. Baur, L. Steffen, J. M. Fink, S. Filipp, and A. Wallraff.
Physical Review Letters **107**, 113601 (2011). PhysRevLett, arXiv

28. **Multimode mediated qubit-qubit coupling and dark-state symmetries in circuit quantum electrodynamics**
S. Filipp, M. Göppl, J. M. Fink, M. Baur, R. Bianchetti, L. Steffen, and A. Wallraff.
Physical Review A **83**, 063827 (2011). PhysRevA, arXiv

29. **PRL: Observation of Resonant Photon Blockade at Microwave Frequencies using Correlation Function Measurements**
C. Lang, D. Bozyigit, C. Eichler, L. Steffen, J. M. Fink, A. A. Abdumalikov Jr., M. Baur, S. Filipp, M. P. da Silva, A. Blais, A. Wallraff.
Physical Review Letters **106**, 243601 (2011). PhysRevLett, arXiv

30. **PRL: Experimental State Tomography of Itinerant Single Microwave Photons**
C. Eichler, D. Bozyigit, C. Lang, L. Steffen, J. M. Fink and A. Wallraff.
Physical Review Letters **106**, 220503 (2011). PhysRevLett, arXiv

31. **Nature Physics: Antibunching of Microwave Frequency Photons observed in Correlation Measurements using Linear Detectors**
D. Bozyigit, C. Lang, L. Steffen, J. M. Fink, C. Eichler, M. Baur, R. Bianchetti, P. J. Leek, S. Filipp, M. P. da Silva, A. Blais, and A. Wallraff.
Nature Physics **7**, 154 (2011). NatPhys, arXiv

32. **Correlation Measurements of Individual Microwave Photons Emitted from a Symmetric Cavity**
D. Bozyigit, C. Lang, L. Steffen, J. M. Fink, C. Eichler, M. Baur, R. Bianchetti, P. J. Leek, S. Filipp, M. P. da Silva, A. Blais, and A. Wallraff.
Journal of Physics: Conference Series **264**, 012024 (2011). DOI, arXiv

33. **PRL: Control and Tomography of a Three Level Superconducting Artificial Atom**
R.Bianchetti, S. Filipp, M. Baur, J. M. Fink, C. Lang, L. Steffen, M. Boissonneault, A. Blais, A. Wallraff.
Physical Review Letters **105**, 223601 (2010). PhysRevLett, arXiv

34. **PRL: Quantum-to-classical transition in cavity quantum electrodynamics**
J. M. Fink, L. Steffen, P. Studer, Lev S. Bishop, M. Baur, R. Bianchetti, D. Bozyigit, C. Lang, S. Filipp, P. J. Leek, and A. Wallraff.
Physical Review Letters **105**, 163601 (2010). PhysRevLett, reprint

35. **PRL: Cavity QED with separate photon storage and qubit readout modes**
P. J. Leek, M. Baur, J. M. Fink, R. Bianchetti, L. Steffen, S. Filipp, A. Wallraff.
Physical Review Letters **104**, 100504 (2010). PhysRevLett, arXiv

36. **Thermal excitation of multi-photon dressed states in circuit quantum electrodynamics**
J. M. Fink, M. Baur, R. Bianchetti, S. Filipp, M. Göppl, P. J. Leek, L. Steffen, A. Blais and A. Wallraff.
Physica Scripta **T137**, 014013 (2009).
Proceedings of the Nobel Physics Symposium on Qubits for Future Quantum Computers, Gothenburg, Sweden, 2009. DOI, reprint

37. **Dynamics of dispersive single qubit read-out in circuit quantum electrodynamics**
R. Bianchetti, S. Filipp, M. Baur, J. M. Fink, M. Göppl, P. J. Leek, L. Steffen, A. Blais, and A. Wallraff.
Physical Review A **80**, 043840 (2009). PhysRevA, arXiv

38. **PRL: Dressed collective qubit states and the Tavis-Cummings model in circuit QED**
J. M. Fink, R. Bianchetti, M. Baur, M. Göppl, L. Steffen, S. Filipp, P. J. Leek, A. Blais, A. Wallraff.
Physical Review Letters **103**, 083601 (2009). PhysRevLett, reprint

39. **PRL: Measurement of Autler-Townes and Mollow transitions in a strongly driven superconducting qubit**
M. Baur, S. Filipp, R. Bianchetti, J. M. Fink, M. Göppl, L. Steffen, P. J. Leek, A. Blais, A. Wallraff.
Physical Review Letters **102**, 243602 (2009). PhysRevLett, arXiv

40. **Using sideband transitions for two-qubit operations in superconducting circuits**
P. J. Leek, S. Filipp, P. Maurer, M. Baur, R. Bianchetti, J. M. Fink, M. Göppl, L. Steffen, A. Wallraff.
Physical Review B (Rapid Commun.) **79**, 180511(R) (2009). PhysRevB, arXiv

41. **PRL: Two-qubit state tomography using a joint dispersive read-out**
S. Filipp, P. Maurer, P. J. Leek, M. Baur, R. Bianchetti, J. M. Fink, M. Göppl, L. Steffen, J. M. Gambetta, A. Blais, A. Wallraff.
Physical Review Letters **102**, 200402 (2009). PhysRevLett, reprint

42. **Science: Resolving Vacuum Fluctuations in an Electrical Circuit by Measuring the Lamb Shift**
A. Fragner, M. Göppl, J. M. Fink, M. Baur, R. Bianchetti, P. J. Leek, A. Blais and A. Wallraff.
Science **322**, 1357 (2008). Science, arXiv

43. **Coplanar waveguide resonators for circuit quantum electrodynamics**
M. Göppl, A. Fragner, M. Baur, R. Bianchetti, S. Filipp, J. M. Fink, P. J. Leek, G. Puebla, L. Steffen, A. Wallraff.
J. Appl. Phys. **104**, 113904 (2008). DOI, reprint

44. **Nature: Climbing the Jaynes-Cummings ladder and observing its square root of n nonlinearity in a cavity QED system**
J. M. Fink, M. Göppl, M. Baur, R. Bianchetti, P. J. Leek, A. Blais and A. Wallraff.
Nature **454**, 315-318 (2008). Nature, reprint

45. **Science: Observation of Berry's Phase in a Solid State Qubit**
P. J. Leek, J. M. Fink, A. Blais, R. Bianchetti, M. Göppl, J. M. Gambetta, D. I. Schuster, L. Frunzio, R. J. Schoelkopf, and A. Wallraff.
Science **318**, 1889 (2007). Science, reprint

Refereed Conference Proceedings

46. **Microwave quantum illumination with a digital phase-conjugated receiver**
S. Barzanjeh, S. Pirandola, D. Vitali and J. M. Fink
2020 IEEE Radar Conference (RadarConf20) , Florence, Italy, 2020
RadarConf

47. **Efficient single sideband microwave to optical conversion using a LiNbO3 WGM-resonator**
A. Rueda and F. Sedlmeir and M. C. Collodo and U. Vogl and B. Stiller and G. Schunk and D. V. Strekalov and C. Marquardt and J. M. Fink and O. Painter and G. Leuchs and H. G. L. Schwefel.
2016 Conference on Lasers and Electro-Optics (CLEO), San Jose, CA, 2016. CLEO

Books and Book Chapters

48. **Tomography schemes for characterizing itinerant microwave photon fields**
C. Eichler, D. Bozyigit, C. Lang, L. Steffen, J. Fink, and A. Wallraff.
Quantum Machines: Measurement and Control of Engineered Quantum Systems, Les Houches 2011, Oxford Univ. Press, ISBN 978-0-19-968118-1 (2014).

49. **Quantum Nonlinearities in Strong Coupling Circuit QED: On-Chip Quantum Optics with Microwave Photons and Superconducting Electronic Circuits**
Johannes M. Fink
LAP LAMBERT Academic Publishing, ISBN 978-3-8454-1971-8 (2011). Amazon, reprint

Other Publications

50. **Qubit Energy-Relaxation Statistics in the Bluefors Quantum Measurement System**
Slawomir Simbierowicz, Chunyan Shi, Michele Collodo, Moritz Kirste, Farid Hassani, Johannes Fink,

Jonas Bylander, Daniel Perez Lozano, Russell Lake.
Application Note, June 3, 2021 (blog)

51. **The Bluefors Dilution Refrigerator as an Integrated Quantum Measurement System**
Russell Lake and Slawomir Simbierowicz (Bluefors Quantum Team), Philip Krantz (Keysight Technologies), Farid Hassani and Johannes Fink (IST Austria).
Application Note, April 20, 2021 (blog)

52. **Commentary: Die ersten Quantencomputer nehmen Gestalt an**
Johannes Fink. *Austria Press Agency Dossie*r: Quanten ante portas (2018). Gastkommentar

53. **Photonenblockade aufgelöst**
J. Fink, *Phys. Unserer Zeit* **48,** 111 (2017). PhysUnsererZeit

54. **Viewpoint: Microwave Quantum States Beat the Heat**
Johannes M. Fink. *Physics* **10**, 32 (2017). APS Physics, reprint

55. **Single sideband microwave to optical photon conversion – an electro-optic realization**
A. Rueda, F. Sedlmeir, M. C. Collodo, U. Vogl, B. Stiller, G. Schunk, D. V. Strekalov, C. Marquardt, J. M. Fink, O. Painter, G. Leuchs, and H. G. L. Schwefel.
Nonlinear Optics, OSA Technical Digest (online) (Optical Society of America, 2017), paper NM3A.1. OSA

56. **Nonlinear single sideband microwave to optical conversion using an electro-optic WGM-resonator**
A. Rueda, F. Sedlmeir, M. C. Collodo, U. Vogl, B. Stiller, G. Schunk, D. V. Strekalov, C. Marquardt, J. M. Fink, O. Painter, G. Leuchs, and H. G. L. Schwefel.
Photonics and Fiber Technology 2016 (ACOFT, BGPP, NP), OSA Technical Digest (online) (Optical Society of America, 2016), paper NTh3A.6. OSA

Theses

57. **PhD thesis: Quantum Nonlinearities in Strong Coupling Circuit QED**
Johannes M. Fink, *ETH Zurich* (2010). reprint

58. **Master thesis: Single Qubit Control and Observation of Berry's Phase in a Superconducting Quantum Circuit**
Johannes M. Fink, *ETH Zuerich & Universitaet Wien* (2007). reprint

59. **HTL diploma thesis: Heat dissipation by convection at cylindrical bodies**
Wolfram Steurer, Johannes Fink and Sebastian Gerber, *HTL Bregenz & Liebherr Aerospace* (2001). reprint

Patents

60. **Techniques for transduction and storage of quantum level signals**
Oskar Painter, Jie Luo, Michael T Fang, Alp Sipahigil, Paul B Dieterle, Mahmoud Kalaee, Johannes M Fink, Andrew J Keller, Gregory MacCabe, Hengjiang Ren, Justin D Cohen. US Patent 10,858,239

61. **Techniques for bidirectional transduction of quantum level signals between optical and microwave frequencies using a common acoustic intermediary**
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