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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, Caltech, 2015 – 2016
Postdoctoral Research Scholar, Caltech, 2012 – 2015
Postdoctoral Research Fellow, Department of Physics, ETH Zurich, 2011 – 2012
Research Associate and Teaching Assistant, ETH Zurich, 2006 – 2010
Mechanical Engineer, Liebherr Aerospace and Doppelmayr, 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

Grants and Fellowships

Full list of active and past funding at quantumIDs.com/projects

Selected functions, committees and board memberships
Head of the 'Nanofabrication Facility' of IST Austria, 2022 - present
Elected member of the ISTA professorial committee 2023 - 2026
Board member of the FWF cluster of excellence quantA, 2022 – present
Cooperation partner of ML4Q: Matter and Light for Quantum Computing, Cluster of Excellence of the German Research Foundation, 2019 – present
Board member of the Vienna Centre for Quantum Science and Technology (VCQ), 2019 – 2024

Selected Distinctions
2023 - ERC Consolidator grant
2018 - Fritz Kohlrausch prize
2017 - ERC Starting grant
2012 - IQIM fellowship
2010 - ETH Medal
2009 - CSF award
2004 - Joint Study fellowship

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), 3x Quantum Optics with Circuits and Atoms (2019/2020, 2020/2021, 2022/2023), ISTA Quantum Colloquium (2023 - present)
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.

Supervision of Students and Postdocs
Total (current and alumni): ~ 40 rotation students, 15 PhD students, 11 postdocs
Full list of current and past group members at quantumIDs.com/team

Awards, distinctions and grants of group members
Marie-Curie individual fellowship for Shabir Barzanjeh: SUPEREOM (2016 – 2018)
ISTplus postdoc fellowship for William Hease: (2018 – 2019)
IST outstanding scientific achievement award for Shabir Barzanjeh (2018)
IST outstanding scientific achievement award for Alfredo Rueda (2019)
ÖAW DOC fellowship for Georg Arnold (2018 – 2020)
ÖAW DOC fellowship for Elena Redchenko (2019 – 2020)
ISTplus postdoc fellowship for Yuan Chen (2019 – 2021)
ISTA outstanding PhD thesis award for Rishabh Sahu (2023)
Carl E. Anderson Division of Laser Science Dissertation Award of the American Physical Society 2023 for Rishabh Sahu (2023)
NOMIS Postdoc fellowship for Andrei Militaru (2023)
ISTA outstanding PhD thesis award for Georg Arnold (2025)
Best poster award for Alejandro Andres Juanes at LT30, Helsinki, August 2025
NOMIS Postdoc fellowship for Matthijs De Jong (2025)

Membership in exam and thesis committees
45 qualifying and PhD exams at ISTA (as evaluator or chair) and10 external PhD theses

Hosted visitors at ISTA
~ 140 scientific visitors - full list at quantumids.com/team

Reviewing activities
Reviewer for various journals, national funding agencies, the European research council, foundations, and institute evaluations, 2016 – present

Outreach and tech transfer activities
Links on recent activities at quantumids.com/science-outreach

Scientific presentations of the group
More than 220 scientific talks and posters presented at conferences, seminars, colloquia and workshops. Full list of contributions at quantumids.com/talks

Publication list
~ 60 peer reviewed publications, ~ 20 other (theses, opinions, patents, application notes), ~ 30 publications of the group without the PI. Citation metrics at google scholar. Full publication list at quantumids.com/publications.

Publication highlights:

1. **Entangling remote qubits through a two-mode squeezed reservoir**
   A. Andres-Juanes, J. Agusti, R. Sett, E. S. Redchenko, L. Kapoor, S. Hawaldar, P. Rabl and J. M. Fink
   arXiv:2510.07139 (2025)

2. **All-optical superconducting qubit readout**
   Georg Arnold*, Thomas Werner*, Rishabh Sahu, Lucky N. Kapoor, Liu Qiu, and Johannes M. Fink
   Nature Physics 21, 393–400 (2025) NatPhys, arXiv
   News coverage, When Qubits Learn the Language of Fiberoptics

3. **Inductively shunted transmon: A superconducting qubit with flux noise insensitive plasmon states and a protected fluxon decay exceeding 3 hours**
   Farid Hassani, Matilda Peruzzo, Lucky N. Kapoor, Andrea Trioni, Martin Zemlicka, Johannes M. Fink
   Nature Commun. **14**, 3968 (2023) NatCommun, arXiv

4. **Entangling microwaves with light**
   Rishabh Sahu*, Liu Qiu*, William Hease, Georg Arnold, Yuri Minoguchi, Peter Rabl, and Johannes M. Fink
   Science **380**, 718 (2023) Science, arXiv, open access reprint

5. **Quantum-enabled operation of a microwave-optical interface**
   Rishabh Sahu, William Hease, Alfredo Rueda, Georg Arnold, Liu Qiu, Johannes Fink
   Nature Commun. **13**, 1276 (2022) NatCommun, SI, arXiv

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. **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. **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

9. **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

10. **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

11. **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

12. **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

13. **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

14. **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