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Curriculum Vitae*

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Personal Information

Name	Mikko Pentti Matias Möttönen
Birth date	July 2, 1980
Nationality	Finland
Military service	Tikkakosken viestikoulu, Tikkakoski, Jul. 1999
ResearcherID	A-6929-2012
ORCID	0000-0001-5084-2298

Current positions

Associate Professor (tenured) of Quantum Technology Aalto University, Department of Applied Physics and VTT Technical Research Centre of Finland 1.4.2019- (permanent)
(leader of the QCD group since October 2007, currently 15–25 group members)

Founder and Chief Scientist IQM Finland Oy, 28.4.2018 –

Education

Doctor of Technology Helsinki University of Technology, Technical Physics, 4.9/5.0, 25 Jan 2005,
“*Vortices and elementary excitations in dilute Bose-Einstein condensates*”
Advisors: Prof. Martti M. Salomaa and Dr. Sami M. M. Virtanen

Master of Science Helsinki University of Technology (TKK), Technical Physics, GPA 4.9/5.0,
Sep 2002
Advisors: Prof. Martti M. Salomaa and Dr. Sami M. M. Virtanen

Senior high school degree Jyväskylän normaalikoulun lukio, GPA 9.9/10.0, Dec 1998

Previous work experience

Senior Scientist	Aalto University, Department of Applied Physics	1.8.2015-31.3.2019
Research Professor of Quantum Computing	University of Jyväskylä, Department of Mathematical Information Technology, part time	1.10.2015-30.9.2017

*See an updated version at <http://users.aalto.fi/~mpmotton/cv.pdf> and the QCD group home page at <http://physics.aalto.fi/qcd/>

Columnist	Helsingin Sanomat, Sanoma Media Finland Oy	2.3.2015-26.11.2015
Academy research fellow	Aalto University, Department of Applied Physics and Low Temperature Laboratory	1.8.2010-31.7.2015
Academy post doc. fellow	Aalto University, Department of Applied Physics and Low Temperature Laboratory Advisors: Prof. Jukka P. Pekola and Prof. Risto M. Nieminen	1.1.2010-31.7.2010
Academy post doc. fellow	TKK, Department of Applied Physics and Low Temperature Laboratory Advisors: Prof. Jukka P. Pekola and Prof. Risto M. Nieminen	1.1.2008-31.12.2009
Senior Research Fellow	University of New South Wales, Centre for Quantum Computer Technology Advisors: Prof. Robert G. Clark, Prof. Andrew S. Dzurak, and Prof. Andrea Morello	1.8.2008-31.7.2009
Post doc. researcher	TKK, Laboratory of Physics and Low Temperature Laboratory Advisors: Prof. Jukka P. Pekola and Prof. Risto M. Nieminen	1.9.2005-31.12.2007
Post doc. researcher	University of California, Berkeley Advisor: Prof. K. Birgitta Whaley	22.2.-31.8.2005
Post doc. researcher	TKK, Materials Physics Laboratory	25.1.2005-21.2.2005
Doctoral student	TKK, Materials Physics Laboratory Advisors: Prof. Martti M. Salomaa and Dr. Sami M. M. Virtanen	1.10.2002-25.1.2005
Research assistant	TKK, Materials Physics Laboratory	15.5.2001-30.9.2002
Teaching assistant	TKK, Institute of Mathematics	15.1.-30.4.2001
Teaching assistant	TKK, Institute of Mathematics	11.9.-8.12.2000
Research trainee	VTT Automation, Measurement Technology	24.7.-3.9.2000
Research trainee	VTT Automation, Measurement Technology	22.5.-25.6.2000
Technical trainee	University of Oulu, Measurement and Sensor Lab.	12.7.-7.8.1999

Titles of Docent

Title of docent in quantum computing, University of Jyväskylä, Nov. 2017, permanent

Title of docent in quantum computing, Aalto University, Feb. 2012, permanent

Title of docent in quantum computing, Helsinki University of Technology, Mar. 2007–Feb. 2012

Positions of trust

Chair of the Technology Advisory Board of IQM, 17.11.2020 –

Deputy Member of the Steering Group of InstituteQ – The Finnish Quantum Institute, 14.5.2021–

Member of MATINE – The Scientific Advisory Board for Defense, Ministry of Defense, Finland, 24.1.2019 – 23.1.2024.

Member of the Expert Panel of Quantum Karelia consortium 4.12.2020 –

Millennium Technology Prize (MTP) Fellow, Technology Academy of Finland, 19.3.2019 –

Management Committee Member, COST Action CA16221, 5.11.2018 –

Awards and honors

Innovation Professor 2021 award ([link](#)), by Technology Industries of Finland, Business Finland, and Spinverse, 16.2.2021

Väisälä Prize 2020, annual science prize awarded by the Finnish Academy of Science and Letters, 14.12.2020

Nokia Foundation Recognition Award 2020, *For achievements in quantum-computing research*, 26.11.2020

IQM chosen as one of the ten most promising Finnish startups of 2020 and 2021 by Talouselämä, 6.3.2020

Chosen as one of the 100 influential Finnish persons in ICT by [TiVi](#), 13.12.2019

Chosen as one of the 120 Finnish technology professionals by [TEK](#), 30.3.2016

Inspiration Award, *Monopole collaboration*, Electronic Products, USA, 2014

Memberships of scientific societies

Member of the Association of ERC Grantees, EU, 2020 –

Member of the American Physical Society, USA, 2016 –

Lifetime member of Physics Alumni, Finland, 2014 –

Member of the Finnish Physical Society, Finland, 2001 –

Referee of scientific journals

Applied Physics Letters

Europhysics Letters

International Journal of Quantum Information

Journal of Low Temperature Physics

Journal of Physics B

Journal of Statistical Mechanics

Nature

Nature Communications

Nature Nanotechnology

Nature Physics

New Journal of Physics

Physical Review A

Physical Review Applied

Physical Review B

Physical Review Letters

Quantum Information and Computation

Science

Science Advances

Superconductor Science and Technology

External reviewer in major scientific funding schemes

PRELUDIUM funding scheme, National Science Centre, Poland, 2017

START funding scheme, The Austrian Science Fund (FWF), Austria, 2016

OPUS funding scheme, National Science Centre, Poland, 2016

Quantum Technology Capital, EPSRC, United Kingdom, 2015

Editorships in scientific journals

Editor of Nature Publishing Group journal Scientific Reports, 2011–

Journal of Low Temperature Physics, guest editor for BEC part of the special issue SUR2010

Referee/pre-examiner of theses and docentships

PhD thesis: *Multimode Superconducting Circuits as Building Blocks for a Programmable Quantum Processor*, Tanay Roy, Tata Institute of Fundamental Research, India, 2018

Docentship: *Quantum gases, quantum crystals and semiconductors at low temperatures*, Jarno Järvinen, University of Turku, Finland, 2018

PhD thesis: *2-D and 3-D Periodic Nanostructures for Thermal Engineering Applications*, Tero Isotalo, University of Jyväskylä, Finland, 2014.

PhD thesis: *Exotic superfluid states of ultra-cold Fermi gases*, Tomi Paananen, University of Helsinki, Finland, 2009.

PhD thesis: *Fermionic superfluidity in optical lattices*, Timo Koponen, University of Jyväskylä, Finland, 2008.

Opponent at theses defenses

PhD thesis: *Protecting quantum entanglement by repetitive measurement*, Cornelis Christiaan Bultink, Delft University of Technology, Netherlands, 2020

PhD thesis: *Quantum Systems in Cold Atoms and Superconducting Circuits*, Niels Jakob Loft, Aarhus University, Denmark, 2019

Licentiate thesis: *Superfluid Hydrodynamics of Spinor Bose Gases*, Dmitry Kobayakov, Umeå University, Sweden, 2012.

Raised major academic scholarships and grants (> 40 000€)

- CI in Future Makers project, Technology Industries of Finland Centennial Foundation and Jane and Aatos Erkko Foundation, 2022 (870 k€, 3 years, 290 k€/year)
- Co-Investigator in a Business Finland Co-Innovation project QuTI, 2021 (600 k€ for QCD as part of multimillion project, 3 years, 200 k€/year)
- PI in an Academia-Industry Tandem, The Finnish Research Impact Foundation, 2021 (172 k€, 2 years, 86 k€/year).

- PI in a research project consortium, The Scientific Advisory Board for Defense, Ministry of Defense, 2021 (77 k€, two years, part of 217 k€ consortium).
- Co-investigator in QuantERA project EQUIP, 2021 (not receiving funding)
- PI in an Academia-Industry Tandem, The Finnish Research Impact Foundation, 2020 (193 k€, 2 years, 97 k€/year).
- PI in ERC Proof of Concept Grant, European Research Council, 2020 (150 000€, 18 months, 100 k€/year)
- PI in a project of ICT 2023: Beyond 5G Systems call, Academy of Finland, 2018 (290 000€, 3 years, 97 000€/year, part of 580 k€ consortium)
- PI in a project QMiCS of the first call in the FET Flagship on Quantum Technologies, European Commission, 2018 (415 k€, 3 years, part of 3.0 M€ consortium)
- PI in Academy of Finland Centre of Excellence in Quantum Technology, Academy of Finland, 2018 (171 k€ for the first two years of eight-year funding, 86 k€/year, part of 8 M€ consortium)
- PI in a project grant of RADDESS call, Academy of Finland, 2017 (333 k€, 4 years, part of 1.0 M€ consortium)
- CI in Future Makers project (head of the working group), Technology Industries of Finland Centennial Foundation and Jane and Aatos Erkko Foundation, 2017 (950 k€, 3 years, 320 k€/year)
- PI in Key Project Grant, Academy of Finland, 2016 (300 k€, 2 years, 150 k€/year)
- PI in ERC Proof of Concept Grant, European Research Council, 2016 (150 000€, 18 months, 100 k€/year)
- PI in ERC Consolidator Grant, European Research Council, 2016 (1 950 000€, 5 years, 390 000€/year)
- PI in a H2020 project e-SI-Amp, European Metrology Programme for Innovation and Research, 2015 (95 k€, 4 years, part of a 1.7 M€ consortium)
- PI in a project of ICT 2023: ICT sensors and actuators call, Academy of Finland, 2015 (133 000€, 2 years, 66 000€/year, part of 680 k€ consortium)
- PI in a Research Excellence Grant (REG), European Metrology Research Programme, 2013 (259 000€, 3 years, 86 000€/year, integral REG in a multi-million consortium)
- PI in the research expenses of the Academy Research Fellow, Academy of Finland, 2013 (140 000€, 2 years, 70 000€/year)
- PI in the ERC Starting Grant, European Research Council, 2011 (1 500 000€, 5 years, 300 000€/year)
- PI in a grant strengthening the competitiveness of ERC applicants, Academy of Finland, 2011 (120 000€, 1 year)
- PI in a project grant for QCD group, Academy of Finland, 2010 (384 000€, 4 years, 78 000€/year)
- PI in Academy Research Fellow grant, Academy of Finland, 2010 (390 000€, 5 years, 78 000€/year)
- PI in the research expenses of the Academy Research Fellow, Academy of Finland, 2010 (218 000€, 3 years, 73 000€/year)

- PI in project grant for QCD group, Emil Aaltonen Foundation, 2008 (200 000€, 3 years, 66 000€/year)
- PI in post doctoral researcher's project, Academy of Finland, 2007 (189 000€, 3 years, 63 000€/year)
- PI in annual scholarship for doctoral and post-doctoral research, The Finnish Cultural Foundation, 2004 (48 000€, 3 years, 16 000€/year)

Other major academic scholarships and grants for the QCD group members

- Center for Quantum Engineering grant of Jan Goetz, Aalto University, 2018 (40 k€ from a total of 80 k€ for the whole project, 1.5 years)
- Academy project of Kuan Yen Tan, Academy of Finland, 2018 (372 k€, 4 years, 93 k€/year)
- Marie Skłodowska-Curie Individual Fellowship of Jan Goetz, 2018 (180 000 €, 2 years, 90 000/year)
- Academy Research Fellow of Kuan Yen Tan, Academy of Finland, 2017 (434 000€, 5 years, 87 000€/year + 300 000€ of research expenses for the first 3 years)
- Key Project Grant of Russell Lake, Academy of Finland, 2016 (300 k€, 2 years, 150 k€/year)
- Postdoctoral researcher's project of Kuan Yen Tan, Academy of Finland, 2014 (260 000€, 3 years, 87 000€/year)
- Postdoctoral researcher's project of Russell Lake, Academy of Finland, 2013 (266 000€, 3 years, 89 000€/year)
- Postdoctoral researcher's project of Jukka Huhtamäki, Helsinki University of Technology, 2008 (180 000€, 3 years, 60 000€/year)
- QCD group has been a funded partner in the Academy of Finland Centre of Excellence for Computational Nanoscience (COMP) for 2007–2017
- QCD is a funded partner in in the Academy of Finland Centre of Excellence in Quantum Technology (QTF) for 2018–2025

Personally raised minor academic scholarships and grants (< 40 000€)

- Organization of a Finnish-Japanese seminar: Topological Structures in Quantum Matter, Academy of Finland, 2017 (5125€)
- Travel grant for attending the conference Quantum Dynamics in Dots and Junctions, Riva del Garda, Italy, Vilho, Yrjö, and Kalle Väisälä Foundation, 2008 (1600€)
- Travel grant for visiting UCB and USC, 2007, Magnus Ehrnrooth Foundation, 2006 (2600€)
- Travel grant for attending the Quantum Gases conference, Paris, Finnish Academy of Science and Letters, Vilho, Yrjö, and Kalle Väisälä Foundation, 2006 (1000€)
- Travel grant for attending the Asian Conference on Quantum Information Science 2005, Magnus Ehrnrooth Foundation, 2006 (2500€)

- Travel grant for visiting the Whaley group at University of California, Berkeley, Finnish Academy of Science and Letters, Vilho, Yrjö, and Kalle Väisälä Foundation, 2005 (3500€)
- Scholarship for a doctoral degree under 30 years of age, Helsinki University of Technology, 2005 (3000€)
- Grant for post-doctoral research at University of California, Berkeley, Academy of Finland, 2004 (5500€)
- Personal grant, Jenny and Antti Wihuri Foundation, 2004 (3000€)
- Travel grant for the conference EQIS 2004 in Tokyo, Japan, The Research Foundation of Helsinki University of Technology, (4000€)
- Scholarship for fast completion of the doctoral courses, Helsinki University of Technology, 2003 (1000€)
- PI in annual scholarship for doctoral studies, The Foundation of Technology, 2003 (15000€)
- Scholarship for fast graduation, Helsinki University of Technology, 2002 (840€)
- Scholarship for advanced students, HUT Student Union, 2001 (840€)

Venture capital and industrial grants (different roles)

- Series A1 funding round for IQM Finland Oy, one of the four Co-Founders, several investors, 2020 (39 000 000€)
- R&D grant for IQM Finland Oy, co-applicant, Business Finland, 2020 (2 820 000€)
- European Innovation Council grant and equity component for IQM, one of the four Co-Founders, 2020 (2 500 000€ grant + 15 000 000€ equity component)
- Seed funding for IQM Finland Oy, one of the four Co-Founders, several investors, 2019 (11 450 000€)
- R&D grant for IQM Finland Oy, main applicant, Business Finland, 2019 (459 500€)

Language skills

Finnish, English, Swedish, and German

Leadership and media training

Future Research Leaders Program, Aalto University, 11.2010-9.2011

Aalto Leaders' Network, 11.2012-2015

Aalto Media Training (publicity seminar, writing clinic, TV-interview training), 10.2013

Pedagogical training

Tools for teaching, 1 day, Aalto University, 2013

PED-131.1000, *A! Peda Intro*, 5 ECTS, 2013

PED-131.2210, *Teaching at Aalto University II: Course design*, 5 ECTS, 2014

Demonstration lectures

- Demonstration lecture *Quantum harmonic oscillator* for an interview of a tenure track position, 16.2.2018, Department of Applied Physics, Aalto University
- Demonstration lecture *Post CMOS transistors* for an interview of a tenure track position, 13.1.2017, Department of Electronics and Nanoengineering, Aalto University, grade: good
- Demonstration lecture *Temperature: from macroscopic to mesoscopic systems* for an interview of a tenure track position, 22.10.2013, Olli V. Lounasmaa Laboratory, Aalto University, grade: very good
- Demonstration lecture *Phenomenological theory of superconductivity* for an interview of a professorship in theoretical physics, 13.9.2013, Department of Physics and Astronomy, University of Turku
- Demonstration lecture *X-ray methods in condensed matter studies* for an interview of a tenure track position, 3.6.2013, Department of Applied Physics, Aalto University, grade: good
- Demonstration lecture *Ginzburg-Landau model and the Josephson effect in superconductors* for an interview of a professorship in experimental condensed-matter physics, 27.4.2012, Department of Physics and Astronomy, University of Turku
- Demonstration lecture *Bra-ket notation: what is the wavefunction really?* for an interview of a tenure track position, 12.1.2012, Department of Applied Physics, Aalto University
- Demonstration lecture *Free-electron model for electrons in solids* for an interview of a professorship in experimental condensed-matter and materials physics, 12.5.2010, Department of Applied Physics, Aalto University, grade: good
- Demonstration lecture *Quantum Gates* for the title of docent in Quantum Computing, 21.12.2006, Department of Engineering Physics and Mathematics, TKK, grade: excellent

Curriculum development

Director of the degree program Aalto Bachelor's Programme of Science and Technology, 1.8.2019-

Responsible professor of the major and minor of Quantum Technology in Aalto Bachelor's Programme of Science and Technology, 10.5.2019-

In-class teaching experience

- Lectures on *Introduction to quantization of electrical circuits and superconducting qubits* in Summer School on Engineered Quantum Systems, Helsinki, Finland, 2019
- Lectures on *Quantum electric circuits: basis for engineered quantum technological devices* in Quantum Connections in Sweden 6: Physics Summer School on Quantum Frontiers, Stockholm, Sweden, 2019
- Lectures on *Knots, monopoles, and skyrmions in a quantum order parameter* in Quantum Connections in Sweden 6: Physics Summer School on Quantum Frontiers, Stockholm, Sweden, 2019
- Lectures on *Superconducting Quantum Computer* in QuICC Summer School, York, UK, 2018
- Lecturer of course *Kvanttilaskennan perusteet*, 1–2 ECTS, 2018

Guest lecturer on course *ELEC-C3220 Kvantti-ilmiot*, 2018
Lecturer of course *Introduction to Quantum Computing*, 1–2 ECTS, 2017
Lecturer of course *Superconducting Quantum Computer* in Jyväskylä Summer School, 1 ECTS, 2016
Lecturer on *Low-Temperature Quantum Nanoelectronics* in the course Advanced Materials of Helsinki Summer School, 2012
Lecturer of the lecture series *Ultra-cold Bose gases and dilute Bose-Einstein condensates* in Nordita Winter School on Condensed Matter Physics, 2011.
Lecturer of the course *Quantum mechanics II*, Tfy-44.130, 6 ECTS, 2008.
Assistant on a seminar course Tfy-55.172 “Quantum gases”, 2004.
Assistant on a course Mat-1.402 Matematiikan peruskurssi L2 , 2001.
Assistant on a course Mat-1.401 Matematiikan peruskurssi L1 , 2000.

Supervised theses (all co-supervised thesis marked individually)

1. PhD thesis: *Bolometric techniques for circuit quantum electrodynamics*, Roope Kokkonen, 2020. (Co-supervised with Dr. Jean-Philippe Girard.)
2. PhD thesis: *Photon-assisted tunneling and charge transport in hybrid circuits*, Joni Ikonen, 2020. (Co-supervised with Dr. Kuan Yen Tan.)
3. PhD thesis: *Photon-assisted tunneling and charge transport in hybrid circuits*, Maté Jenei, 2020. (Co-supervised with Dr. Kuan Yen Tan.)
4. PhD thesis: *Creation and dynamics of topological structures in Bose-Einstein condensates*, Tuomas Ollikainen, 2019. (Co-supervised with Prof. David Hall.) (*The best PhD thesis of the year* award from Aalto University School of Science.)
5. PhD thesis: *Control of heat in superconducting microwave circuits*, Matti Partanen, 2019.
6. PhD thesis: *Quantum knots and monopoles*, Konstantin Tiurev, 2017. (*The best PhD thesis of the year* award from Department of Applied Physics and another one from School of Science.)
7. PhD thesis: *Towards calorimetric detection of individual itinerant microwave photons*, Joonas Govenius, 2016.
8. PhD thesis: *Single-electron pumping in silicon quantum dots*, Tuomo Tantt, 2016.
9. PhD thesis: *Magnetic-Monopole Analogues and Topological Textures in Dilute Bose–Einstein Condensates*, Emmi Ruokokoski, 2015. (*The best PhD thesis of the year* award from Department of Applied Physics and another one from School of Science.)
10. PhD thesis: *Control of Open Quantum Systems*, Juha Salmilehto, 2014.
11. PhD thesis: *Integration of normal-metal components into the framework of circuit quantum electrodynamics*, Philip Jones, 2013.
12. PhD thesis: *Electrostatic control of quasiparticle transport in superconducting hybrid nanostructures*, Olli-Pentti Saira, 2013. (grade: *passed with distinction = in the top 10%*. *The best PhD thesis of the year* award from School of Science. Co-supervised with Prof. Jukka Pekola.)
13. PhD thesis: *Exotic Vortex Structures in Dilute Bose–Einstein condensates*, Pekko Kuopanportti, 2012. (grade: *passed with distinction = in the top 10%*)

14. PhD thesis: *Topological defects and phase transitions in dilute Bose gases*, Ville Pietilä, 2010. (grade: *passed with distinction = in the top 10%*)
15. PhD thesis: *Stability and dynamics of quantized vortices in gaseous Bose-Einstein condensates*, Jukka Huhtamäki, 2008. (grade: *passed with distinction = in the top 10%*)
16. PhD thesis: *From the Control of Quantum Systems to Multiqubit Logic*, Ville Bergholm, 2007.
1. Licentiate thesis: *Entanglement-Enhanced Quantum Key Distribution*, Olli Ahonen, 2009.
1. Master's thesis: *Island-free superconducting qubit*, Eric Hyyppä, 2020. (Co-supervised with Jani Tuorila and Juha Hassel. Thesis award by the Finnish Physical Society.)
2. Master's thesis: *Real-time detection of microwave pulses with a superconducting proximity bolometer*, Kassius Kohvakka, 2020. (Co-supervised with Roope Kokkonen and Jean-Philippe Girard. Thesis award by Aalto School of Science, 4 awards were given out of 400 theses.)
3. Master's thesis: *On-demand photon generation for quantum backscatter communication*, Aarne Keränen, 2020. (Co-supervised with Joni Ikonen.)
4. Master's thesis: *Simulations of Josephson junction arrays driven with a mode-locked laser*, Katja Kohonpää, 2020. (Supervised in practice by Antti Kemppinen and Emma Mykkänen.)
5. Master's thesis: *Unconditional reset of a readout resonator by multichannel driving*, András Márton Gunyhó, 2020. (Co-supervised with Joni Ikonen.)
6. Master's thesis: *Bath-induced persistent Rabi oscillations in a qubit*, Jesper Ilves, 2019. (Co-supervised with Jan Goetz.)
7. Master's thesis: *Radio frequency quantum-circuit refrigerator*, Arto Viitanen, 2019.
8. Master's thesis: *Exact Quantum Dynamics of Driven Dissipative Resonators*, Akseli Mäkinen, 2018. (Co-supervised with Joni Ikonen.)
9. Master's thesis: *Reaction coordinate approach to non-Markovian dynamics in the spin-boson model*, Santeri Kaupinmäki, 2018.
10. Master's thesis: *Characterizing superconducting qubits*, Sofia Patomäki, 2017. (This thesis obtained the exceptional grade *Laudatur* and the corresponding thesis award by the Department of Physics, University of Helsinki.)
11. Master's thesis: *Phase gate for microwave photons*, Roope Kokkonen, 2016.
12. Master's thesis: *Optimal quantum driving for single-qubit gates*, Joni Ikonen, 2016. (This thesis obtained the exceptional grade *Laudatur* and the corresponding thesis award by the Department of Physics, University of Helsinki.)
13. Master's thesis: *Two-qubit gates in a microwave photonic quantum computer*, Tuomas Ollikainen, 2015.
14. Master's thesis: *Quantum-limited heat conduction over macroscopic distances*, Matti Partanen, 2014.
15. Master's thesis: *Quantum computing with itinerant microwave photons*, Janne Kokkala, 2013.
16. Master's thesis: *Non-equilibrium fluctuation relations in driven single-electron devices*, Tuomo Tantt, 2012.
17. Master's thesis: *Field-Programmable Gate Array Card for Readout and Control of Cryoelectronics*, Evgenia Bogdanova, 2012.

18. Master's thesis: *Monopoles in Dilute Bose-Einstein Condensates*, Emmi Ruokokoski, 2011.
19. Master's thesis: *Beyond the lowest-order approximation for decoherence in steered quantum evolution*, Juha Salmilehto, 2010.
20. Master's thesis: *Phosphorus dopant qubits in silicon*, Juha-Matti Pirkkalainen, 2009.
21. Master's thesis: *Creation and properties of multiply quantized vortices in dilute Bose-Einstein condensates*, Pekko Kuopanportti, 2008.
22. Master's thesis: *Thermal effects in Coulomb-blockaded nanostructures with superconductor-insulator-normal metal junctions*, Olli-Pentti Saira, 2007. (*The Best Master's thesis of the year award*, Helsinki University of Technology. Co-supervised with Prof. Jukka Pekola.)
23. Master's thesis: *Quantum Cryptography Protocol Based on Sending Entangled Qubit Pairs*, Olli Ahonen, 2007.
24. Master's thesis: *Vortex clusters and topological defects in dilute Bose-Einstein condensates*, Ville Pietilä, 2006.
25. Master's thesis: *Complexity analysis of quantum circuits*, Laura Koponen, 2004. (Co-supervised with Dr. Juha Vartiainen.)
1. Special Assignment: *Quantum-Circuit Refrigerator for Active Qubit Reset*, Tuomas Uusnäkki, 2021. (Co-supervised with Timm Mörstedt)
2. Special Assignment: *Zeeman effect in the current-voltage characteristics of hybrid single-electron transistors*, Heidi Kivijärvi, 2020. (Co-supervised with Sasu Tuohino)
3. Special Assignment: *Numerically exact simulations of qubit initialization with adiabatic decoupling*, Kassius Kohvakka, 2019. (Co-supervised with Jani Tuorila)
4. Special Assignment: *Electromagnetic simulations for quantum computing applications*, Aarne Keränen, 2018. (Co-supervised with Jan Goetz)
5. Special Assignment: *Creation and dynamics of polar-core vortices in spin-1 Bose-Einstein condensates*, Mikael Myllymäki, 2018. (Co-supervised with Tuomas Ollikainen)
6. Special Assignment: *Characterization of a graphene microwave bolometer*, Iiro Sallinen, 2018. (Co-supervised with Roope Kokkonen)
7. Special Assignment: *Randomized benchmarking of single-qubit gates*, András Gunyho, 2018. (Co-supervised with Jan Goetz)
8. Special Assignment: *Calibration of amplifier gain using normal-metal-insulator-superconductor junctions*, Eric Hyyppä, 2018.
9. Special Assignment: *Quantum-circuit refrigerator coupled to two parallel resonators*, Arto Viitanen, 2018. (Co-supervised with Matti Silveri)
10. Special Assignment: *Quantum-circuit refrigerator coupled to superconducting qubits*, András Gunyhó, 2017. (Co-supervised with Matti Silveri)
11. Special Assignment: *Microwave photodetector based on silver proximity Josephson junctions*, Niko Oinonen, 2017. (Co-supervised with Matti Partanen)
12. Special Assignment: *Dynamics of quasiprobability distributions in the Jaynes-Cummings model*, Akseli Mäkinen, 2017. (Co-supervised with Joni Ikonen)
13. Special Assignment: *Quantum driving of a superconducting qubit using a transmission line*, Jesper Ilves, 2017. (Co-supervised with Joni Ikonen)

14. Special Assignment: *Thermal bifurcations in a microwave photon detector*, Ari-Pekka Soikkeli, 2015. (Co-supervised with Joonas Govenius)
15. Special Assignment: *Monopoles in spin-2 Bose-Einstein condensates*, Tuomas Ollikainen, 2014. (Co-supervised with Emmi Ruokokoski)
16. Special Assignment: *Creation and dynamics of two-dimensional skyrmions in antiferromagnetic spin-1 Bose-Einstein condensates*, Tuomas Ollikainen, 2013. (Co-supervised with Emmi Ruokokoski.)
17. Special Assignment: *Heat Transport in a Superconducting Microwave Cavity*, Matti Partanen, 2012.
18. Special Assignment: *Voltage-biased Cooper pair pumps*, Janne Kokkala, 2012.
19. Special Assignment: *Observation of heat transfer mechanisms at sub-kelvin temperatures*, Matti Partanen, 2011.
20. Special Assignment: *Cooper pair pumping in the presence of decoherence*, Juha Salmilehto, 2009.
21. Special Assignment: *Topologically protected superconducting qubits*, Juha Salmilehto, 2009.
22. Special Assignment: *Elementary excitations in attractively interacting two-component Bose-Einstein condensates*, Pekko Kuopanportti, 2008.
23. Special Assignment: *Synthesis of hybrid quantum logic circuits by a matrix decomposition*, Tony Liimatainen, 2008.
24. Special Assignment: *Implementation of holonomic quantum computation in Josephson devices*, Juha-Matti Pirkkalainen, 2007.
25. Special Assignment: *Qubit dynamics in a noisy environment*, Olli-Pentti Saira, 2007.
26. Special Assignment: *Decompositions of permutation operators for quantum computers*, Olli-Pentti Saira, 2006.
27. Special Assignment: *Stability of stationary vortex rings in dilute Bose-Einstein condensates*, Juha-Matti Pirkkalainen, 2006.
28. Special Assignment: *Suppression of errors due to $1/f$ noise in one-qubit rotations*, Pekko Kuopanportti, 2006.
1. Bachelor's Thesis: *Estimation of the energy resolution of a SNS-junction bolometer with single-pulse photon detection*, Valteri Torsti, 2021. (Co-supervised with Jean-Philippe Girard and Giacomo Catto)
2. Bachelor's Thesis: *Measurement of the Lamb Shift of a Lumped-Element Resonator*, Aleksi Kononen, 2021. (Co-supervised with Arto Viitanen and Giacomo Catto)
3. Bachelor's Thesis: *Use of a single circuit for a superconducting qubit and its readout*, Olavi Kiuru, 2021. (Co-supervised with Suman Kundu)
4. Bachelor's Thesis: *Modeling dielectric loss in superconducting coplanar-waveguide resonators*, Veikka Taka, 2020. (Co-supervised with Valteri Lahtinen)
5. Bachelor's Thesis: *Electromagnetic simulation of superconducting-qubit-resonator coupling*, Niko Savola, 2020. (Co-supervised with Giacomo Catto and Timm Mörstedt)
6. Bachelor's Thesis: *Control of Qubit Lifetime with a Quantum-Circuit Refrigerator*, Fredrik Ihamuotila, 2020. (Co-supervised with Timm Mörstedt and Joni Ikonen)

7. Bachelor's Thesis: *Characterization and charge detection methods for silicon quantum dots*, Heidi Kivijärvi, 2019. (Co-supervised with Maté Jenei)
8. Bachelor's Thesis: *Precise Characterization of Superconducting Microwave Resonators*, Otto Solatie, 2019. (Co-supervised with Johannes Heinsoo)
9. Bachelor's Thesis: *Traceable microwave power measurement at femtowatt level*, Eemil Visakorpi, 2019. (Co-supervised with Roope Kokkonen)
10. Bachelor's Thesis: *Simulation of a tunable coupler for implementing two-qubit gates between transmon qubits*, Severi Rissanen, 2018. (Co-supervised with Jan Goetz)
11. Bachelor's Thesis: *Pulsed quantum-circuit refrigeration*, Kassius Kohvakka, 2018. Co-supervised with Matti Partanen.
12. Bachelor's Thesis: *Time-dependent behavior of a phase shifter for microwave photons*, Osama Abuzaid, 2018. Co-supervised with Roope Kokkonen.
13. Bachelor's Thesis: *Single-charge pumping with a silicon quantum dot*, Elin Nyman, 2018. Co-supervised with Maté Jenei.
14. Bachelor's Thesis: *Creation of a two-quantum vortex in quadrupole–Ioffe-configuration trap*, Henrik Nortamo, 2017. Co-supervised with Tuomas Ollikainen.
15. Bachelor's Thesis: *Nanosecond Operation of a Quantum-Circuit Refrigerator*, Eric Hyppä, 2017. Co-supervised with Kuan Yen Tan.
16. Bachelor's Thesis: *Characterization of Xmon qubits*, Aarne Keränen, 2017. Co-supervised with Jan Goetz.
17. Bachelor's Thesis: *Critical current in superconductor–normal-metal–superconductor junctions*, Niko Oinonen, 2017. Co-supervised with Matti Partanen.
18. Bachelor's Thesis: *Measurement of the Noise Equivalent Power of an Attowatt Microwave Detector*, András Gunyhó, 2017. Co-supervised with Joonas Govenius.
19. Bachelor's Thesis: *Charge capture mechanisms in quantum dot single-electron pumps*, Heikki Timonen, 2016. Co-supervised with Maté Jenei.
20. Bachelor's Thesis: *Deterministic creation of tailored vortex structures using three-dimensional phase imprinting*, Teijo Väärä, 2015. Co-supervised with Emmi Ruokokoski and Tuomas Ollikainen.
21. Bachelor's Thesis: *Photonic heat conduction in a microwave transmission line*, Miika Mäkelä, 2015. Co-supervised with Matti Partanen.
22. Bachelor's Thesis: *Single-electron pumping with a silicon quantum dot*, Akseli Mäkinen, 2015. Co-supervised with Tuomo Tantt.
23. Bachelor's Thesis: *Microwave response of superconductor–normal metal–superconductor junctions*, Roope Kokkonen, 2015. Co-supervised with Russell Lake.
24. Bachelor's Thesis: *Tunable phase gate for microwave photon qubits*, Sakari Saarenpää, 2014. Co-supervised with Russell Lake.
25. Bachelor's Thesis: *Quantum driving with a coherent state in the Jaynes–Cummings model*, Sofia Patomäki, 2014. Co-supervised with Elsi-Mari Laine.
26. Bachelor's Thesis: *Counting charge transitions in a single-electron pump*, Kukka-Emilia Huhtinen, 2014. Co-supervised with Tuomo Tantt.
27. Bachelor's Thesis: *Implementation of data acquisition and preprocessing with a field-programmable gate array*, Elsa Mannila, 2014.

28. Bachelor's Thesis: *Fabrication and cryogenic measurements of nanowires grown with focused ion and electron beams*, Antti Mäkinen, 2013.
29. Bachelor's Thesis: *Optimization of nearly adiabatic steering of two-level quantum systems*, Juha Kreula, 2011.
30. Bachelor's Thesis: *Quantum gate decompositions of many-particle state preparations for simulations of quantum chemistry*, Tuomo Tantt, 2009.
31. Bachelor's Thesis: *Nonadiabatic charge pumping in superconducting circuits*, Janne Kokkala, 2009.

Present members in the Quantum computing and devices (QCD) group

- Mikko Möttönen, Docent, group leader (since Oct 2007)
- Vasilii Vadimov, PhD, postdoctoral researcher
- Roberto Zamora-Zamora, PhD, postdoctoral researcher
- Suman Kundu, PhD, postdoctoral researcher
- Jian Ma, PhD, postdoctoral researcher
- Wallace Teixeira, postdoctoral researcher
- Florian Blanchet, postdoctoral researcher
- Wei Liu, part-time postdoctoral researcher
- Arto Viitanen, MSc, PhD student
- Timm Mörstedt, MSc, PhD student
- Giacomo Catto, MSc, PhD student
- Sasu Tuohino, MSc, PhD student
- Marton Gunyho, MSc, PhD student
- Miika Rasola, MSc, PhD student
- Aarne Keränen, MSc, PhD student
- Aashish Sah, MSc, PhD student
- Rostislav Duda, MSc, PhD student
- Kassius Kohvakka, MSc, part-time PhD student
- Toni Annala, visiting PhD student
- Joonas Vuojamo, BSc, MSc thesis student
- Heikki Suominen, BSc, MSc thesis student
- Heidi Kivijärvi, BSc, summer student
- Tuomas Pyhäranta, BSc, summer student
- Tuomas Uusnäkki, BSc, summer student
- Olavi Kiuru, summer student
- Valtteri Torsti, summer student

Students currently under supervision outside QCD group

- Akseli Mäkinen, MSc, PhD student/Quantum Engineer, IQM Finland Oy

- Fabian Marxer, MSc, PhD student/Quantum Engineer, IQM Finland Oy
- Jami Rönkkö, MSc, PhD student/Quantum Engineer, IQM Finland Oy
- Sinan Inel, PhD, PhD student/Quantum Engineer, IQM Finland Oy
- Eric Hyypä, BSc, PhD student/Quantum Engineer, IQM Finland Oy

Postdocs supervised and the next job

1. Jean-Philippe Girard, Cryoengineer, Bluefors Ltd.
2. Chengyu Yan, Associate Professor, Huazhong University of Science and Technology, China
3. Valtteri Lahtinen, Research Fellow, Aalto University, Finland
4. Wei Liu, Quantum Engineer, IQM, Finland
5. Vasilii Sevriuk, Quantum Engineer, IQM, Finland
6. Jani Tuorila, Quantum Engineer, IQM, Finland
7. Johannes Heinsoo, Quantum Engineer, IQM, Finland
8. Tianyi Li, Quantum Engineer, IQM, Finland
9. Leila Najafi, cleanroom engineer, VTT, Finland
10. Dibyendu Hazra, R&D staff, Microsoft, Finland
11. Matti Silveri, Group Leader at University of Oulu, Finland
12. Jan Goetz, Marie Skłodowska-Curie Fellow at Aalto University, Finland
13. Visa Vesterinen, Staff Scientist at VTT Technical Research Centre of Finland
14. Kuan Yen Tan, Academy Research Fellow at Aalto University, Finland
15. Shumpei Masuda, Tokyo Medical University (assistant professor), Japan
16. Russell Lake, postdoc at NIST and University of Boulder, USA
17. Ivan Savenko, Center for Theoretical Physics of Complex Systems, Republic of Korea (tenure track researcher)
18. Elsi-Mari Laine, University of Turku (postdoc)
19. Harri Mäkelä, Finnair Oy, Finland
20. Ville Pietilä, Varian Medical Systems, Finland
21. Paolo Solinas, SPIN – CNR (tenure track researcher), Genova, Italy
22. Jukka Huhtamäki, Eigenor Corporation, Finland
23. Yuichiro Mazusaki, NTT Research, Japan

Research Fellows and Staff Scientists supervised and the next job

1. Research Fellow Valtteri Lahtinen, CSO of quantum company Quanscient, Finland
2. Staff Scientist Matti Kalliokoski, University of Helsinki, permanent research staff
3. MSC Fellow Jan Goetz, CEO of quantum computer company IQM, Finland
4. Academy Research Fellow Kuan Yen Tan, CTO of IQM, Finland

Mentoring of students and research staff external to QCD group and IQM

1. Elmeri Rivasto, University of Turku, PhD student at the time of mentoring, 2020–2021

Organized scientific events

Member of Scientific Committee of *European Numerical Mathematics and Advanced Applications Conference 2019*, Delft University, 2019

Chair of the organizing committee of *Summer School on Engineered Quantum Systems*, Helsinki, 2019

Member of Program Committee of *Quantum Thermodynamics*, Aalto University, 2019

Main organizer of *International Workshop on Strong Coupling Effects in Open Quantum Systems*, Aalto University, 2018.

Main organizer of *International Workshop on Topological Structures in Quantum Matter*, Aalto University, Espoo, 2017.

Main organizer of the international summer school *Introduction to Quantum Systems and Devices*, Aalto University, Espoo, 2013.

Co-organizer of the *Symposia on superfluids under rotation: vortices, superfluid dynamics, and quantum turbulence*, Low Temperature Laboratory, Aalto University, Espoo, 2010.

Main organizer of the international summer school *Introduction to Quantum Systems and Devices*, Helsinki University of Technology, Espoo, 2008.

Session chair in 6 international conferences and workshops, 2013–

Columns in the main national newspaper Helsingin Sanomat

1. *Elon Musk pelkää turhaan tekoälyä*, 23.11.2015
2. *Tutkimusrahoista säästäminen torppaa haaveet ja aiheuttaa katastrofaalisia kerrannaisvaikutuksia*, 26.10.2015
3. *Nobelistin kannoilla*, 5.10.2015.
4. *Vapaan tahdon olemassaolon mysteeri on arjessa merkityksetön – tärkeintä on jakaa hyvää oloa*, 24.8.2015.
5. *Suomalaiset tekevät maailman parhaat superpakastimet*, 27.7.2015.
6. *Myydään: magneettinen monopoli*, 29.6.2015.
7. *Kilon mallilla voi heittää vesilintua*, 1.6.2015.
8. *Osta hyvä kvanttikone*, 4.5.2015.
9. *Kvantit pannaan töihin*, 30.3.2015.

Posts in the technology magazine Tekniikan Maailma

1. *Kvanttiherruus on ehkä saavutettu – Tekeekö tämä kvanttietokoneista ylivertaisia kaikessa?*, 26.9.2019
2. *Tiedätkö, miten kvanttietokone toimii? – Lukemalla tämän saat selville, miksi kubitti voi olla nolla ja ykkönen yhtä aikaa*, 1.8.2019
3. *Kvanttietokone kuluttaa sähköä ison kiukaan verran – ja juuri siksi se voi auttaa selättämään ilmastonmuutoksen*, 2.5.2019

Other Blog Posts and similar

1. [Mikko's Quantum Blog](#) (several posts)
2. [Our quantum results climbed to the top of the world](#), VTT Quantum Blog, 1.10.2020
3. [New record for bolometer noise and speed](#), Nature Research Device & Materials Engineering Community, 11.10.2019
4. [Quantum Technology – What is that?](#), VTT Technology Blog, 23.5.2019

Invited talks to elementary and high-school students

1. *Kvanttitietokone*, lesson to elementary-school students, Töölön yhteiskoulu, online, 14.10.2021
2. *Kvanttitietokone*, 1-hour lesson to high-school students, Haukilahden lukio, online, 12.10.2021
3. *Kvanttitietokoneen toiminta*, 1-hour lesson to elementary-school students, Maatullin ala-aste, online, 11.2.2021
4. *European Quantum Week Education Session*, lesson to high-school students, online, 3.11.2020
5. *Quantum Computer*, lesson to high-school students, Otaniemen lukio, Espoo, 3.3.2020
6. *How to utilize a quantum computer*, talk and challenge to high-school and elementary-school students for the Millennium Youth Prize 2020, Espoo, 7.2.2020
7. *Quantum Computer*, lesson to high-school students from Tampereen klassillinen lukio, Aalto University, Espoo, 16.1.2020
8. *Kvanttitietokone*, 1.5-hour talk to high-school students, Olarin lukio, Espoo, 16.11.2018
9. *Kvanttitietokone*, 1-hour talk to high-school students, Helsingin ranskalais-suomalainen koulu, Helsinki, 15.11.2018
10. *Kvanttitietokone*, 1.5-hour talk to high-school students, Etelä-Töölön lukio, Helsinki, 29.5.2018
11. *Kvanttitietokonetta rakentamassa*, 1.5-hour talk to high-school students, Etelä-Tapiolan lukio, Espoo, 3.4.2018
12. *Tarina kvanttitietokoneesta ja sen tekemisestä*, two one-hour talks to high-school students, Heureka, Vantaa, 12.10.2017
13. *Kvanteja*, two lessons to sixth graders, Iivisniemen koulu, 12.10.2017
14. *Sähkö*, double lessons to fourth graders, Kartanonkosken koulu, 1.12.2016
15. *Asiaa kvanttitietokoneista*, talk to high-school students, Ulvilan Lukio, 7.11.2016
16. *Tutkijan elämää*, two double lessons to fifth graders, Ilpoisten lukio, 7.10.2016
17. *Kvanttitietokoneet*, talk to high-school students, Aalto University, 20.10.2015
18. *Kysymyksiä*, [talk](#) to high-school students, Jyväskylän normaalikoulun lukio, 29.9.2015
19. *QCD Labs*, talk to high-school students on working as a researcher, Jyväskylän normaalikoulun lukio, 20.3.2015

Invited presentations to policy makers, general public, journalist, and business

1. *Take a quantum leap in Finland!*, host of the event Episode IV: Future Digitalization organized by Business Finland, 15.11.2021

2. *Kvanttitietokoneiden aikakausi*, invited talk in an event Kaikki liikkeessä 2030 organized by Finnish Transport and Communications Agency, 9.11.2021
3. How an International Quantum-Computer Company Rose from the North and What Are They Doing?, invited talk in an event Science meets Industry: Quantum Computing by BW_i, online, 21.10.2021.
4. *Kvanttitietokoneiden kehityspolku ja tulevaisuuden mahdollisuudet*, invited talk in the 70th-year birthday seminar of Anita Mikkonen and Pekka Neittaanmäki, University of Jyväskylä, Broad casted by Järviradio (live and recorded), 8.10.2021
5. *Kvanttitietokone käytännössä*, invited keynote talk in an event CIO Forum by Tivi, 5.10.2021
6. *Kvanttitietokone ja sen sovellukset yritysmaailmassa*, invited keynote talk and Q&A in an event Future of ICT by Telia, 9.9.2021
7. *How to Gain Financing for your Quantum Start-Up*, invited talk and Q&A in an event Quantum AI & Machine Learning, 8.9.2021
8. *Kurkistus kvanttitietokoneiden maailmaan*, invited studia generalia talk in the 30th Jyväskylä Summer School, online, 11.8.2021
9. *Quantum Computer*, invited talk in Tech Spotlight series for all staff of NTT Data Romania, online, 23.4.2021
10. *Kvanttitietokone*, invited lectures in the University for the Elderly (Ikääntyvien yliopisto), Jyväskylä/online, 21.4.2021
11. *Kvanttitietokoneen toiminta*, invited talk in the Kvantilla tulevaisuuteen webinar, Joensuu/online, 10.2.2021
12. *Kvanttitekhnologia*, invited talk in the annual meeting of AFCEA Helsinki Chapter, Helsinki, 25.11.2020
13. *Quantum Computer*, invited talk in the annual event of MAOL Espoo, Espoo, 10.9.2020
14. *Quantum Computer*, invited talk in the annual event of the Lukema network for high-school teachers, Espoo, 24.8.2020
15. *Quantum Computing in a Nutshell*, invited talk in quantum computing webinar: Finland – The Coolest Place to Develop Quantum Computing, Helsinki, 21.4.2020
16. *IQM We build quantum computers*, invited pitch at Physicists fair, Espoo, 11.2.2020
17. *Kvanttitietokone*, invited talk for Academic Association for Mathematics and Natural Sciences – MAL, Helsinki, 4.2.2020
18. *What is a quantum coputer*, invited talk at EyesOn event by Airbus, Jyväskylä, 30.1.2020
19. *Quantum Computer Development*, invited talk for the Finnish Metrological Institute, Helsinki, 20.1.2020
20. *Quantum Computer: concepts, development, and opportunities*, plenary talk and panel discussion at Future Tech Forum, Taiwan, 6.12.2019
21. *Quantum Computing*, talk at The European Big Data Value Forum, Helsinki, 16.10.2019
22. *Quantum Computer*, talk at Hel Tech meetup, Helsinki, 6.9.2019
23. *Kvanttitekhnologia: tietoisku*, talk for policy makers, Ministry of Defense, Helsinki, 28.8.2019
24. *Kvanttitekhnologia ja metrologia*, talk on the World Metrology Day event at MIKES, Espoo, 20.5.2019
25. *Kvanttitietokoneen kehityksen nykytila*, talk in the biannual seminar of the Signals Officers' Association, Helsinki, 11.2.2019

26. *Quantum computer and research in the QCD Labs*, talk for policy makers, Ministry of Defense, Helsinki, 9.11.2018
27. *Quantum computer and research in the QCD Labs*, talk for Aalto students at Aaltoes, Espoo, 27.9.2018
28. *Fysikkan monet tehtävät ja kvantti-infomaation vaikutus ilmiöiden selittämisessä*, public talk at a meeting of The Finnish Society for Natural Philosophy, Helsinki, 18.8.2018
29. *Quantum Computer*, invited talk at Future Data Summit, Espoo, 19.9.2018
30. *Superconducting quantum computer*, invited talk at Cryptodocks meetup, Helsinki, 30.5.2018
31. *Kvanttitietokone ja sen rakentaminen Suomessa*, invited talk at Bank of Finland, Helsinki, 5.4.2018
32. *Quantum Computers and Information security*, invited talk at Disobey (hacker conference), Helsinki, 12.2.2018
33. *Kvanttitietokone*, talk at the fall meeting of the Technology Industries of Finland, 15.11.2017
34. *Kansainvälisyys, ERC ja eurooppalainen tutkimusrahoitus*, invited interview by Jussi-Pekka Rantanen at Tiedefoorumi (Science Forum) organized by Academy of Finland and Ministry of Culture and Education, Turku, 6.6.2017.
35. *Topologiset rakenteet fysiikassa: vuoden 2016 Nobel-palkinnosta kvanttisolmuihin ja monopoleihin*, public talk at the annual meeting of The Finnish Society for Natural Philosophy, Helsinki, 21.3.2017
36. *Laatu mikrotasolla määrää aineen ihmeelliset ominaisuudet*, talk to general public on 2016 Nobel prize in Physics, Tampere City Library, 10.12.2016
37. *Quantum Technology*, talk to policy makers of research funding, Ministry of Education and Culture, 25.5.2016
38. *Johdatus kvanttitietokoneisiin ja -teknologiaan*, talk to policy makers on network security, Ministry of Finance, Helsinki, 28.4.2016
39. *Kvanttitietokone: turvallisuusuhka vai runsaudensarvi?*, public talk (the only university speaker), ICTexpo 2016, Helsinki, 27.4.2016
40. *Far Beyond 5G: the quantum information age*, talk to journalists at Elisa Academy (also live internet stream), 14.10.2015.
41. *Quantum Computers and Cryptography*, talk to policy makers on network security, Ministry of Finance, Helsinki, 10.4.2014

Other outreach and societal impact (see [QCD media room](#) for more links, the listed interviews are all personal individual interviews = no multiple counting of duplicate articles based on the same interview)

Spotlight [interview by Superconductor Week](#), 11.12.2021

Interview on [millikelvin microwave source](#) by [Helsingin Sanomat](#), [Shifted](#), [Tekniikka&Talous](#), [Tekniikan Maaailma](#), [Iltalehti](#), [Apu](#), 9.12.2021

Interview by [Helsingin Sanomat](#), [Kylmyyden maailman-ennätys syntyi ovelalla keinolla – Nyt päästiin muutaman kymmenen biljoonas-osan päähän ehdottomasta kylmyydestä](#), 27.10.2021.

Interview by [Financial Times](#), [Money's quantum time bomb](#), 23.7.2021.

Interview on KQCircuits circuit design software, featured in tivi.fi *Suomalaistutkijat tekivät jättiläisrakennuksen kvanttitietokoneissa – ”haluamme vauhdittaa innovaatioiden syntymistä”*, 21.6.2021.

Invited member in the EIC Coordinators Day panel "How to fundraise from VCs", 15.6.2021

Podcast [interview on quantum computers](#), program Kahvit Näppikselle, Aalto University, featured Helsingin Sanomat, 10.5.2021

Radio [interview on quantum computers](#), program Mikä maksaa, national radio Yle Radio 1, 15.4.2021

Interviews on quantum computers by Iltalehti (print and web), *Ihmeellinen kone*, 10.4.2021

Interview by Teknologiateollisuus, *"Ilman innovatiivisia ratkaisuja tuote tulee luultavasti olemaan huono" – Innovaatioprofessori Mikko Möttönen rakentaisi jouhevasti toimivia tiimejä*, 21.3.2021.

Interview by Tekniikka&Talous, *Vuoden teknologiajohtaja Jyrki Ovaska: Raha ei ratkaise tuotekehityksessä – tässä ovat kaikki voittajat*, 17.2.2021.

Panelist in Maria 01 Investor Collective: Scaling up Hardware Deep Tech Startups, 16.2.2021.

Interview by Talouselämä, *Otaniemessä, -273 asteen kylmyydessä kehitetään teknologiaa, joka voi mullistaa yritysten liiketoiminnan – "Se avaa suuren aikakauden"*, 8.1.2021

Interview by Helsingin Sanomat, *Järjenvastainen jääkaappi*, 4.1.2021.

Interview by Tekniikka&Talous, *Toimittajamme yritti ymmärtää, miten kvanttitietokone oikeasti toimii – katso lopputulos tästä supergraafista*, 15.12.2020

Interview and press release by Nokia Foundation on their Recognition Award 2020. News features by

Interview by Talouselämä, *Espoolainen kvanttitietokonestartup keräsi 39 miljoonan rahoituspotin*, 19.11.2020

Radio interview on quantum computers, national radio Yle Radio 16.11.2020

Interview by Maaseudun tulevaisuus on popularizing science, 16.11.2020

Interviews by Talouselämä and Kauppalehti, *Kvanttitietokonetta kehittävä suomalaisyhtiö porskuttaa – keräsi 39 miljoonaa rahoitusta*, 10.11.2020

Interview by Keski-suomalainen, *Suomalainen kvanttitietokoneita kehittävä IQM keräsi kymmenien miljoonien rahoituksen – reilu vuosi sitten työntekijöitä oli yksi, nyt määrä kasvaa yhdellä viikossa*, 10.11.2020

TV interview by MTV3 News, *Suomalaistutkijat kehittivät uuden nanokokoisen säteilyilmaisimen – tutkimuksen tulokset julkaistiin arvostetussa Nature-lehdessä*, 30.9.2020

Interviews by Helsingin Sanomat, Yle, Turun Sanomat, Shifted.eu, Tekniikan Maailma, Tekniikka&Talous, Graphenea, 30.9.2020

Interview by Capital (Germany), *Europas Quantenvorsprung*, 20.8.2020

Interview by Superconductor week, *IQM Receives €17.5 Million from EIC Accelerator*, 3.7.2020

Interview by Helsingin Sanomat, *Suurvallat ja -yritykset syytävät nyt miljardeja teknologiaan, jonka ennustetaan mullistavan maailman – Voisiko pienen budjetin Suomi ollakin kisan yllättäjä?*, 25.6.2020.

Interview by Talouselämä, *EU sijoittaa miljoonia suomalaiseen kvanttitietokoneita kehittävään startup-yritykseen – Teknologia voi tulevaisuudessa mullistaa ihmisten elämän*, 11.6.2020.

Interview by Helsingin Sanomat, *Suomalaiset kvantti-tietokoneiden kehittäjät keräsivät viikossa 40 miljoonan euron rahoituksen*, 11.6.2020.

Interview by Christina Anderson for quantum technology brief, *10 syytä miksi kvanttiteknologia pitäisi olla johdon ja hallituksen agendalla vuonna 2020*, 26.5.2020

Interview by Helsingin Sanomat, *Tutkijat onnistuivat todistamaan: Outo kaksiuolotteinen hiukkanen on todellakin olemassa*, 14.5.2020.

Interview by Tekniikan Maailma, *Kvanttikoneen jäähdytys etenee*, 8.5.2020.

Interview by Talouselämä, *Tämä kisa on pakko voittaa: Espoossa startup rakentaa kaiken mullistavaa kvanttietokoneita, jonka se haluaisi myydä myös Suomen valtiolle*, 6.3.2020.

Interview by Tekniikan Maailma, *Teema-artikkeli: Kvanttietokoneet*, 28.1.2020.

News and podcast about quantum computers by In Pace of Progress, Ville Vesterinen, 16.12.2019.

Interview by Helsingin Sanomat, *Arkijärjen vastainen laite tulee mullistamaan laskennan, ja suomalaisilla on valtti hihassa*, 3.11.2019.

Interview by TiVi, *Mikko Möttönen rakentaa Suomen ensimmäistä kvanttietokoneita*, 2.11.2019.

TV interview by MTV3 News, *Google saavutti kvanttiherruuden – suomalaisprofessori: Valtavan suuri edistysaskel*, 24.10.2019

Interview by Helsingin Sanomat, *IBM kiistää Googlen kvanttiherruuden, mutta turhaan, sanovat asiantuntijat*, 26.10.2019.

Interview by Helsingin Sanomat, *Nyt se on virallista: Kvanttietokone saavutti herruuden eli laski 200 sekunnissa sen, mikä olisi vienyt supertietokoneelta 10 000 vuotta*, 23.10.2019.

Interviews about QCD record-breaking bolometer by Tekniikan maailma and Tekniikka&Talous, 11.10.2019.

Interview by Tekniikan Maailma, *Tutkijat ratkaisivat tärkeän kvanttietokoneiden kehittämiseen liittyvän ongelman – ”Informaatiota voidaan välittää kvanttimekaanisesti”*, 25.9.2019.

Interview by Helsingin Sanomat, *Google väittää, että se saavutti virstanpylvään kvanttietokoneiden kehittämisessä – kilpailija IBM kiistää*, 25.9.2019.

Interview by Tekniikka&Talous, *Tutkimus vuoti verkkoon: Google uskoo saavuttaneensa kvanttiherruuden – suomalaistutkija: ”mahtava uutinen koko alalle, olettaen että se on totta”*, 24.9.2019.

Radio interview on quantum computers, *Kvanttiaikakausi on ovella - suomalainen startup-yritys kehittää kaupallista kvanttietokoneita Otaniemessä*, national radio Yle Radio 1 in program Tiedeykkönen, 6.9.2019.

Interview by Tiede, *Miksi Suomen kvanttisiru kiinnostaa?*, 6.8.2019.

Live TV interview by Rosa Kettumäki, *Suomalaisstartup sai 11 miljoonaa kvanttietokoneen kehittämiseen*, Yle aamu-TV, 10.7.2019

Interviews about the seed funding round of IQM by STT, Talouselämä, Kauppalehti, Tekniikan maailma, Keskisuomalainen, and Superconductor week. These news were featured around the globe in ~300 stories with total potential audience of 2 billion according to PR Newswire visibility report, 9.7.2019

Live radio interview by Sanna Pirkkalainen and Juho Blomberg/Yle Radio Suomi, 9.7.2019

Interview by Tekniikka&Talous, *Uusi askel kvanttiteknologian kehityksessä - Aalto-yliopistossa tiedetään, kuinka kvanttimuisti nollataan nopeasti*, 18.4.2019.

Interview by Helsinki Smart site, *The quantum computer will revolutionise data processing*, 1.4.2019

Radio interview by Juuso Pekkinen/Yle Puhe on quantum computers, 26.3.2019.

Interviews by [Tekniikka&Talous](#), [Yle](#), [Suomen Kuvalehti](#), Tekniikan Maailma, Apu, HelsinkiSmart, [Keskisuomalainen](#), Uudenmaan liitto, Superconductor Week, Ars Technica, and TiVi on fast qubit readout and/or Lamb shift, 11.3.2019

Interview by Physics World, *Studying impossible systems with analogues*, 14.8.2018

Interview by Ilta-Sanomat, *Tiesitkö nämä asiat salamaniskuista? 15 vastausta kesämyrskyjen keskelle*, 20.7.2018

Interview by Helsingin Sanomat, *$E = mc^2$ – mitä väliä?*, 12.6.2018

Interview by Skrolli magazine, *Suomen ensimmäinen kvanttietokone*, 1.6.2018.

Interview by Tähdet ja avaruus magazine, *Pallosalama rinnastui kvanttiluonnon*, 1.5.2018

Interview by Tivi, *"Kubitit näyttävät yksittäin toimivan hyvin" – näin kehitetään suomalaista tulevaisuuden tietokonetta*, 8.4.2018.

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Interviews on quantum knots given to [New Scientist](#), [de Volkskrant](#), [Digitoday](#), [Spektrum der Wissenschaft](#), [Wissenschaft Aktuell](#), [Gizmodo](#), [CSC Magazine](#), [Keskisuomalainen](#), [Helsingin Sanomat](#), [Tekniikka & Talous](#), [Iltalehti](#), [Apu](#), 18.1.2016

Video press release, [Tying Quantum Knots](#), Aalto University, 18.1.2016

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Interviewed for a [documentary](#) on a claimed perpetual machine, 25.10.2015

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Radio interview, [Toukokuu tarjoaa tähtiä, tähdenlentoja ja auringonpilkkujakin](#), national radio Yle Radio 1 in program Tiedeykkönen, 8.5.2015.

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Video press release, [Making Monopoles in the Lab](#), Aalto University, 30.4.2015

Radio interview, [Kvanttitietokone tulossa, kvanttisalaus jo totta](#), national radio Yle Radio 1 in program Tiedeykkönen, 22.8.2014.

Radio interview, [Elektronien pumppaamisella käytännön sovellus](#), national radio Yle Radio 1 in program Tiedeykkönen, 20.6.2014.

Press release, [Transistor pumps electrons one by one](#), Aalto University, 26.5.2014

MagNews Spring 2014 cover story

Tiede magazine 5/2014 featured our monopole work in a two-page article and in their [cover text](#) with the title [Mikko Möttönen's recipe worked – magnetic monopole was born](#)

Helsingin Sanomat wrote about my work in the editorial 31.3.2014 with the title [Rantatontteja voisi antaa myös fysiikan olympiamitalisteille](#)

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Press release, *Detector for the single-electron magnet discovered—pathway to the silicon-based quantum computer*, Aalto University, 27.9.2010.

Press release, *Single-atom transistor discovered*, Helsinki University of Technology, 3.12.2009.

Press release, *Reaching for magnetic monopoles—an analogy for a point source of magnetic field found?*, Helsinki University of Technology, 14.7.2009.

Patents

1. Patent on *Detector of Single Microwave Photons Propagating in a Guide* (in Finnish *Menetelmä ja laite yksittäisten mikroaaltofotonien ilmaisemiseksi metallisessa aaltojohteessa*). Patent numbers FI122887B, US9,255,839B2, and JP5973445B2. First patent granted on 31.8.2012.
2. Patent on *Cryogenic Microwave Analyzer*, Patent numbers FI129000B and AU2020101876A4. First patent granted on 30.4.2021.
3. Patent on *Vector Signal Generator Operating on Microwave Frequencies, and Method for Generating Time-Controlled Vector Signals on Microwave Frequencies*, Patent numbers FI128904B and CN211457087U. First patent granted on 26.2.2021.

4. Patent application and granted utility model on *Method and Arrangement for Reading out the State of a Qubit*, Finnish patent application number FI20185847 (submitted in 2018), Chinese utility model number 201921541006.4.
5. Patent application on *A Circuit Assembly, a System and a Method for Cooling a Quantum Electric Device*, Finnish patent application number FI 20165492 (submitted in 2015), international patent application number P-WO101022E (submitted in 2016), and US patent application number US16/066,207 (submitted in 2018).
6. Patent application on *Additive Control of Qubits for Enabling Time-Domain and Frequency-Domain Multiplexing*, European patent application number EP135906 (submitted in 2020)
7. Patent application on *Method and Arrangement for Resetting Qubits*, European patent application number EP20183079 (submitted in 2020)
8. Patent application on *Qubit Leakage Error Reduction*, European patent application number EP20184473 (submitted in 2020)
9. Patent application on *Quantum Computing Circuit Comprising a Plurality of Chips and Method for Manufacturing the Same*, European patent application number EP138624MB (submitted in 2020)
10. Patent application on *Spin-Based Quasiparticle Qubits in Superconducting Structures*, PCT patent application number PCT/FI2021/050504 (submitted in 2021)
11. Patent application on *Superconducting qubit based on a charge island-free grounded coplanar waveguide resonator with embedded Josephson junctions*, European patent application number EP20212122.4 (submitted in 2020)
12. Patent application on *Qubit readout*, European patent application number EP 20212481.4 (submitted in 2020)
13. Patent application on *Quantum-state readout arrangement and method*, PCT patent application number PCT/FI2021/050388 (submitted in 2021)
14. Patent application on *3D superconducting qubit*, European patent application number EP20209130.2 (submitted in 2020)
15. Patent application on *Qubit reset*, PCT patent application number PCT/FI2021/050500 (submitted in 2021)
16. Patent application on *Tunable Dissipative Circuits for low Temperature Frequency Shifters, and Methods for Making a Frequency Shift at Low Temperature*, PCT patent application number PCT/EP2021/055453 (submitted in 2021)
17. Patent application on *Apparatus, Arrangement and Method for Electromagnetic Isolation for Quantum Computing Circuit* PCT patent application number PCT/FI2021/050532 (submitted in 2021)

Invited talks in international conferences and major international workshops

(other talks listed after the list of publications)

1. M. Möttönen, **invited talk** on *Bolometry and calorimetry at extremely low powers and energies: opportunities for qubit and axion experiments*, Searching for Galactic Axions and Superconducting Devices with Quantum Efficiency, October 2021, Korea, online.

2. M. Möttönen, **invited talk** on *Superconducting Quantum Computers*, 19th International Conference on Unconventional Computation and Natural Computation, October 2021, Finland, online.
3. M. Möttönen et al., **invited talk** on *Experiments on open quantum systems made of superconducting qubits with tunable coupling to their environment*, FQMT'21, July 2021, Czech Republic, online.
4. M. Möttönen et al., **invited keynote talk** on *Bolometry and calorimetry at extremely low powers and energies*, 14th edition of the Workshop on Low Temperature Electronics (WOLTE-14), April 2021, online.
5. M. Möttönen et al., **invited talk** on *Towards calorimetric detection of single microwave photons*, Quantum Nanophotonics, March 2021, Spain (online).
6. M. Möttönen et al., **invited talk** on *Bolometer operating at the threshold for circuit quantum electrodynamics*, Nanoscience Days, October 2020, Finland (online).
7. M. Möttönen et al., **invited talk** on *Photon-number-dependent Lamb shift*, International conference on quantum technologies MIPT (PhysTech) — QUANT 2020, September 2020, Russia (online).
8. M. Möttönen et al., **invited talk** on *Fabrication of superconducting quantum electric circuits at OtaNano, Finland*, Workshop on Nanofabrication for basic research in Quantum Technology, October 2019, Finland.
9. M. Möttönen et al., **invited talk** on *Readout and control for a superconducting quantum computer*, Quantum Technology: Academia Meets Industry, September 2019, China.
10. M. Möttönen et al., **invited talk** on *Quantum Detectors*, Axion Experiments in Germany, August 2019, Germany.
11. M. Möttönen et al., **invited talk** on *Ultrasensitive Microwave Bolometer*, 18th International Workshop on Low Temperature Detectors, July 2019, Italy.
12. M. Möttönen et al., **invited talk** on *Fast measurement and initialization of superconducting qubits*, FQMT'19, July 2019, Czech Republic.
13. M. Möttönen et al., **invited plenary talk** on *Techniques for qubit initialization and readout*, European Quantum Technologies Conference EQTC 2019, Feb 2019, France.
14. M. Möttönen et al., **invited talk** on *On-chip engineered heat baths for quantum devices*, QT60 – Workshop on thermodynamics, thermoelectrics and transport in quantum devices, Sep 2018, Finland.
15. M. Möttönen et al., **invited talk** on *Three-dimensionally non-trivial topological structures in spin-1 Bose–Einstein condensates*, Workshop on Unconventional Superfluids, Sep 2018, UK.
16. M. Möttönen et al., **invited talk** on *In-situ-controllable dissipators for superconducting electronics*, International conference on quantum technologies, Sep 2018, Russia.

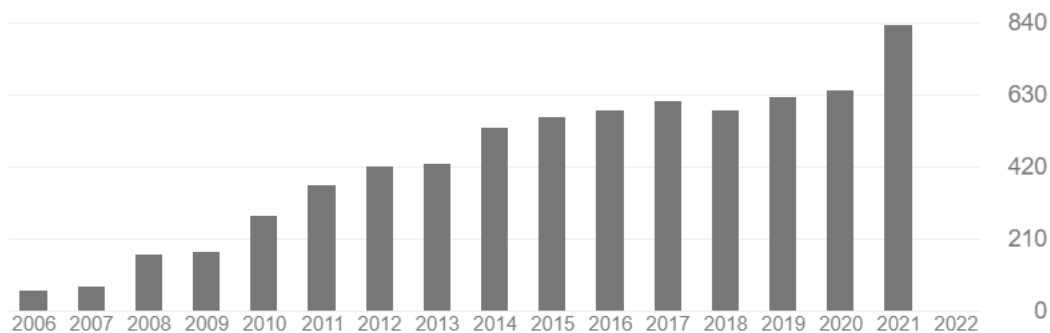
17. M. Möttönen et al., **invited talk** on *Superconducting Quantum Computer*, ICPS 2018, Aug 2018, Finland.
18. M. Möttönen et al., **invited (midnight) talk** on *Quantum Technology – Quantum electronics*, 16th NAMIS Workshop, June 2018, Finland.
19. M. Möttönen et al., **invited talk** on *Computational Challenges and Opportunities Provided by Quantum Mechanics*, Innovative Methods in Scientific Computing, October 2017, Finland.
20. M. Möttönen et al., **invited talk** on *Experiments on temporally controllable dissipation in superconducting quantum circuits*, FQMT'17, July 2017, Czech Republic.
21. M. Möttönen et al., **invited talk** on *Quantum knots and monopoles*, Topological Effects in Ultra-Cold Atoms, November 2016, Brazil.
22. M. Möttönen et al., **invited talk** on *Quantum-limited heat conduction over macroscopic distances*, Energy Materials and Nanotechnology meeting on Quantum, April 2016, Thailand.
23. M. Möttönen et al., **invited plenary talk** on *Discoveries of magnetic-monopole analogues in Bose–Einstein condensates*, Workshop on Discovery of quantum-mechanical monopoles and its implications, December 2015, Turkey.
24. M. Möttönen et al., **invited talk** on *On-demand dissipation for quantum electric circuits*, 9th International Conference on Control of quantum correlations in tailored matter: Common perspectives of mesoscopic systems and quantum gases, October 2015, Germany.
25. M. Möttönen et al., **invited talk** on *Discoveries of magnetic-monopole analogues in Bose–Einstein condensates*, FQMT'15, July 2015, Czech Republic.
26. M. Möttönen et al., **invited talk** on *Fluctuation relations in single-electron devices*, Quantum Information and Thermodynamics, February 2015, Brazil.
27. M. Möttönen et al., **invited talk** on *Integrating normal-metal components into the framework of circuit quantum electrodynamics*, Superconducting Nanocircuits, September 2014, Maratea, Italy.
28. M. Möttönen, **invited plenary talk** on *Experimental studies of fluctuation relations in single-electron boxes*, Thermodynamics at the Quantum Scale, Belfast, UK, 19.8.2014.
29. M. Möttönen, **invited talk** on *QCD Labs*, Quantum Technologies for Metrology and Sensing, Lancaster, UK, 30.6.2014.
30. M. Möttönen et al., **invited talk** on *Exotic life of Cooper pairs in normal metal*, Nanophysics: from fundamentals to applications, July 2013, Quy.Nhon, Vietnam.
31. M. Möttönen et al., **invited talk** on *Experimental study of work and entropy fluctuations in a single-electron box*, Frontiers of Quantum and Mesoscopic Thermodynamics, August 2013, Prague, Czech Republic.
32. M. Möttönen, **invited talk** on *Single-atom transistor: study of single donors in silicon*, Nanowires 2010, 2010, Heraklion, Greece.

33. M. Möttönen, **invited talk** on *Topological vortex formation*, Symposia on superfluids under rotation: vortices, superfluid dynamics, and quantum turbulence, 2010, Lammi, Finland.
34. M. Möttönen et al., **invited talk** on *Recent progress on electron transport through single phosphorus donors in silicon*, Silicon Qubit Workshop, Berkeley, USA, Aug. 25th 2009.
35. M. Möttönen et al., **invited talk** on *Experimental determination of the Berry phase in a superconducting charge pump*, Quantum Dynamics in Dots and Junctions: Coherent Solid State Systems, 2008, Riva del Garda, Italy.
36. M. Möttönen et al., **invited talk** on, *Observation of the Berry phase in a superconducting charge pump*, Topological Aspects of Solid State Physics, 2008, Kyoto, Japan.
37. M. Möttönen et al., **invited talk** on *Recent progress on Cooper pair sluice*, EURAMET Expert Meeting on quantum electrical metrology, 2007, Espoo, Finland.

Scientific publications (first publication in 2002)

- ResearcherID A-6929-2012 (not always up to date, CV updated more often)
- **134** peer-reviewed journal articles (tracked by ISI)
- **7159** Google Scholar citations in total (**4434** in ISI)
- H-index **44** (**35** in ISI)
- **3** Nature, **1** Science, **1** Reviews of Modern Physics, **5** Nature Physics, **1** Nature Electronics, **1** Science Advances, **2** Physical Review X, **3** Nano Letters, **2** Nature Communications, **15** Physical Review Letters, **2** npj Quantum Information, **1** Communications Physics (journals listed roughly according to their impact factors)

Citations per year



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1. W. S. Teixeira, F. L. Semião, J. Tuorila, and M. Möttönen, *Assessment of weak-coupling approximations on a driven two-level system under dissipation*, New J. Phys. **24**, 013005 (2022).

2. T. F. Mörstedt, A. Viitanen, V. Vadimov, V. Sevriuk, M. Partanen, E. Hyypä, G. Catelani, M. Silveri, K. Y. Tan, and M. Möttönen, *Recent Developments in Quantum-Circuit Refrigeration*, submitted to *Annalen der Physik* (2021). arXiv:2111.11234
3. J.-P. Girard, W. Liu, R. Kokkonen, E. Visakorpi, J. Govenius, M. Möttönen, *Cryogenic power sensor enabling broad-band and traceable measurements*, *Phys. Rev. Res.* (2021, submitted), arXiv:2108.05101.
4. G. Catto, W. Liu, S. Kundu, V. Lahtinen, V. Vesterinen, and M. Möttönen, *Microwave response of a metallic superconductor subject to a high-voltage gate electrode*, *Sci. Rep.* (2021, submitted), arXiv:2105.08322.
5. Máté Jenei, Ruichen Zhao, Kuan Y. Tan, Tuomo Tanttu, Kok W. Chan, Yuxin Sun, Vasilii Sevriuk, Fay Hudson, Alessandro Rossi, Andrew Dzurak, and Mikko Möttönen, *Superconducting charge sensor coupled to an electron layer in silicon*, submitted to *Phys. Rev. Appl.* (2020), arXiv:1909.11976.
6. V. Vadimov, A. Viitanen, T. Mörstedt, T. Ala-Nissila, and M. Möttönen, *Single-junction quantum-circuit refrigerator*, *Appl. Phys. Lett.* (submitted, 2021), arXiv:2112.08008.

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7. C. Yan, J. Hassel, V. Vesterinen, J. Zhang, J. Ikonen, L. Grönberg, J. Goetz, and M. Möttönen, *A low-noise on-chip coherent microwave source*, *Nat. Electronics* **4**, 885 (2021).
8. A. Viitanen, M. Silveri, M. Jenei, V. Sevriuk, K. Y. Tan, M. Partanen, J. Goetz, L. Grönberg, V. Lahtinen, M. Möttönen, *Photon-number-dependent effective Lamb shift*, *Phys. Rev. Res.* **3**, 033126 (2021).
9. V. Vadimov, T. Hyart, J. L. Lado, M. Möttönen, and T. Ala-Nissila, *Many-body Majorana-like zero modes without gauge symmetry breaking*, *Phys. Rev. Res.* **3**, 023002 (2021).
10. V. Vadimov, J. Tuorila, T. Orell, J. Stockburger, T. Ala-Nissila, J. Ankerhold, and M. Möttönen, *Validity of Born–Markov master equations for single and two-qubit systems*, *Phys. Rev. B* **103**, 214308 (2021).
11. M. Räsänen, H. Mäkynen, M. Möttönen, and J. Goetz, *Path to European quantum unicorns*, *EPJ Quant. Techn.* **8**, 5 (2021).
12. H. Hsu, M. Silveri, V. Sevriuk, M. Möttönen, G. Catelani, *Charge dynamics in quantum-circuit refrigeration: thermalization and microwave gain*, *AVS Quantum Sci.* **3**, 042001 (2021).

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13. R. Kokkonen, J.-P. Girard, D. Hazra, A. Laitinen, J. Govenius, R. E. Lake, I. Sallinen, V. Vesterinen, P. Hakonen, and M. Möttönen, *Bolometer operating at the threshold for circuit quantum electrodynamics*, *Nature* **586**, 47 (2020).

14. S. Alipour, A. T. Reza khani, A. P. Babu, K. Mølmer, M. Möttönen, and T. Ala-Nissila, *Correlation Picture Approach to Open-Quantum-System Dynamics*, Phys. Rev. X **10**, 041024 (2020).
15. H. Hsu, M. Silveri, A. Gunyhó, J. Goetz, G. Catelani, and M. Möttönen, *Tunable refrigerator for non-linear quantum electric circuits*, Phys. Rev. B **101**, 235422 (2020).
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132. M. Möttönen, R. de Sousa, J. Zhang, and K. B. Whaley, *High fidelity one-qubit operations under random telegraph noise*, Phys. Rev. A **73**, 022332 (2006).
133. M. Möttönen and J. J. Vartiainen, *Decompositions of general quantum gates* in *Trends in Quantum Computing Research*, edited by S. Shannon, ISBN 1-59454-840-4 (Nova Science Publishers Inc., New York, 2006).

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135. V. Bergholm, J. J. Vartiainen, M. Möttönen, and M. M. Salomaa, *Quantum circuits with uniformly controlled one-qubit gates*, Phys. Rev. A **71**, 052330 (2005).

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137. M. Möttönen, J. J. Vartiainen, V. Bergholm, and M. M. Salomaa, *Transformation of quantum states using uniformly controlled rotations*, Quant. Inf. Comp. **5**, 467 (2005).

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138. M. Möttönen, J. J. Vartiainen, V. Bergholm, and M. M. Salomaa, *Quantum circuits for general multiqubit gates*, Phys. Rev. Lett. **93**, 130502 (2004).
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140. M. Möttönen, *Vortices and elementary excitations in dilute Bose-Einstein condensates*, PhD Thesis, Helsinki University of Technology (2004).

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141. M. Möttönen, T. Mizushima, T. Isoshima, M. M. Salomaa, and K. Machida, *Splitting of a doubly quantized vortex through intertwining in Bose-Einstein condensates*, Phys. Rev. A **68**, 023611 (2003).

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142. M. Möttönen, N. Matsumoto, M. Nakahara, and T. Ohmi, *Continuous Creation of a Vortex in a Bose-Einstein Condensate with Hyperfine Spin $F=2$* , J. Phys.: Condens. Matter **14**, 13481 (2002).
143. S-i. Ogawa, M. Möttönen, M. Nakahara, T. Ohmi, and H. Shimada, *Method to create a vortex in a Bose-Einstein condensate*, Phys. Rev. A **66**, 013617 (2002).
144. M. Möttönen, *Vortex dynamics in Bose-Einstein condensates at finite temperature*, MSc Thesis, Helsinki University of Technology (2002).

Talks in seminars, meetings, and colloquia abroad

1. *IQM – Building useful quantum computers*, **invited talk**, Danish Quantum Community conference, Denmark (organized online), 8.10.2020
2. *Quantum Computer Development*, **invited talk**, CoE EQUiTANT Seminar, National Institute of Chemical Physics and Biophysics, Tallinn, Estonia (organized online), 14.4.2020
3. *Superconducting Bolometer with Ultralow Noise Equivalent Power*, **invited talk**, Seminar series of IBS Center for Axion and Precision Physics, Daejeon, Republic of Korea, 23.1.2019.
4. *Controllable dissipators for quantum electric circuits*, **invited talk**, Seminar series of IBS Center for Theoretical Physics of Complex Systems, Daejeon, Republic of Korea, 22.1.2019.

5. *Aalto Partner Presentation*, **invited talk**, kickoff meeting of the EU Quantum Technology Flagship project OpenSuperQ, Bad Honnef, Germany, 17.1.2019.
6. *Aalto Partner Presentation*, **invited talk**, kickoff meeting of the EU Quantum Technology Flagship project QMiCS, Garching, Germany, 22.11.2018.
7. *In-situ-tunable dissipators for superconducting quantum circuits and a glimpse of electron pumps and magnetic monopole analogues*, **invited talk**, seminar series at Tata Institute for Fundamental Research, Mumbai, India, 22.10.2018.
8. *Tunable dissipators for superconducting quantum electronics*, **invited talk**, Workshop on Exact Dynamics of Open Quantum Systems, Ulm University, Ulm, Germany, 7.8.2018.
9. *Superconducting electric circuits: new physics and quantum technology*, **invited talk**, Mini-Symposium on Quantum Science and Technology, Technical University of Munchen, Garching, Germany, 11.7.2018.
10. *Tunable dissipators for superconducting quantum electronics*, **invited talk**, Google Quantum AI seminar, Google SBA, Santa Barbara, USA, 8.5.2018.
11. *Superconducting electric circuits for future technologies*, **invited talk**, Memento Physics Institute, EPFL, Lausanne, Switzerland, 10.4.2018.
12. *Refrigerator that absorbs photons from your circuit only when switched on*, Engineering Quantum Systems group, MIT, Cambridge, USA, 17.1.2018.
13. *Thermal-error regime in high-accuracy gigahertz single-electron pumping*, EURAMET DC and Quantum Metrology Meeting, VTT MIKES, Espoo, Finland, 2.6.2017
14. *Quantum Knots and Monopoles*, **invited talk**, University of Sao Paolo, Sao Paolo, Brazil, 11.5.2017
15. *Quantum Knots and Monopoles*, **invited talk**, Sao Carlos Institute of Physics, Sao Carlos, Brazil, 9.5.2017
16. *Quantum-Circuit Refrigerator*, **invited talk**, CNR NEST, Pisa, Italy, 15.2.2017.
17. *Tunable Engineered Reservoirs for Electric Quantum Circuits*, **invited talk**, Walther-Meissner-Institut, Garching, Germany, 19.1.2017.
18. *Recent progress at Quantum Computing and Devices Laboratories*, **invited talk**, Seminar series of IBS Center for Theoretical Physics of Complex Systems, Daejeon, Republic of Korea, 19.10.2016.
19. *Quantum Reservoir Engineering for Electric Quantum Circuits*, **invited talk**, Physics and Astronomy colloquium at University of Victoria, Canada 14.9.2016.
20. *On-Demand Dissipation for Electric Quantum Circuits*, D-Wave Systems Inc., Vancouver, Canada 12.9.2016.
21. *Quantum-Circuit Refrigerator*, Superconducting Quantum Devices, 2016, Cambridge, UK 9.9.2016.

22. *On-demand Dissipation for Quantum Devices*, Workshop on Quantum Computing and Computational Quantum Mechanics, **keynote talk**, Jyväskylä, Finland 12.8.2016.
23. *e-SI-Amp Aalto Partner Presentation*, e-SI-Amp EMPIR project kick-off meeting, London, UK 27.6.2016.
24. *Quantum reservoir engineering for circuit quantum electrodynamics*, Seminar series of London Centre for Nanotechnology, London, UK, 20.5.2016.
25. *Recent progress at Quantum Computing and Devices Laboratories*, **invited talk**, Cavendish Laboratory Seminar, Cambridge, UK, 19.5.2016.
26. *Recent results from the Quantum Computing and Devices group*, **invited talk**, Symposium for Experimental Physics, Ulm, Germany, 7.8.2015.
27. *Quantum Electronics Meets Dissipation*, **invited talk**, ETH Symposium on Quantum Engineering, Zurich, Switzerland, 14.4.2015.
28. *SNS detector and Incoherent photon sources*, MICROPHOTO EMRP project meeting, Torino, Italy, 10.6.2014.
29. *Thermometry and power sensing with superconductor-normal-superconductor proximity structures*, MICROPHOTO EMRP project kick-off, Braunschweig, Germany, 10.6.2013.
30. *Topological creation of vortices and monopoles in spin-1 Bose-Einstein condensates*, **invited talk**, Nordita program: Quantum solids, liquids, and gases, Stockholm, Sweden, July 21st 2010.
31. *Electron transport and spin qubit experiments on single-donor silicon devices*, Alan Aspuru-Guzik group seminar, Harvard/Cambridge, USA, Aug. 26th 2009.
32. *Topological phase imprinting and monopoles in coherent matter fields*, **invited talk**, Sydney Quantum Information Workshop, Sydney, Australia, Feb. 6th 2009.
33. *Experimental determination of the Berry phase in a superconducting charge pump*, **invited talk**, QSciTech seminar, Macquarie University, Sydney, Australia, Dec. 11th 2008.
34. *Single Cooper pair electronics at PICO group*, kick-off meeting for the European Research Council project SCOPE, KTH, Stockholm, Sweden, Oct. 15th 2008.
35. *Observation of the Berry phase in a superconducting charge pump*, **invited talk**, Annual Workshop of the Center for Quantum Computer Technology, The Naval and Military Club, Melbourne, Australia, Feb. 19th 2008.
36. *BEC research at QCD group*, **invited talk**, Machida group seminar, Okayama, Japan, Feb. 13th 2008.
37. *Observation of the Berry phase in a superconducting charge pump*, **invited talk**, Nakahara group seminar, Kinki University, Osaka, Japan, Feb. 11th 2008.
38. *Observation of the Berry phase in a superconducting charge pump*, **invited talk**, Solid state physics seminar, Swiss Federal Institute of Technology (ETH), Zurich, Switzerland, Dec. 13th 2007.

39. *First steps to geometric quantum computation in Josephson devices—Observation of the Berry phase*, **invited talk**, Special seminar, University Southern California, Los Angeles, USA, Sep. 11th 2007.
40. *First steps to geometric quantum computation in Josephson devices—Observation of the Berry phase*, **invited talk**, Special seminar, University of California, Berkeley, USA, Sep. 5th 2007.
41. *Suppression of decoherence and 1/f noise in one-qubit operations*, **invited talk**, Berkeley Quantum Information and Computation seminar, University of California, Berkeley, USA, Oct. 31th 2006.
42. *Measurement of the Berry phase in superconducting circuits*, **invited talk**, USC seminar class: Department of Physics and Astronomy, University of Southern California, Los Angeles, USA, Feb. 23th 2006.
43. *Measurement of the Berry phase in superconducting circuits*, J. Clarke group seminar, University of California, Berkeley, USA, Feb. 17th 2006.
44. *Topological creation and stability of vortices in dilute Bose-Einstein condensates*, **invited talk**, Research seminar, Intitute for Scientific Interchange, Torino, Italy, Oct. 10th 2005.
45. *Efficient decompositions of arbitrary n-qubit gates*, **invited talk**, Quantum Information and Bose-Einstein Condensate seminar, National Institute of Standards and Technology, Gaithersburg, USA, Apr. 20th 2005.
46. *Efficient decompositions of arbitrary n-qubit gates*, Berkeley Quantum Information and Computation seminar, University of California, Berkeley, USA, Apr. 4th 2005.
47. *Vortices and elementary excitations in dilute Bose-Einstein condensates*, Nordic Project Meeting: Manipulating atomic matter, Nordita, Copenhagen, Denmark, Jan. 12th 2005.
48. *Quantum circuits for general multiqubit gates*, **invited talk**, Work shop on quantum information processing, Kinki University, Osaka, Japan, Sep. 7th 2004.

International conference presentations (excluding invited talks given above)

1. M. Möttönen et al., talk on *Low-noise on-chip coherent microwave source*, European Quantum Technologies Conference EQTC 2021, Dec 2021, Online.
2. M. Möttönen et al., talk on *Bolometer operating at the threshold for circuit quantum electrodynamics*, 19th International Workshop on Low Temperature Detectors, 2021, Online/USA.
3. M. Möttönen et al., talk on *Cryoelectronics for detection and on-demand absorption of microwave photons*, Kryo 2021 meeting, 2021, Online/Germany.
4. M. Möttönen et al., talk on *Observation of a Broadband Lamb Shift in a Superconducting Resonator*, APS March Meeting 2019, 2019, Boston, USA.

5. Joni Ikonen, Jan Goetz, Jesper Ilves, Aarne Keränen, Andras M. Gunyho, Matti Partanen, Kuan Y. Tan, Leif Grönberg, Visa Vesterinen, Slawomir Simbierowicz, Juha Hassel, and Mikko Möttönen, poster on *Qubit Measurement by Multi-Channel Driving*, 687. WE-Heraeus-Seminar on 'Scalable Hardware Platforms for Quantum Computing, 2019, Bad Honnef, Germany.
6. M. Möttönen et al., talk on *Superconducting Bolometer with Ultralow Noise Equivalent Power*, Kryo 2018 meeting, 2018, Schöntal, Germany.
7. W. Lee, A. H. Gheorghe, K. Tiurev, T. Ollikainen, M. Möttönen, and D. S. Hall, **invited poster** on *Synthetic electromagnetic knot in a three-dimensional skyrmion*, Humboldt Kolleg – Controlling quantum matter: From ultracold atoms to solids, 2018, Vilnius, Lithuania.
8. M. Möttönen et al., talk on *Ultrasensitive microwave detector*, The 27th Conference of the EPS Condensed Matter Division, 2018, Berlin, Germany.
9. M. Möttönen et al., talk on *Quickly Tunable Refrigerator for Superconducting Quantum Circuits*, APS March Meeting 2018, 2018, Los Angeles, USA.
10. M. Möttönen et al., poster on *Microwave Bolometer with Low Noise-Equivalent Power*, Nanoscience Days, 2017, Jyväskylä, Finland.
11. M. Möttönen et al., poster on *Tying quantum knots*, Bose-Einstein Condensation 2017: Frontiers in Quantum Gases, 2017, Sant Feliu, Spain.
12. M. Möttönen et al., talk on *High-precision transport of single electrons using a silicon quantum dot*, Silicon Quantum Electronics Workshop, 2017, Portland, USA.
13. M. Möttönen et al., poster on *Quantum-circuit refrigerator*, 28th International Conference on Low Temperature Physics, 2017, Gothenburg, Sweden.
14. M. Möttönen et al., talk on *Extremely Sensitive Microwave Bolometer Suitable for Quantum Sensing*, Mesoscopic Transport and Quantum Coherence, 2017, Espoo, Finland.
15. J. Govenius et al., and M. Möttönen, **invited poster** on *Microwave bolometer with an ultralow noise equivalent power*, FQMT'17, July 2017, Prague, Czech Republic.
16. M. Möttönen et al., talk on *Quantum-circuit refrigerator*, APS March Meeting 2017, 2017, New Orleans, USA.
17. M. Möttönen et al., poster on *Integrating normal-metal components into the framework of circuit quantum electrodynamics*, QuantERA partnering meeting, February 2017, Valetta, Malta.
18. M. Möttönen et al., poster on *On-demand Dissipation in Electric Quantum Circuits*, 635. WE-Heraeus-Seminar on Scalable Architectures for Quantum Simulation, January 2017, Bad Honnef, Germany.
19. M. Möttönen et al., talk on *Experiments on engineered on-chip heat reservoirs for superconducting devices*, The 26th Conference of the EPS Condensed Matter Division, 2016, Groningen, Netherlands.

20. M. Möttönen et al., talk on *Superconductor/normal-metal hybrids for quantum technology*, Silicon Quantum Information Processing 2016, Cambridge, UK.
21. M. Möttönen et al., poster on *Bidirectional electron pumping using a silicon quantum dot*, Silicon Quantum Information Processing 2016, Cambridge, UK.
22. M. Möttönen et al., poster on *Bidirectional electron pumping using a silicon quantum dot*, Silicon Quantum Electronics Workshop, 2016, Delft, Netherlands.
23. M. Möttönen et al., talk on *Engineered dissipative reservoirs for superconducting circuits*, Statistical Mechanics of Quantum Dynamics, 2016, Mariehamn, Åland.
24. M. Partanen et al., and M. Möttönen, poster on *Experiments on normal-metal components integrated into the framework of circuit quantum electrodynamics*, Statistical Mechanics of Quantum Dynamics, 2016, Mariehamn, Åland.
25. M. Möttönen et al., talk on *Detection of zeptojoule microwave pulses using electrothermal feedback*, MICROPHOTON 2016 Workshop, 2016, London, UK.
26. M. Möttönen et al., talk on *Quantum-limited heat conduction over macroscopic distances*, APS March Meeting 2016, 2016, Baltimore, USA.
27. M. Möttönen et al., poster on *Experimental Observations of Magnetic-Monopole Analogues in Spinor Bose-Einstein Condensates*, Bose-Einstein Condensation 2015: Frontiers in Quantum Gases, 2015, Sant Feliu, Spain.
28. J. Govenius et al., and M. Möttönen, **invited poster** on *Microwave detector and heat conduction in the framework of circuit quantum electrodynamics*, FQMT'15, July 2015, Prague, Czech Republic.
29. M. Möttönen et al., talk **by invitation** on *Integrating normal-metal components into the framework of circuit quantum electrodynamics*, The 25th Conference of the EPS Condensed Matter Division, August 2014, Paris, France.
30. M. Möttönen et al., talk on *Observations of Quantum-Mechanical Monopoles*, 27th International Conference on Low Temperature Physics, August 2014, Buenos Aires, Argentina.
31. M. Möttönen et al., talk on *Measurement and modeling of very low volume and critical current superconductor–normal-metal–superconductor junctions*, International Workshop “Cryogenic Nanodevices”, 2013, Kiruna, Sweden.
32. M. Möttönen et al., poster on *Creation of Dirac monopoles in spin-1 Bose-Einstein condensates*, Bose-Einstein Condensation 2013: Frontiers in Quantum Gases, 2013, Sant Feliu, Spain.
33. M. Möttönen and J. Salmilehto, talk on *Conservation law of operator current in open quantum systems*, International Workshop on Silicon Quantum Electronics, 2012, Sydney, Australia.
34. M. Möttönen, O.-P. Saira, Y. Yoon, T. Tanttu, J. P. Pekola, talk on *Test of Jarzynski and Crooks fluctuation relations in an electronic system*, Capri Fall Workshop on "Non-equilibrium processes & fluctuation-dissipation theorems", 2012, Capri, Italy.

35. M. Möttönen, P. Solinas, I. Kamleitner, J.-M. Pirkkalainen, C. Müller, J. P. Pekola, and A. Shnirman, talk on *Geometric non-Abelian phases using Josephson devices*, Quantum Information Processing and Communication, 2011, Zurich, Switzerland.
36. K. W. Chang, M. Möttönen, A. Kemppinen, N. S. Lai, K. Y. Tan, W. H. Lim, and A. S. Dzurak, poster on *Single-electron shuttle based on a silicon quantum dot*, 26th International Conference on Low Temperature Physics, 2011, Beijing, China.
37. M. Möttönen et al., talk on *Transport and Single-Shot Readout of Electron Spins in Silicon*, Moriond 2011 – Quantum Mesoscopic Physics, 2011, La Thuile, Italy.
38. M. Möttönen and V. Pietilä, poster on *Creation of Dirac monopoles in spinor Bose-Einstein condensates*, Bose-Einstein Condensation 2009: Frontiers in Quantum Gases, 2009, Sant Feliu, Spain.
39. M. Möttönen, A. Kemppinen, M. Meschke, J. J. Vartiainen, O.-P. Saira, D. V. Averin, J. P. Pekola, talk on *Quantized current with SINIS turnstile*, Symposium on Quantum Phenomena and Devices at Low Temperatures, 2008, Espoo, Finland.
40. M. Möttönen, J. J. Vartiainen, A. Kemppinen, and J. P. Pekola, talk on *Observation of the Berry phase in a superconducting charge pump*, Moriond 2008 Quantum Transport and Nanophysics, 2008, La Thuile, Italy.
41. M. Möttönen, V. Pietilä, and S. M. M. Virtanen, poster on *Vortex pumping in dilute Bose-Einstein condensates*, Bose-Einstein Condensation 2007: Frontiers in Quantum Gases, 2007, Sant Feliu, Spain.
42. M. Möttönen, R. de Sousa, J. Zhang, and K. B. Whaley, poster on *High fidelity one-qubit operations under random telegraph noise*, ICTP Workshop on Noise and Instabilities in Quantum Mechanics, 2005, Trieste, Italy.
43. M. Möttönen, R. de Sousa, J. Zhang, and K. B. Whaley, talk on *High fidelity one-qubit operations under random telegraph noise*, Quantum computing 2005: Algorithms, Physical Realizations and Beyond, 2005, Osaka, Japan.
44. M. Möttönen, R. de Sousa, J. Zhang, and K. B. Whaley, *High fidelity one-qubit operations under random telegraph noise*, EQIS, 2005, Tokyo, Japan.
45. M. Möttönen, V. Bergholm, and J. J. Vartiainen, *Almost optimal fixed structure circuit for arbitrary n-qubit gates*, Gordon research conference: Quantum Information Science, 2005, Ventura, USA.
46. M. Möttönen, J. J. Vartiainen, V. Bergholm, and M. M. Salomaa, *Local preparation of quantum states*, EQIS, 2004, Tokyo, Japan.

National Conference presentations and proceedings (presenting author underlined)

(Years following 2014 not recorded)

2014

1. J. Govenius, R. E. Lake, K. Y. Tan, V. Pietilä, P. Virtanen, T. T. Heikkilä, J. K. Julin, I. J. Maasilta, and M. Möttönen, *Thermal Analysis of a Nanobolometer*, XLVIII Annual Conference of the Finnish Physical Society, 2014, Tampere, Finland.
2. M. W. Ray, E. Ruokokoski, S. Kandel, M. Möttönen, and D. S. Hall, Observation of Dirac Monopoles, XLVIII Annual Conference of the Finnish Physical Society, 2014, Tampere, Finland.
3. T. Tantt, A. Rossi, K. Y. Tan, I. Iisakka, R. Zhao, A. S. Dzurak, and M. Möttönen, High-precision single-electron current source based on a silicon quantum dot, XLVIII Annual Conference of the Finnish Physical Society, 2014, Tampere, Finland.
4. K. Y. Tan, M. P. Partanen, R. E. Lake, J. Govenius, P. J. Jones, and M. Möttönen, Single-Photon Heat Conduction in Electronic Circuits, XLVIII Annual Conference of the Finnish Physical Society, 2014, Tampere, Finland.
5. M. Möttönen, M. W. Ray, E. Ruokokoski, T. Ollikainen, S. Kandel, and D. S. Hall, Monopoles and Skyrmions in Bose–Einstein Condensates, XLVIII Annual Conference of the Finnish Physical Society, 2014, Tampere, Finland.
6. Juha Salmilehto, Paolo Solinas, and Mikko Möttönen, Quantum Driving and Work, XLVIII Annual Conference of the Finnish Physical Society, 2014, Tampere, Finland.
7. K. Tiurev, E. Ruokokoski, M. W. Ray, D. S. Hall, and M. Möttönen, Creation of an Isolated Monopole Excitation in a Dilute Bose-Einstein Condensate, XLVIII Annual Conference of the Finnish Physical Society, 2014, Tampere, Finland.
8. Russell Lake, Joonas Govenius, Kuan Yen Tan, Ville Pietelä, and Mikko Möttönen, Probing the Impedance of Superconducting Weak Links, XLVIII Annual Conference of the Finnish Physical Society, 2014, Tampere, Finland.

2013

9. R. Lake, J. Govenius, K. Y. Tan, P. Jones, and M. Möttönen, *Measuring ultrahigh-frequency impedance of superconductor-normal-superconductor junctions*, XLVII Annual Conference of the Finnish Physical Society, 2013 Espoo, Finland.
10. T. Tantt, K. Y. Tan, A. Rossi, A. S. Dzurak, and M. Möttönen, *Single-electron shuttle for current metrology*, XLVII Annual Conference of the Finnish Physical Society, 2013 Espoo, Finland.
11. J. Govenius, R. Lake, V. Pietilä, P. Virtanen, T. Heikkilä, and M. Möttönen, *Measurement and modeling of very low volume and critical current superconductor–normal-metal–superconductor junctions*, XLVII Annual Conference of the Finnish Physical Society, 2013 Espoo, Finland.

12. J. Salmilehto, P. Solinas, J. P. Pekola, and M. Möttönen, *Conservation of operator current in open quantum systems and application to cooper pair pumping*, XLVII Annual Conference of the Finnish Physical Society, 2013 Espoo, Finland.
13. P. Kuopanportti, B. P. Anderson, and M. Möttönen, *Vortex pump for Bose–Einstein condensates utilizing a time-averaged orbiting potential trap*, XLVII Annual Conference of the Finnish Physical Society, 2013 Espoo, Finland.
14. E. Ruokokoski, P. Kuopanportti, and M. Möttönen, *Vortex-dipole pump for dilute Bose–Einstein condensates*, XLVII Annual Conference of the Finnish Physical Society, 2013 Espoo, Finland.
15. H. Mäkelä, J. Salmilehto, and M. Möttönen, *Detrimental effects of the rotating wave approximation on modeled non-Markovian dynamics*, XLVII Annual Conference of the Finnish Physical Society, 2013 Espoo, Finland.
16. K. Y. Tan, M. P. Partanen, R. Lake, P. J. Jones, and M. Möttönen, *Single-photon heat conduction in a microwave circuit*, XLVII Annual Conference of the Finnish Physical Society, 2013 Espoo, Finland.
17. P. J. Jones, J. A. M. Huhtamäki, K. Y. Tan, M. Partanen, and M. Möttönen, *Artificial tunable environments for superconducting quantum bits*, XLVII Annual Conference of the Finnish Physical Society, 2013 Espoo, Finland.
18. J. V. Koski, T. Sagawa, O.-P. Saira, P. Solinas, A. Kutvonen, Y. Yoon, M. Möttönen, T. Ala-Nissilä, and J. P. Pekola, *Distribution of Entropy Production in Nonequilibrium Single-Electron Tunneling*, XLVII Annual Conference of the Finnish Physical Society, 2013 Espoo, Finland.

2012

19. J. P. Pekola, O.-P. Saira, Y. Yoon, T. Tanttu, M. Möttönen, A. Kutvonen, T. Ala-Nissilä, and D. V. Averin, *Test of Jarzynski and Crooks fluctuation relations in single-electron tunneling*, XLVI Annual Conference of the Finnish Physical Society, 2012 Joensuu, Finland.
20. J. Salmilehto and M. Möttönen, *Superadiabatic theory for Cooper pair pumping*, XLVI Annual Conference of the Finnish Physical Society, 2012 Joensuu, Finland.
21. P. Kuopanportti, J. A. M. Huhtamäki, and M. Möttönen, *Vortex lattices in two-species Bose-Einstein condensates*, XLVI Annual Conference of the Finnish Physical Society, 2012 Joensuu, Finland.
22. K. W. Chan, M. Möttönen, A. Kemppinen, N. S. Lai, K. Y. Tan, W. H. Lim, A. S. Dzurak, *Single-electron shuttle based on a silicon quantum dot*, XLVI Annual Conference of the Finnish Physical Society, 2012 Joensuu, Finland.
23. F. Hoehne, Yu. A. Pashkin, O. V. Astafiev, M. Möttönen, J. P. Pekola, and J. S. Tsai, *Coherent superconducting quantum pump*, XLVI Annual Conference of the Finnish Physical Society, 2012 Joensuu, Finland.

24. P. J. Jones, J. A. M. Huhtamäki, K. Y. Tan, and M. Möttönen, *Single-photon heat conduction in electrical circuits*, XLVI Annual Conference of the Finnish Physical Society, 2012 Joensuu, Finland.

2010

25. M. Möttönen, A. Morello, J. J. Pla, F. A. Zwanenburg, K. W. Chan, K. Y. Tan, H. Huebl, C. D. Nugroho, C. Yang, J. A. van Donkelaar, A. D. C. Alves, D. N. Jamieson, C. C. Escott, J.-M. Pirkkalainen, L. C. L. Hollenberg, R. G. Clark, and A. S. Dzurak, *Single-shot readout of individual electron spins in silicon*, XLV Annual Conference of the Finnish Physical Society, 2011 Helsinki, Finland.
26. O.-P. Saira, A. Kemppinen, V. Maisi, S. Lotkhov, M. Möttönen and J. Pekola, *Experimental studies on single-electron transport in the attoampere scale and below*, XLV Annual Conference of the Finnish Physical Society, 2011 Helsinki, Finland.
27. P. Kuopanportti, J. A. M. Huhtamäki, and M. Möttönen, *Size and dynamics of vortex dipoles in dilute Bose–Einstein condensates*, XLV Annual Conference of the Finnish Physical Society, 2011 Helsinki, Finland.
28. Y. Yoon, S. Gasparinetti, M. Möttönen, and J. P. Pekola, *Capacitively enhanced thermal escape in underdamped josephson junctions*, XLV Annual Conference of the Finnish Physical Society, 2011 Helsinki, Finland.
29. P. Solinas, J.-M. Pirkkalainen and M. Möttönen, *Ground-state geometric quantum computing in superconducting systems*, XLV Annual Conference of the Finnish Physical Society, 2011 Helsinki, Finland.
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