

Johannes M. Fink

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Career

Assistant Professor, Institute of Science and Technology Austria, 2016 – present

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

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-Investigators: 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

NOMIS Foundation research grant, Hybrid Semiconductor - Superconductor Quantum Devices, Co-Investigators: G. Katsaros (IST Austria), 2017-2021

EC Horizon 2020 **FET Proactive**, HOT: Hybrid Opto-mechanical Technologies, Co-investigators: Tobias Kippenberg (EPFL), Albert Schliesser (Copenhagen University), David Vitaly (Camerino), Andreas Nunnenkamp (University of Cambridge), Paul Seidler (IBM Zurich), Ewold Verhagen (AMOLF, NL), Andre Xuereb (Malta), Mika Sillanpaa (Aalto), Florian Marquardt (MPI Erlangen), Eva Weig (Konstanz), Dries Van Thourhout (Gent University), Isabelle Robert-Philip (CNRS), Daniel Dolfi (Thales), Gary Steele (TU Delft), James Haigh (Hitachi), Guido Chiaretti (ST Microelectronics), 2017-2020

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

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

7 PhD students: Andrea Trioni (High impedance circuits), Riya Sett (Microwave quantum optics), Rishabh Sahu (Electrooptics), Farid Hassani (Circuit QED), Georg Arnold (Optomechanics), Elena Redchenko (Circuit QED), Matilda Peruzzo (High impedance circuits).

Selected Invited Talks

1. *Quantum microwave photonics: optical interfaces, nonreciprocity and entanglement* (invited talk), J. M. Fink. Fourth year colloquium, IST Austria, September 14, 2020

2. *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
3. *From mechanical entanglement generation to microwave quantum illumination* (invited web seminar), J. M. Fink. 3. Physics Institute, University of Stuttgart, July 07, 2020
4. *Microwave quantum technology: Optical interfaces and quantum illumination* (invited web colloquium), J. M. Fink. Department of Optics, Palacky University, Olomouc, Czechia, May 26, 2020
5. *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
6. *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
7. *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
8. *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
9. *Mechanical generation of stationary entangled radiation* (conference talk), J. M. Fink. 16th International Workshop of Nanomechanical Sensors (NMC2019), EPFL, Lausanne, June 19-21, 2019
10. *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
11. *Controlling Microwave Photons with Nanomechanical Oscillators* (conference talk), J. M. Fink. 2018 Annual Meeting of the Austrian Physical Society, Graz, Austria, September 13, 2018
12. *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
13. *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
14. *Dielectric mechanical oscillators as a tool for analog (quantum) signal processing* (conference talk), J. M. Fink. EQU S Annual Workshop, Hunter Valley, Australia, September 25-27, 2017
15. *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
16. *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
17. *Optomechanical crystals for cavity opto- and electromechanics* (lecture series) Quantum Optomechanics and Nanomechanics Summer School, Les Houches, France, August, 2015
18. *Superconducting electromechanics on silicon nitride nanomembranes* (seminar talk) RWTH Aachen, Aachen, Germany, July 3, 2015
19. *Integrating acoustic, nanophotonic and superconducting quantum devices* (seminar talk) Harvard, School of Engineering and Applied Science, USA, May 2, 2014
20. *Integrating acoustic, nanophotonic and superconducting quantum circuits* (talk) Symposium: Selected Topics in Science and Technology, TU Munich, Germany, February 18, 2014
21. *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
22. *Cavity QED with Microwave Photons and Superconducting Electronic Circuits* (seminar talk) Kavli Nanoscience Institute, Caltech, Pasadena, USA, January 17, 2012
23. *Quantum nonlinearities in strong coupling circuit QED* (seminar talk) Max Planck Institute for the Science of Light, Erlangen, Germany, July 21, 2011
24. *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

25. *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
26. *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. **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. [arXiv:2008.08764](#)

Refereed Journal Articles

2. **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](#)
3. **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)
4. **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](#)
5. **Efficient microwave frequency conversion mediated by the vibrational motion of a silicon nitride nanobeam oscillator**
 J. M. Fink, M. Kalaei, R. Norte, A. Pitanti, O. Painter.
Quantum Sci. Technol. **5**, 034011 (2020). [QST](#), [arXiv](#)
6. **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](#)
7. **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](#)
8. **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 coverage: [ProPhysik](#), [PhysOrg](#), [Medium](#), [innovationorigins](#), [DiePresse](#)

9. **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](#)

10. **Nature Nanotechnology: Quantum electromechanics of a hypersonic crystal**
Mahmoud Kalaei, 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](#)

11. **Nature Communications: Mechanical On-Chip Microwave Circulator**
S. Barzanjeh, M. Wulf, M. Peruzzo, M. Kalaei, 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](#)

12. **AI 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](#)

13. **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](#)

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

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

16. **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](#)

17. **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](#)

18. **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](#)

19. **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](#)
20. **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](#)
 21. **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](#)
 22. **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](#)
 23. **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](#)
 24. **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](#)
 25. **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](#)
 26. **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](#)
 27. **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](#)
 28. **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](#)
 29. **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](#)

30. **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](#)
31. **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](#)
32. **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](#)
33. **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](#)
34. **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](#)
35. **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](#)
36. **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](#)
37. **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](#)
38. **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](#)
39. **Science: Resolving Vacuum Fluctuations in an Electrical Circuit by Measuring the Lamb Shift**
A. Fagner, M. Göppl, J. M. Fink, M. Baur, R. Bianchetti, P. J. Leek, A. Blais and A. Wallraff.
Science **322**, 1357 (2008). [Science](#), [arXiv](#)
40. **Coplanar waveguide resonators for circuit quantum electrodynamics**
M. Göppl, A. Fagner, 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](#)
41. **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](#)

42. **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

43. **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](#)
44. **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

45. **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).
46. **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

47. **Commentary: Die ersten Quantencomputer nehmen Gestalt an**
Johannes Fink. *Austria Press Agency Dossier: Quanten ante portas* (2018). [Gastkommentar](#)
48. **Photonenblockade aufgelöst**
J. Fink, *Phys. Unserer Zeit* **48**, 111 (2017). [PhysUnsererZeit](#)
49. **Viewpoint: Microwave Quantum States Beat the Heat**
Johannes M. Fink. *Physics* **10**, 32 (2017). [APS Physics](#), [reprint](#)
50. **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](#)
51. **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

52. **PhD thesis: Quantum Nonlinearities in Strong Coupling Circuit QED**
Johannes M. Fink, *ETH Zurich* (2010). [reprint](#)
53. **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](#)
54. **HTL diploma thesis: Heat dissipation by convection at cylindrical bodies**
Wolfram Steurer, Johannes Fink and Sebastian Gerber, *HTL Bregenz & Liebherr Aerospace* (2001). [reprint](#)

Patents

55. **Techniques for transduction and storage of quantum level signals**
Oskar Painter, Jie Luo, Michael T Fang, Alp Sipahigil, Paul B Dieterle, Mahmoud Kalae, Johannes M Fink, Andrew J Keller, Gregory MacCabe, Hengjiang Ren, Justin D Cohen. [US Patent App. 16/293,455](#)
56. **Techniques for bidirectional transduction of quantum level signals between optical and microwave frequencies using a common acoustic intermediary**
Oskar Painter, Jie Luo, Michael T. Fang, Alp Sipahigil, Paul B. Dieterle, Mahmoud Kalae, Johannes M. Fink, Andrew J. Keller, Gregory MacCabe, Ren Hengjiang, Justin D. Cohen. [US Patent App. 16/293,457](#)