

19.4.2024

Curriculum Vitae*

Mikko Möttönen
POB 13500, Tietotie 3
00076 AALTO
Finland, EU
+358505940950
mikko.mottonen_AT_aalto.fi



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 and activities

| | |
|---|---|
| Full Professor of Quantum Technology | Aalto University, Department of Applied Physics 1.11.2023– and VTT Technical Research Centre of Finland (leader of the QCD group since October 2007, currently 15–25 group members) |
| Co-Founder | IQM Finland Oy, 28.4.2018– |
| Co-Founder & CEO | Nanoq Oy, 23.12.2021– |
| Founder & CEO | Quantum Computer Finland Oy, 19.11.2018– |

Education

| | |
|---------------------------|--|
| Doctor of Technology | Helsinki University of Technology, Technical Physics, 4.9/5.0, 25 Jan 2005, “ <i>Vortices and elementary excitations in dilute Bose-Einstein condensates</i> ” 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

| | |
|--|---|
| Associate Professor (tenured) of Quantum Technology | Aalto University, Department of Applied Physics 1.4.2019–31.10.2023 and VTT Technical Research Centre of Finland |
|--|---|

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

| | | |
|---|--|--|
| Chief Scientist | IQM Finland Oy | 28.4.2018-26.3.2023 |
| Chief Executive Officer | IQM Finland Oy | 28.4.2018-1.2.2019 |
| Senior Scientist | Aalto University, Department of Applied Physics | 1.8.2015-31.3.2019 |
| Research Professor of Quantum Computing Columnist | University of Jyväskylä, Department of Mathematical Information Technology, part time Helsingin Sanomat, Sanoma Media Finland Oy | 1.10.2015-30.9.2017 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

Member of The Finnish Academy of Science and Letters, 28.4.2023 –

Member of The Finnish Academy of Technology, 1.11.2022 –
Advisor of quantum company Quanscient, 31.1.2022 –
Chairman of the Board of Directors, Nanoq Oy, 23.12.2021 –
Member of MATINE – The Scientific Advisory Board for Defense, Ministry of Defense, Finland,
24.1.2019 –
Member of the 248. National Defense Course (*Maanpuolustuskurssi*), 4.3.2024 –
Deputy Member of the Steering Group of InstituteQ – The Finnish Quantum Institute,
14.5.2021–1.10.2023
Chair of the Technology Advisory Board of IQM, 17.11.2020 – 26.3.2023
Member of the Expert Panel of Quantum Karelia consortium 4.12.2020 – 4.12.2022
Member of the Award Jury, CTO Forum, 2022
Millennium Technology Prize (MTP) Fellow, Technology Academy of Finland, 19.3.2019 –
Chairman of the Board of Directors, Quantum Computer Finland Oy, 19.11.2018 –
Management Committee Member, COST Action CA16221, 5.11.2018 – 28.11.2021
Chairman of the Board of Directors, IQM Finland Oy, 28.4.2018 – 21.12.2018
Founding director of the Finnish Quantum-Computing Infrastructure (FiQCI), 2020

Awards and honors

Aalto Research Impact Award 2023, Aalto University, 5.9.2023
Invitee for the Independence Day Reception and Kultaranta Talks by the President of Finland,
2022
Honorary Doctor, Lappeenranta University of Technology, 2022
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, 2021, and 2022 by
Talouselämä, 6.3.2020 – 10.2.2022
Chosen as one of the 100 influential Finnish persons in ICT by [TiVi](#) 13.12.2019, [TiVi](#)
15.12.2020, [TiVi](#) 7.12.2021, [TiVi](#) 5.12.2022, and [TiVi](#) 12.12.2023
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 –
Lifetime member of Physics Alumni, Finland, 2014 –
Member of the Finnish Physical Society, Finland, 2001 –
Member of the American Physical Society, USA, 2016 – 2023

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

ERC Advanced Grant, European Research Council, 2023
ERC Consolidator Grant, European Research Council, 2022
Swiss Postdoctoral Fellowships, Swiss National Science Foundation, Poland, 2022
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

External reviewer in Professorship applications

University of Innsbruck, Austria, 2022

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 PhD and habilitation theses and docentships

PhD thesis: *Localization and criticality in non-crystalline quantum matter*, Moein K. Ivaki,
Tampere University, Finland, 2023

Full Professorship evaluation, University of Innsbruck/Institute for Quantum Optics and Quantum Information (IQOQI), 2022

Habilitation thesis: *Microwave quantum communication with superconducting circuits*, Kirill Fedorov, Technical University of Munich, Germany, 2022

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 or committee member at theses defenses

PhD defense grading committee: *Machine Learning for Quantum Information and Computing*, Shah Nawaz Ahmed, Chalmers University of Technology, Sweden, 2023

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

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

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

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

- OpenSuperQPlus, Quantum Flagship project of the European Commission H2020, 2022 (425 k€ for QCD group, 3.5 years 121 k€/y)
- CI in an Academy of Finland project grant, 2022 (655 k€ for QCD as part of 1.3 M€ project, 4 years, 164 k€/y)
- PI in ERC Advanced Grant, European Research Council, 2022 (2.5 M€, 5 years, 500 k€/year)
- 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 A2 funding round for IQM Finland Oy, one of the four Co-Founders, several investors, 2022 (128 000 000€)
- 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-
- Head of Nokia Industrial Doctoral Program in Quantum Technology, 2021-

Teaching for courses

- Lecturer (together with Prof. Tapio Ala-Nissilä) of the course *Quantum mechanics*, PHYS-C250, Aalto University, 5 ECTS, 3 realizations in 2020 (23 students), 2021 (43 students), and 2022 (50 students)
- Lecturer/Teacher in Charge (together with Ilkka Tittonen) of the *Quantum Labs*, PHYS-C0258, Aalto University, 5 ECTS, 2021 (15 students).
- Teacher in Charge (together with the program Planning Officers) of the *Introduction Course for Bachelor's students*, SCI-A1010, Aalto University, 2 ECTS, 2022–2023 (171 students).
- Teacher in Charge (together with Maurice Forget) of the *Bachelor's Thesis and Seminar*, JOIN.bsc, Aalto University, 10 ECTS, 2020 (10 students) and 2021 (12 students).

Teacher in Charge (together with four other heads of majors) of the *Practical Training*, JOIN.trai, Aalto University, 10 ECTS, 2021–2023 (a couple of students handled by me).

Lecturer of course *Kvanttilaskennan perusteet*, 1–2 ECTS, University of Jyväskylä, 2018 (25 students)

Lecturer of course *Introduction to Quantum Computing*, 1–2 ECTS, University of Jyväskylä, 2017 (25 students)

Lecturer of the course *Quantum mechanics II*, Tfy-44.130, 6 ECTS, Helsinki University of Technology, 2008 (20 students).

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.

Guest lectures and summer/winter school courses

Lectures on *Qubits and quantum computing* in Cryocourse 2023, Aalto University, Finland, 2023 (40 students)

Lectures on *Introduction to quantum computers and superconducting qubits* in Winter School in Theoretical Chemistry 2022 — QC-4C: Quantum Computers for Chemistry, University of Helsinki, Finland, 2022 (30 students)

Lectures on *Introduction to quantization of electrical circuits and superconducting qubits* in Summer School on Engineered Quantum Systems, Aalto University, 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, Nordita, Stockholm, Sweden, 2019 (25 students)

Lectures on *Knots, monopoles, and skyrmions in a quantum order parameter* in Quantum Connections in Sweden 6: Physics Summer School on Quantum Frontiers, Nordita, Stockholm, Sweden, 2019 (25 students)

Lectures on *Superconducting Quantum Computer* in QuICC Summer School, University of York, UK, 2018 (35 students)

Guest lecturer on course *ELEC-C3220 Kvantti-ilmiot*, 2018

Lecturer of course *Superconducting Quantum Computer* in Jyväskylä Summer School, 1 ECTS, University of Jyväskylä, 2016 (30 students)

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.

Supervised theses (all co-supervised thesis marked individually)

1. PhD thesis: *Dissipation engineering of quantum-electric devices*, Arto Viitanen, 2023. (Co-supervised with Dr. Matti Silveri.)
2. PhD thesis: *Ultrasensitive bolometers as detectors of single quanta*, Giacomo Catto, 2023.
3. PhD thesis: *Bolometric techniques for circuit quantum electrodynamics*, Roope Kokkonen, 2020. (Co-supervised with Dr. Jean-Philippe Girard.)

4. PhD thesis: *Photon-assisted tunneling and charge transport in hybrid circuits*, Joni Ikonen, 2020. (Co-supervised with Dr. Kuan Yen Tan.)
5. PhD thesis: *Photon-assisted tunneling and charge transport in hybrid circuits*, Maté Jenei, 2020. (Co-supervised with Dr. Kuan Yen Tan.)
6. 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.)
7. PhD thesis: *Control of heat in superconducting microwave circuits*, Matti Partanen, 2019.
8. 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.)
9. PhD thesis: *Towards calorimetric detection of individual itinerant microwave photons*, Joonas Govenius, 2016.
10. PhD thesis: *Single-electron pumping in silicon quantum dots*, Tuomo Tanttu, 2016.
11. 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.)
12. PhD thesis: *Control of Open Quantum Systems*, Juha Salmilehto, 2014.
13. PhD thesis: *Integration of normal-metal components into the framework of circuit quantum electrodynamics*, Philip Jones, 2013.
14. 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.)
15. PhD thesis: *Exotic Vortex Structures in Dilute Bose–Einstein condensates*, Pekko Kuopanportti, 2012. (grade: *passed with distinction = in the top 10%*)
16. PhD thesis: *Topological defects and phase transitions in dilute Bose gases*, Ville Pietilä, 2010. (grade: *passed with distinction = in the top 10%*)
17. PhD thesis: *Stability and dynamics of quantized vortices in gaseous Bose-Einstein condensates*, Jukka Huhtamäki, 2008. (grade: *passed with distinction = in the top 10%*)
18. 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: *Quantum-circuit refrigeration by noise*, Heidi Kivijärvi, 2024. (Co-supervised with Arto Viitanen).
2. Master's thesis: *Pulse-level simulations of the fermionic-simulation gate on a superconducting quantum processor*, Joonas Andersson, 2024. (Co-supervised with Jani Tuorila and Tuure Orell.)
3. Master's thesis: *Simulations of Superconducting Qubits Under a Subharmonic Drive*, Fredrik Ihamuotila, 2023. (Co-supervised with Aashish Sah.)
4. Master's thesis: *Topologically Protected Vortex Knots*, Hermanni Rajamäki, 2023. (Co-supervised with Toni Annala.)

5. Master's thesis: *Design and modelling of long-coherence qubits using energy participation ratios*, Niko Savola, 2023. (Co-supervised with Caspar Ockeloen-Korppi and Jani Tuorila.)
6. Master's thesis: *Creation and evolution of monopole-antimonopole pairs in spin-1 Bose-Einstein condensates*, Joonas Vuojamo, 2022. (Co-supervised with Toni Annala and Roberto Zamora-Zamora.)
7. Master's thesis: *Qubit characterization and optimal control*, Heikki Suominen, 2022. (Co-supervised with Andras Gunyho.)
8. 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.)
9. 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.)
10. Master's thesis: *On-demand photon generation for quantum backscatter communication*, Aarne Keränen, 2020. (Co-supervised with Joni Ikonen.)
11. 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.)
12. Master's thesis: *Unconditional reset of a readout resonator by multichannel driving*, András Márton Gunyhó, 2020. (Co-supervised with Joni Ikonen.)
13. Master's thesis: *Bath-induced persistent Rabi oscillations in a qubit*, Jesper Ilves, 2019. (Co-supervised with Jan Goetz.)
14. Master's thesis: *Radio frequency quantum-circuit refrigerator*, Arto Viitanen, 2019.
15. Master's thesis: *Exact Quantum Dynamics of Driven Dissipative Resonators*, Akseli Mäkinen, 2018. (Co-supervised with Joni Ikonen.)
16. Master's thesis: *Reaction coordinate approach to non-Markovian dynamics in the spin-boson model*, Santeri Kaupinmäki, 2018.
17. 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.)
18. Master's thesis: *Phase gate for microwave photons*, Roope Kokkonen, 2016.
19. 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.)
20. Master's thesis: *Two-qubit gates in a microwave photonic quantum computer*, Tuomas Ollikainen, 2015.
21. Master's thesis: *Quantum-limited heat conduction over macroscopic distances*, Matti Partanen, 2014.
22. Master's thesis: *Quantum computing with itinerant microwave photons*, Janne Kokkala, 2013.
23. Master's thesis: *Non-equilibrium fluctuation relations in driven single-electron devices*, Tuomo Tantt, 2012.

24. Master's thesis: *Field-Programmable Gate Array Card for Readout and Control of Cryoelectronics*, Evgenia Bogdanova, 2012.
25. Master's thesis: *Monopoles in Dilute Bose-Einstein Condensates*, Emmi Ruokokoski, 2011.
26. Master's thesis: *Beyond the lowest-order approximation for decoherence in steered quantum evolution*, Juha Salmilehto, 2010.
27. Master's thesis: *Phosphorus dopant qubits in silicon*, Juha-Matti Pirkkalainen, 2009.
28. Master's thesis: *Creation and properties of multiply quantized vortices in dilute Bose-Einstein condensates*, Pekko Kuopanportti, 2008.
29. 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.)
30. Master's thesis: *Quantum Cryptography Protocol Based on Sending Entangled Qubit Pairs*, Olli Ahonen, 2007.
31. Master's thesis: *Vortex clusters and topological defects in dilute Bose-Einstein condensates*, Ville Pietilä, 2006.
32. Master's thesis: *Complexity analysis of quantum circuits*, Laura Koponen, 2004. (Co-supervised with Dr. Juha Vartiainen.)
1. Special Assignment: *Flux noise spectroscopy with dynamical decoupling for unimon qubits*, Tuomas Uusnäkki, 2023. (Co-supervised with Suman Kundu)
2. Special Assignment: *Quantum-Circuit Refrigerator for Active Qubit Reset*, Tuomas Uusnäkki, 2021. (Co-supervised with Timm Mörstedt)
3. Special Assignment: *Bolometer supplemented with dc heater: investigation of heat capacity*, Antti Karjasilta, 2020. (Co-supervised with Jean-Philippe Girard)
4. Special Assignment: *Zeeman effect in the current-voltage characteristics of hybrid single-electron transistors*, Heidi Kivijärvi, 2020. (Co-supervised with Sasu Tuohino)
5. Special Assignment: *Numerically exact simulations of qubit initialization with adiabatic decoupling*, Kassius Kohvakka, 2019. (Co-supervised with Jani Tuorila)
6. Special Assignment: *Electromagnetic simulations for quantum computing applications*, Aarne Keränen, 2018. (Co-supervised with Jan Goetz)
7. Special Assignment: *Creation and dynamics of polar-core vortices in spin-1 Bose-Einstein condensates*, Mikael Myllymäki, 2018. (Co-supervised with Tuomas Ollikainen)
8. Special Assignment: *Characterization of a graphene microwave bolometer*, Iiro Sallinen, 2018. (Co-supervised with Roope Kokkonen)
9. Special Assignment: *Randomized benchmarking of single-qubit gates*, András Gunyho, 2018. (Co-supervised with Jan Goetz)
10. Special Assignment: *Calibration of amplifier gain using normal-metal-insulator-superconductor junctions*, Eric Hyyppä, 2018.
11. Special Assignment: *Quantum-circuit refrigerator coupled to two parallel resonators*, Arto Viitanen, 2018. (Co-supervised with Matti Silveri)
12. Special Assignment: *Quantum-circuit refrigerator coupled to superconducting qubits*, András Gunyhó, 2017. (Co-supervised with Matti Silveri)

13. Special Assignment: *Microwave photodetector based on silver proximity Josephson junctions*, Niko Oinonen, 2017. (Co-supervised with Matti Partanen)
14. Special Assignment: *Dynamics of quasiprobability distributions in the Jaynes–Cummings model*, Akseli Mäkinen, 2017. (Co-supervised with Joni Ikonen)
15. Special Assignment: *Quantum driving of a superconducting qubit using a transmission line*, Jesper Ilves, 2017. (Co-supervised with Joni Ikonen)
16. Special Assignment: *Thermal bifurcations in a microwave photon detector*, Ari-Pekka Soikkeli, 2015. (Co-supervised with Joonas Govenius)
17. Special Assignment: *Monopoles in spin-2 Bose-Einstein condensates*, Tuomas Ollikainen, 2014. (Co-supervised with Emmi Ruokokoski)
18. Special Assignment: *Creation and dynamics of two-dimensional skyrmions in antiferromagnetic spin-1 Bose-Einstein condensates*, Tuomas Ollikainen, 2013. (Co-supervised with Emmi Ruokokoski.)
19. Special Assignment: *Heat Transport in a Superconducting Microwave Cavity*, Matti Partanen, 2012.
20. Special Assignment: *Voltage-biased Cooper pair pumps*, Janne Kokkala, 2012.
21. Special Assignment: *Observation of heat transfer mechanisms at sub-kelvin temperatures*, Matti Partanen, 2011.
22. Special Assignment: *Cooper pair pumping in the presence of decoherence*, Juha Salmilehto, 2009.
23. Special Assignment: *Topologically protected superconducting qubits*, Juha Salmilehto, 2009.
24. Special Assignment: *Elementary excitations in attractively interacting two-component Bose-Einstein condensates*, Pekko Kuopanportti, 2008.
25. Special Assignment: *Synthesis of hybrid quantum logic circuits by a matrix decomposition*, Tony Liimatainen, 2008.
26. Special Assignment: *Implementation of holonomic quantum computation in Josephson devices*, Juha-Matti Pirkkalainen, 2007.
27. Special Assignment: *Qubit dynamics in a noisy environment*, Olli-Pentti Saira, 2007.
28. Special Assignment: *Decompositions of permutation operators for quantum computers*, Olli-Pentti Saira, 2006.
29. Special Assignment: *Stability of stationary vortex rings in dilute Bose-Einstein condensates*, Juha-Matti Pirkkalainen, 2006.
30. Special Assignment: *Suppression of errors due to $1/f$ noise in one-qubit rotations*, Pekko Kuopanportti, 2006.
1. Bachelor's Thesis: *Deep Strong Coupling of Superconducting Artificial Atoms*, Jonatan Albanese, 2023. (Co-supervised with Yoshiki Sunada)
2. Bachelor's Thesis: *Characterization of a trimon system*, Eemeli Forsblom, 2023. (Co-supervised with Heikki Suominen)
3. Bachelor's Thesis: *Low-impedance lumped-element resonators for circuit quantum electrodynamics*, Samuel Klaver, 2023. (Co-supervised with Miika Rasola)
4. Bachelor's Thesis: *Design and simulation of i SWAP gates for unimon qubits*, Ron Nyström, 2022. (Co-supervised with Vasilii Vadimov and Rostislav Duda)

5. Bachelor's Thesis: *Qubit reset using a quantum-circuit refrigerator*, Maaria Tiiri, 2022. (Co-supervised with Timm Mörstedt)
6. Bachelor's Thesis: *Theoretical description of voltage-driven Unimon*, Tommi Malmelin, 2022. (Co-supervised with Vasilii Vadimov)
7. Bachelor's Thesis: *Three-dimensional skyrmions in a biaxial nematic spin-2 Bose-Einstein condensate*, Anna Huttunen, 2022. (Co-supervised with Roberto Zamora Zamora)
8. 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)
9. Bachelor's Thesis: *Measurement of the Lamb Shift of a Lumped-Element Resonator*, Alekski Kononen, 2021. (Co-supervised with Arto Viitanen and Giacomo Catto)
10. Bachelor's Thesis: *Use of a single circuit for a superconducting qubit and its readout*, Olavi Kiuru, 2021. (Co-supervised with Suman Kundu)
11. Bachelor's Thesis: *Modeling dielectric loss in superconducting coplanar-waveguide resonators*, Veikka Taka, 2020. (Co-supervised with Valteri Lahtinen)
12. Bachelor's Thesis: *Electromagnetic simulation of superconducting-qubit-resonator coupling*, Niko Savola, 2020. (Co-supervised with Giacomo Catto and Timm Mörstedt)
13. Bachelor's Thesis: *Control of Qubit Lifetime with a Quantum-Circuit Refrigerator*, Fredrik Ihamuotila, 2020. (Co-supervised with Timm Mörstedt and Joni Ikonen)
14. Bachelor's Thesis: *Characterization and charge detection methods for silicon quantum dots*, Heidi Kivijärvi, 2019. (Co-supervised with Maté Jenei)
15. Bachelor's Thesis: *Precise Characterization of Superconducting Microwave Resonators*, Otto Solatie, 2019. (Co-supervised with Johannes Heinsoo)
16. Bachelor's Thesis: *Traceable microwave power measurement at femtowatt level*, Eemil Visakorpi, 2019. (Co-supervised with Roope Kokkonen)
17. Bachelor's Thesis: *Simulation of a tunable coupler for implementing two-qubit gates between transmon qubits*, Severi Rissanen, 2018. (Co-supervised with Jan Goetz)
18. Bachelor's Thesis: *Pulsed quantum-circuit refrigeration*, Kassius Kohvakka, 2018. Co-supervised with Matti Partanen.
19. Bachelor's Thesis: *Time-dependent behavior of a phase shifter for microwave photons*, Osama Abuzaid, 2018. Co-supervised with Roope Kokkonen.
20. Bachelor's Thesis: *Single-charge pumping with a silicon quantum dot*, Elin Nyman, 2018. Co-supervised with Maté Jenei.
21. Bachelor's Thesis: *Creation of a two-quantum vortex in quadrupole-Ioffe-configuration trap*, Henrik Nortamo, 2017. Co-supervised with Tuomas Ollikainen.
22. Bachelor's Thesis: *Nanosecond Operation of a Quantum-Circuit Refrigerator*, Eric Hyypä, 2017. Co-supervised with Kuan Yen Tan.
23. Bachelor's Thesis: *Characterization of Xmon qubits*, Aarne Keränen, 2017. Co-supervised with Jan Goetz.
24. Bachelor's Thesis: *Critical current in superconductor-normal-metal-superconductor junctions*, Niko Oinonen, 2017. Co-supervised with Matti Partanen.
25. Bachelor's Thesis: *Measurement of the Noise Equivalent Power of an Attowatt Microwave Detector*, András Gunyhó, 2017. Co-supervised with Joonas Govenius.

26. Bachelor's Thesis: *Charge capture mechanisms in quantum dot single-electron pumps*, Heikki Timonen, 2016. Co-supervised with Máté Jenei.
27. 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.
28. Bachelor's Thesis: *Photonic heat conduction in a microwave transmission line*, Miika Mäkelä, 2015. Co-supervised with Matti Partanen.
29. Bachelor's Thesis: *Single-electron pumping with a silicon quantum dot*, Akseli Mäkinen, 2015. Co-supervised with Tuomo Tantt.
30. Bachelor's Thesis: *Microwave response of superconductor–normal metal–superconductor junctions*, Roope Kokkonen, 2015. Co-supervised with Russell Lake.
31. Bachelor's Thesis: *Tunable phase gate for microwave photon qubits*, Sakari Saarenpää, 2014. Co-supervised with Russell Lake.
32. Bachelor's Thesis: *Quantum driving with a coherent state in the Jaynes–Cummings model*, Sofia Patomäki, 2014. Co-supervised with Elsi-Mari Laine.
33. Bachelor's Thesis: *Counting charge transitions in a single-electron pump*, Kukka-Emilia Huhtinen, 2014. Co-supervised with Tuomo Tantt.
34. Bachelor's Thesis: *Implementation of data acquisition and preprocessing with a field-programmable gate array*, Elsa Mannila, 2014.
35. Bachelor's Thesis: *Fabrication and cryogenic measurements of nanowires grown with focused ion and electron beams*, Antti Mäkinen, 2013.
36. Bachelor's Thesis: *Optimization of nearly adiabatic steering of two-level quantum systems*, Juha Kreula, 2011.
37. Bachelor's Thesis: *Quantum gate decompositions of many-particle state preparations for simulations of quantum chemistry*, Tuomo Tantt, 2009.
38. 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, Research Fellow
- Suman Kundu, PhD, Staff Scientist
- Yoshiki Sunada, PhD, postdoctoral researcher
- Jian Ma, PhD, postdoctoral researcher
- Wallace Teixeira, postdoctoral researcher
- Florian Blanchet, postdoctoral researcher
- Qiming Chen, postdoctoral researcher
- Arman Alizadeh, postdoctoral researcher
- Priyank Singh, postdoctoral researcher
- Timm Mörstedt, 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
- Heikki Suominen, MSc, PhD student
- Markus Kivioja, MSc, visiting PhD student
- Kassius Kohvakka, MSc, part-time PhD student
- Heidi Kivijärvi, BSc, MSc student
- Olli Mukkula, BSc, MSc student
- Hermanni Rajamäki, BSc, MSc student
- Daniel De Carvalho, BSc, MSc student
- Mikko Tuokkola, BSc, MSc student
- Jonatan Albanese, semester student

Students currently under supervision outside QCD group

- Paul Venetz, MSc, PhD student/Quantum Engineer, IQM Finland Oy
- Lassi Lehtisyrjä, MSc, PhD student/Researcher, VTT
- Lan-Hsuan Lee, MSc, PhD student/Quantum Engineer, IQM Finland Oy
- 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. Toni Annala, postdoc at Institute of Advanced Study, Princeton
2. Roberto Zamora-Zamora, Quantum SW Engineer, Quantscient
3. Jean-Philippe Girard, Cryoengineer, Bluefors Ltd.
4. Chengyu Yan, Associate Professor, Huazhong University of Science and Technology, China
5. Valtteri Lahtinen, Research Fellow, Aalto University, Finland
6. Wei Liu, Quantum Engineer, IQM, Finland
7. Vasili Sevriuk, Quantum Engineer, IQM, Finland
8. Jani Tuorila, Quantum Engineer, IQM, Finland
9. Johannes Heinsoo, Quantum Engineer, IQM, Finland
10. Tianyi Li, Quantum Engineer, IQM, Finland
11. Leila Najafi, cleanroom engineer, VTT, Finland
12. Dibyendu Hazra, R&D staff, Microsoft, Finland

13. Matti Silveri, Associate Professor at University of Oulu, Finland
14. Jan Goetz, Marie Skłodowska-Curie Fellow at Aalto University, Finland
15. Visa Vesterinen, Staff Scientist at VTT Technical Research Centre of Finland
16. Kuan Yen Tan, Academy Research Fellow at Aalto University, Finland
17. Shumpei Masuda, Tokyo Medical University (assistant professor), Japan
18. Russell Lake, postdoc at NIST and University of Boulder, USA
19. Ivan Savenko, Center for Theoretical Physics of Complex Systems, Republic of Korea (tenure track researcher)
20. Elsi-Mari Laine, University of Turku (postdoc)
21. Harri Mäkelä, Finnair Oy, Finland
22. Ville Pietilä, Varian Medical Systems, Finland
23. Paolo Solinas, SPIN – CNR (tenure track researcher), Genova, Italy
24. Jukka Huhtamäki, Eigenor Corporation, Finland
25. 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
2. Engineering Physics BSc student group π ipsan π intaintegraalit, 2023–2025

Organized scientific events

Member of Program Committee of *Inside Quantum Technology Nordics 2024*, Espoo, Finland, 2024

Member of Scientific Committee of *Quantum Matter International Conference – QUANTUMatter 2024*, San Sebastian, 2024

Co-Organizer of *Hybrid Quantum Electronics workshop*, Espoo, Finland, 2024

Chair of the Scientific Committee of *Superconducting Qubits and Algorithms (SQA)* conference, Munich, 2023

Chair of the *Annual Seminar of Nokia Industrial Doctoral School in Quantum Technology*, Murry Hill, USA, 2023

Chair of the *Superconducting Qubits and Algorithms (SQA)* conference, Helsinki, 2022

Host of *Quantum Error Correction Workshop*, Aalto University, 2022

Chair of the *Annual Seminar of Nokia Industrial Doctoral School in Quantum Technology*, Espoo, 2022

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. Invited talk on *Bringing Quantum from Lab to Life*, John Hopkins University Science Diplomacy Summit, Washington DC, USA, 15.4.2024

2. Invited talk on *Kvanttitietokoneiden ja -laskennan kehittämisen avaintekijät Suomessa Aalto-yliopistosta katsottuna*, SITRA quantum delegation to Lumi supercomputer, CSC, 30.1.2024
3. Invited talk on *Kvanttivistinnän ja -laskennan infrastruktuurien merkitys suomalaisen yhteiskunnan resilienssiin*, Resilience of Finnish society seminar, Aalto University, 7.12.2023
4. Invited fireside chat on *Commercializing research in global markets*, Silta x Mimir start-up event, 17.11.2023
5. Two invited talks on *Kvanttitietokoneiden valtavat mahdollisuudet*, Teknologia 23 convention, 8.11.2023
6. Invited talk on *In the guts of a quantum computer: why and how does it work?*, Teknologia 23 convention, 7.11.2023
7. Invited talk on *Quantum computers for practical applications*, Aalto Alumni Weekend 2023, 29.10.2023
8. Invited keynote talk on *Envisioning and preparing for a DARQ future*, MoneyLive 2023, Copenhagen, 24.10.2023
9. Invited talk on *Suprajohtava kvanttitietokone*, Alumni of Computer Science students of the University of Helsinki, 12.10.2023
10. Invited fireside chat on *Opportunities in quantum for deep tech*, NORDEEP Summit, 12.10.2023
11. Invited talk on *Opportunities of quantum technology for Finland*, BusinessQ Afternoon Meets, 5.9.2023
12. Invited talk on *Kvanttiteknologian tila ja tulevaisuus Suomessa*, Ministry of Finance, 12.6.2023
13. Invited talk on *Kvanttitietokoneen mahdollisuudet ja haasteet*, TIVIA — Finnish Information Processing Association, 13.4.2023
14. Invited talk and panel on *Kvanttitietokoneiden nousu (Rise of quantum computers)*, Finnish Academy of Sciences, 13.3.2023
15. Invited talk on *Road to ERCs* for an ERC info session, Academy of Finland, 2.3.2023
16. Invited talk on *IQM* for the delegation of the German Finance Minister Christian Lindner, Aalto University, 15.2.2023
17. Invited talk *Kvanttitietokoneiden ajan alku Suomessa*, Science Forum, 15.1.2023
18. Invited talk *The Present and Future of IQM Quantum Computers* at the Quantum era if here seminar, Quantum Karelia, 14.12.2022
19. Panel member on quantum future in the Puzzle X conference, Barcelona, 16.11.2022
20. Invited talk on IQM quantum computer at The Finnish Academy of Technology, 4.10.2022
21. Panel member in the workshop on future economy of the [Kultaranta talks](#) invited by the President of Finland, 13.6.2022
22. Panel member on quantum in the DeepTech Track of Artic15 startup conference, 8.6.2022
23. *Quantum Computers at IQM*, invited talk in the Quantum Karelia meetup, 3.6.2022
24. *Quantum Computing for Europe*, invited talk in an event Artificial Intelligence 4.0 – Building European Competence in AI and Digital organized by Minister Mika Lintilä of the Ministry of Employment and Economy, 11.5.2022

25. *Kvanttitietokone ja sen sovellukset yritysmaailmassa*, invited talk at the Töölö Rotary Club, 14.4.2022
26. *Quantum Computing and Applications*, invited talk at Reaktor Oy, 21.1.2022
27. *Take a quantum leap in Finland!*, host of the event Episode IV: Future Digitalization organized by Business Finland, 15.11.2021
28. *Kvanttitietokoneiden aikakausi*, invited talk in an event Kaikki liikkeessä 2030 organized by Finnish Transport and Communications Agency, 9.11.2021
29. *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.
30. *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
31. *Kvanttitietokone käytännössä*, invited keynote talk in an event CIO Forum by Tivi, 5.10.2021
32. *Kvanttitietokone ja sen sovellukset yritysmaailmassa*, invited keynote talk and Q&A in an event Future of ICT by Telia, 9.9.2021
33. *How to Gain Financing for your Quantum Start-Up*, invited talk and Q&A in an event Quantum AI & Machine Learning, 8.9.2021
34. *Kurkistus kvanttitietokoneiden maailmaan*, invited studia generalia talk in the 30th Jyväskylä Summer School, online, 11.8.2021
35. *Quantum Computer*, invited talk in Tech Spotlight series for all staff of NTT Data Romania, online, 23.4.2021
36. *Kvanttitietokone*, invited lectures in the University for the Elderly (Ikääntyvien yliopisto), Jyväskylä/online, 21.4.2021
37. *Kvanttitietokoneen toiminta*, invited talk in the Kvantilla tulevaisuuteen webinar, Joensuu/online, 10.2.2021
38. *Kvanttiteknologia*, invited talk in the annual meeting of AFCEA Helsinki Chapter, Helsinki, 25.11.2020
39. *Quantum Computer*, invited talk in the annual event of MAOL Espoo, Espoo, 10.9.2020
40. *Quantum Computer*, invited talk in the annual event of the Lukema network for high-school teachers, Espoo, 24.8.2020
41. *Quantum Computing in a Nutshell*, invited talk in quantum computing webinar: Finland – The Coolest Place to Develop Quantum Computing, Helsinki, 21.4.2020
42. *IQM We build quantum computers*, invited pitch at Physicists fair, Espoo, 11.2.2020
43. *Kvanttitietokone*, invited talk for Academic Association for Mathematics and Natural Sciences – MAL, Helsinki, 4.2.2020
44. *What is a quantum coputer*, invited talk at EyesOn event by Airbus, Jyväskylä, 30.1.2020
45. *Quantum Computer Development*, invited talk for the Finnish Metrological Institute, Helsinki, 20.1.2020
46. *Quantum Computer: concepts, development, and opportunities*, plenary talk and panel discussion at Future Tech Forum, Taiwan, 6.12.2019
47. *Quantum Computing*, talk at The European Big Data Value Forum, Helsinki, 16.10.2019
48. *Quantum Computer*, talk at Hel Tech meetup, Helsinki, 6.9.2019
49. *Kvanttiteknologia: tietoisku*, talk for policy makers, Ministry of Defense, Helsinki, 28.8.2019

50. *Kvanttitekologia ja metrologia*, talk on the World Metrology Day event at MIKES, Espoo, 20.5.2019
51. *Kvanttietokoneen kehityksen nykytila*, talk in the biannual seminar of the Signals Officers' Association, Helsinki, 11.2.2019
52. *Quantum computer and research in the QCD Labs*, talk for policy makers, Ministry of Defense, Helsinki, 9.11.2018
53. *Quantum computer and research in the QCD Labs*, talk for Aalto students at Aaltoes, Espoo, 27.9.2018
54. *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
55. *Quantum Computer*, invited talk at Future Data Summit, Espoo, 19.9.2018
56. *Superconducting quantum computer*, invited talk at Cryptodocks meetup, Helsinki, 30.5.2018
57. *Kvanttietokone ja sen rakentaminen Suomessa*, invited talk at Bank of Finland, Helsinki, 5.4.2018
58. *Quantum Computers and Information security*, invited talk at Disobey (hacker conference), Helsinki, 12.2.2018
59. *Kvanttietokone*, talk at the fall meeting of the Technology Industries of Finland, 15.11.2017
60. *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.
61. *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
62. *Laatu mikrotasolla määrää aineen ihmeelliset ominaisuudet*, talk to general public on 2016 Nobel prize in Physics, Tampere City Library, 10.12.2016
63. *Quantum Technology*, talk to policy makers of research funding, Ministry of Education and Culture, 25.5.2016
64. *Johdatus kvanttietokoneisiin ja -teknologiaan*, talk to policy makers on network security, Ministry of Finance, Helsinki, 28.4.2016
65. *Kvanttietokone: turvallisuusuhka vai runsaudensarvi?*, public talk (the only university speaker), ICTexpo 2016, Helsinki, 27.4.2016
66. *Far Beyond 5G: the quantum information age*, talk to journalists at Elisa Academy (also live internet stream), 14.10.2015.
67. *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)

TV interview by MTV3 Viiden Jälkeen program, *Vieko suomalaiskeksintö kvanttietokoneet uusiin ulottuvuuksiin?*, 10.4.2024.

Inteerviews by Physics World, [Helsingin Sanomat](#), [Tekniikka&Talous](#), Loimu on bolometric qubit readout, 10.4.2024.

Interview by Insinööri-lehti, *Suomessa rikkoutuu tänä vuonna 50 kubitin raja*, 8.4.2024.

TV interview on quantum computers by HS Lasten Uutiset, 9.12.2023

Interview on *Kvanttitietokoneessa jo tuhat kubittia* by Helsingin Sanomat, 12.12.2023.

Radio interview on quantum computers, live on morning program, national radio Yle Radio Suomi, 10.10.2023

TV interview by MTV3 News, *Hallitus panostaa kymmeniä miljoonia kvanttitietokoneisiin leikkausten keskellä*, featured in prime-time national news and the corresponding article, *Tällaisille laitteille kaikesta säästävä hallitus antaa 70 miljoonaa euroa – "Tulee mullistamaan kaiken"*, 26.9.2023

Interviews on the creation of Alice rings by New Scientist, Science Alert, and Tekniikka&Talous, 29.8.2023

Interview on *Suomalainen Mikko rakensi järjettömän tarkan säteilymittarin* by Tekniikka&Talous, 8.6.2023.

Interview on *New bolometer could lead to better cryogenic quantum technologies* by Physics World, 2.6.2023.

Image on *topologically protected links* was chosen as the runner up in the five-year anniversary image contest by Communications Physics, 29.3.2023.

Interview and video on *Kvanttitietokoneet ovat yksi Suomen "neljästä valtista", sanoo professori – näin hän avaa videolla, mitä kvanttilaboratoriossa tapahtuu* by Yle News, 28.3.2023.

Interviews on *Topologically protected vortex knots and links* by Tekniikka&Talous and Gizmodo, 12.12.2022.

Interviews on the unimon qubit by Tekniikan Maailma, Physics, TiVi, and Superconductor Week, 7.12.2022.

Podcast interview on *In a few years, quantum advantage could change the world as we know it* by Relevant Founders, 29.9.2022.

Podcast interview on quantum computing by Sciencei, 9.9.2022.

Interview by New Scientist, *IBM has built the world's largest fridge for quantum computers*, 8.9.2022.

Interview by Tekniikka&Talous, *Kvanttitietokoneet kasvavat pian niin suuriksi, että niiden rakentaminen vaatii täysin uudenlaista teknologiaa*, 16.2.2022.

Interview on *Quantencomputer von IQM Eiskalt berechnet* by Die Zeit, 28.1.2022

Spotlight interview by Superconductor Week, 11.12.2021

Interview on *millikelvin microwave source* by Helsingin Sanomat, Shifted, Tekniikka&Talous, Tekniikan Maailma, 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 QCCircuits circuit design software, featured in tivi.fi *Suomalaistutkijat tekivät jäätiharppauksen 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 Teknologiaateollisuus, *"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 kvanttietokone 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 kvanttietokonestartup 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, *Kvanttietokonetta kehittävä suomalaisyhtiö porskuttaa – keräsi 39 miljoonaa rahoitusta*, 10.11.2020

Interview by Keski-suomalainen, *Suomalainen kvanttietokoneita 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 kvanttietokoneita 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 kaksiulotteinen 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 kvanttietokonetta, 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 Prace 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 kvanttietokonetta](#), 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 kvanttietokonetta 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 = mc² – 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.

Media interviews on the creation of a three-dimensional skyrmion by Yle uutiset (also in radio news), Turun Sanomat (also in print), Gizmodo, Science News, Tekniikan Maailma, Iltalehti (also in print), El País, Tähdet ja avaruus, New Scientist, Suomen tietotoimisto, Tivi, and Keski-suomalainen in print, 2.3.2018.

Podcast by Heureka on Liikkuminen, liikenne ja tulevaisuus - Heikki Liimatainen, Mikko Möttönen, 19.2.2018

Radio interview by Juuso Pekkinen/Yle Puhe on quantum computers, 19.12.2017.

Interview by Suomen Akatemia on quantum computers, 5.12.2017.

Interview by Tiede, *Kvanttilaskin valmistuu*, 1.12.2017.

Live radio interview on campaign Vaihtoehto Eskolle and on quantum computers by YleX, program Etusivu (time stamp 1:18:00), 15.11.2017.

Radio interview on quantum computers, *Aalto-yliopistossa aletaan rakentaa kvanttietokonetta*, national radio Yle Radio 1 in program Tiedeykkönen, 7.11.2017.

Interviews on quantum computers by Apu magazine, 2.11.2017.

Interview by Tiede, *Miksi Suomi rakentaa kvanttilaskimen?*, 1.11.2017.

Live radio interview on quantum computers by Yle Radio Suomi, program Ajantasa, 16.10.2017.

Live interveiw about quantum computers on national morning TV, MTV3 program *Huomenta Suomi*, 12.10.2017.

Interviews on quantum computers by Iltalehti, Lännen Media (published in ten newspapers), Tekniikan Maailma, Uudenmaan liitto, and Tekniikka&Talous, 10.10.2017.

Interview by Tekniikan Maailma, *Milloin kvanttietokone mullistaa tietojenkäsittelyn?*, 6.9.2017.

Radio interview on Bose–Einstein condensates and quantum computers, *Kvanttimekaniikkaa Bosen-Einsteinin kondensaatissa - kvanttimonopoli hajosi*, national radio Yle Radio 1 in program Tiedeykkönen, 4.8.2017.

Book review in popular science magazine Tiede, Neroksta jännitystä, 6.7.2017.

Interview by Tekniikka&Talous, *Kiina väittää kehittäneensä kvanttitutkan - paljastaa myös häivekoneet*, 21.6.2017.

Interview by Physics Today, *Quantum-circuit refrigerator*, 1.6.2017.

Interview by Tiede, *Kuumat kubitit jäähylle*, 1.6.2017.

Live Radio interview by Juuso Pekkinen at Yle Puhe on quantum computers and the quantum circuit refrigerator, 17.5.2017.

Interviews on the quantum circuit refrigerator by New Scientist, IFLScience, Superconductor Week, Iltalehti, Tekniikan Maailma, Uusi Suomi, Aamulehti (also printed in Kaleva), Suomen Kuvalehti, Tekniikka&Talous, Cleantech Concepts, E&E Magazine, Curiosity, 8.5.2017.

Video press release, *How to Cool Down a Quantum Bit*, Aalto University, 8.5.2017

Interview by Tekniikka&Talous, *Suomalaiset opiskelijat pääsevät koodaamaan kvanttietokonetta – koneen tehot kuitenkin vielä vähissä*, 10.4.2017.

Interviewed for content by Helsingin Sanomat, *Hyvin nopea kvanttietokone voi toteutua pian*, 23.3.2017.

Guest in TV series, *Olipa kerran elämä*, 1.3.2017.

Interview by Suomen Kuvalehti, *Ällistyttävä ennuste: Tietokoneet käyttävät kaiken tuotetun sähkön vuonna 2040 – jos nykymeno jatkuu*, 23.2.2017.

Interview by Tiede magazine, *Näistä maailma puhuu 2017 – Kvanttihyppy tietokoneella*, 5.12.2016

Online story by tietysti.fi, *Oikoreittiä kvanttietokoneilla*, 2.12.2016.

Radio interview on our microwave detector, *Punasolua pienempi fotoni-ilmaisoin - marraskuun tähtitaivaalla vilahtelevat leonidit*, national radio Yle Radio 1 in program Tiedeykkönen, 4.11.2016.

Interview by Academy of Finland, *Tutkijanuraportaitko edistää tieteen parasta*, 31.10.2016.

Invited talk at Fysikerfest, the annual student conference of Finnish Association of Physics and Mathematics Students, *Quantum Knots*, 22.10.2016

Interview Cleantech Concepts, <http://www.cleantechconcepts.com/2016/10/highly-efficient-heat-transfer-holds-promise-for-quantum-computing/>, 14.10.2016

Interview by Superconductor week, *Aalto Builds and Tests Efficient Photon Detector*, 25.8.2016

Interview by Iltalehti, *Otaniemessä tehtaillaan tieteellisiä läpimurtoja. Kuumaa tutkimusryhmää johtaa epätavallinen kvanttifysikko Mikko Möttönen*, 2-pages in print, 6.8.2016

Interviews about our microwave detector given to [EE Times](#), [Physics Buzz](#), [The Next Platform](#), [Iltalehti](#), [Suomen tietotoimisto](#) (published in 17 news papers), 8.7.2016

News on obtaining an ERC Proof-of-Concept Grant, [ERC Proof of Concept to Mikko Möttönen](#), Aalto University, 8.7.2016

Interview by Tiede-lehti, *Suomen kvanttijulkis*, 8.6.2016

Interview by YLE, *Kvanttiteknologian vallankumous kytee Otaniemessä*, 19.5.2016

Interview by Lännen Media, *Äärimmäisen tehokkaat*, appeared at least on Kainuun Sanomat, Turun Sanomat, Satakunnan Kansa, Lapin Kansa, Pohjolan Sanomat, 24.4.2016

Interview by Lännen Media, *Aalto-yliopisto tavoittelee uutta huippuyksikköä*, appeared at least on Turun Sanomat, Kaleva, Ilkka, Pohjalainen, Satakunnan Kansa, Hämeen Sanomat, 23.4.2016.

News on obtaining an ERC Consolidator Grant, *Aalto University research project on quantum technology awarded a seven-figure grant*, Aalto University, 23.3.2016.

Authored a popular science article, *Efficient Long-Distance Heat Transport by Microwave Photons*, 2Physics, 20.3.2016.

Interviewed on quantum computers for an article in mtv.fi, *Tietokoneen esi-isä mullisti maailman 70 vuotta sitten – teki sadan vuoden työt kahdessa viikossa*, 13.2.2016.

Radio interview on quantum knots and another interview on quantum-limited heat conduction, *Suomalaiskeksinnön avulla voidaan viilentää kvanttietokonetta tehokkaasti*, national radio Yle Radio 1 in program Tiedeykkönen, 5.2.2016.

Quantum-limited heat conduction featured in [Radio Aalto Tiedenurkka](#), 2.2.2016

Interviews on quantum-limited heat conduction given to [Physics World](#), [IFLScience](#), [Iltalehti](#), [Helsingin Sanomat](#), [Tekniikka & Talous](#), Lännen media (published in ten news papers), [mtv.fi](#), [Uusi Suomi](#), [Aamulehti](#), [Suomen tietotoimisto](#), [Tekniikan Maailma](#), [Turun Sanomat](#) (in print), [CSC Magazine](#), 1.2.2016.

Video press release, *Quantum-limited heat conduction over macroscopic distances*, Aalto University, 1.2.2016

Live radio interview on the quantum knots in Yle Puhe morning show, 19.1.2016.

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

Video press release, *Tying Quantum Knots*, Aalto University, 18.1.2016

Interviewed for an article in Scientific Computing World magazine, *A quantum leap in processors?*, Dec 2015.

Interviewed for an article in Luonnontieteilijä magazine, Dec 2015.

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

Interview by online medium ELISA.NET, *Suomalaistutkija ratkaisi tiedemaailmaa 80 vuotta vaivanneen ongelman*, 15.10.2015

Video [interview](#) on why we should popularize science (in Finnish), Kaskas Media, 22.5.2015.

Radio interview, *Tieteellinen läpimurto syntyi unettomassa yössä*, live in Yle Puhe morning show, 12.5.2015.

Radio interview, *Toukokuu tarjoaa tähtiä, tähdenlentoja ja auringonpilkkujakin*, national radio Yle Radio 1 in program Tiedeykkönen, 8.5.2015.

Invited statement in [Ylioppilaslehti](#) about concepts in science that we should drop, May 2015.

Interviews on the quantum-mechanical monopole given to [Helsingin Sanomat](#), [Keski-suomalainen](#), [Yle](#), [MTV](#) (two stories), [Savon Sanomat](#), [Karjalainen](#), [Etelä-Suomen Sanomat](#), [Tekniikka&Talous](#), [de Volkskrant](#), 30.4.2015

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 *Rantatonnteja voisi antaa myös fysiikan olympiamitalisteille*

Tekniikan Maailma (TM) wrote an article about my work in the issue 6/2014 with the title *Magneettinen Monopoli Laboratoriossa*

Feature article for general public on author's ERC grant SINGLEOUT, *Studying individual microwave photons*, EU Research 1/2014, p. 49.

Radio interview, *Keinotekoiset magneettiset monopolit*, <http://areena.yle.fi/radio/2104302>, national radio Yle Radio 1 in program Tiedeykkönen, 31.1.2014.

News published on the synthetic magnetic monopole in all relevant Finnish media and in important foreign media including The Guardian (editorial), BBC News, Nature, Scientific American, see <http://physics.aalto.fi/groups/comp/qcd/qcd-mediaroom/> for a more complete list. January 2014.

Newspaper interviews, interviews on the synthetic magnetic monopole given to Helsingin Sanomat, Keski-suomalainen, Suomen Kuvalehti, Suomen tietotoimisto (STT), Der Spiegel (German), and De Vokskrant (Dutch). January 2014.

Video press release, *Making Monopoles - Synthetic Magnetic Monopole Finally Observed*, <http://www.youtube.com/watch?v=HSDoIf5FY2s>, Aalto University, 30.1.2014

Press release, *Scientists discover long awaited synthetic particle*, http://physics.aalto.fi/wp-content/uploads/2014/01/Press_release_monopole_Finland_English_29012014.pdf, Aalto University, 29.1.2014

Magazine interview, *Builders of Our Future*

- http://physics.aalto.fi/wp-content/uploads/2013/04/trendi_march2013.pdf, chosen as the representative from science, Trendi Magazine, 5.3.2013.
- Interview and article, *Computers Go Quantum*, http://issuu.com/aaltouniversity/docs/aum_03_web, Aalto Magazine, 9.5.2012
- Newspaper interview, *Code that does not break*, http://physics.aalto.fi/wp-content/uploads/2012/03/HS_Kvanttikryptografia_web.pdf, national newspaper Helsingin sanomat, 6.3.2012
- Newspaper interview, *Single-atom transistor*, http://physics.aalto.fi/wp-content/uploads/2012/03/hesari_transistori_2012.pdf, national newspaper Helsingin sanomat, 25.2.2012
- Video press release, *EU grant for a basic component of the quantum computer*, http://www.youtube.com/watch?v=dWcT_qrBN_w, Aalto University, 2.11.2011
- Press release, *EU grant for a basic component of the quantum computer*, Aalto University, 6.10.2011
- Live internet presentation, *Kuinka ERC kesytetään*, http://akatemia.livepalvelu.com/video.php?video=2011_10_06_aka_erc_mikko_mottone_n_sd_001.mp4, Academy of Finland, 6.10.2011.
- Radio interview, *Is quantum computer coming?*, http://physics.aalto.fi/wp-content/uploads/2012/03/Tuleeko_kvanttitietokone_Radiaattori27102010.mp3, national radio Yle Radio 1 in program Radiaattori, 27.10.2010.
- 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, US11442086B2, 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 *Qubit Leakage Error Reduction*, Patent numbers US11469759B2. First patent granted on 27.9.2022.
6. 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).

7. Patent application on *Additive Control of Qubits for Enabling Time-Domain and Frequency-Domain Multiplexing*, European patent application number EP135906 (submitted in 2020)
8. Patent application on *Method and Arrangement for Resetting Qubits*, European patent application number EP20183079 (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)
18. Patent application on *Classical simulation of a quantum system* PCT patent application number PCT/EP2022/054202 (submitted in 2022)
19. Patent application on *Methods and Arrangements for Driving a Quantum Mechanical System* PCT patent application number PCT/FI2022/050655 (submitted in 2022)
20. Patent application on *Multi-Qubit Superconducting Circuits* PCT patent application number PCT/FI2023/050477 (submitted in 2023)

Invited talks in international conferences and major international workshops
(other talks listed after the list of publications)

1. M. Möttönen, **invited talk** on *Creating and seeing the family of three-dimensional topological defects on the way to stable vortex knots* in SKCM² Spring Symposium, March 2024, Japan.
2. M. Möttönen, **invited talk** on *Unimon qubit and single-shot readout using a thermal detector* in International Conference on Quantum Technologies and Applications (ICQTA), February 2024, Finland.
3. M. Möttönen, **invited talk** on *Single-Shot Readout of a Superconducting Qubit Using a Thermal Detector* in Workshop in Hybrid Quantum Electronics, January 2024, Finland.

4. M. Möttönen, **invited talk** on *Superconducting qubits and millikelvin electronics* in Symposium on Quantum Computing with Superconducting Qubits (SQCSQ), December 2023, India/online.
5. M. Möttönen, **invited talk** on *Low-temperature detectors rock with superconducting quantum computers* in Low Temperature Detectors (LTD20), July 2023, Korea.
6. M. Möttönen, **invited talk** on *Quantum-Circuit Refrigerator – a tool for engineering quantum thermodynamics* in Dynamical and Hidden Order (BalCon TP 2023), June 2023, Sweden.
7. M. Möttönen, **keynote talk** on *Fidelity, scale, and speed of quantum-computing hardware* in IQT Nordics, June 2023, Denmark.
8. M. Möttönen, **invited talk** on *Addressing the fidelity and scaling challenges of superconducting qubits* in Quantum Matter International Conference – QUANTUMatter 2023, May 2023, France.
9. M. Möttönen, **invited talk** on *Unimon qubit and single-shot readout using a thermal detector* in International meeting on superconducting quantum materials and nanodevices, April 2023, Montenegro.
10. M. Möttönen, **invited talk** on *Unimon qubit and single-shot readout using a thermal detector* in Quantum Mesoscopic Physics at 57th Rencontres de Moriond, March 2023, France.
11. M. Möttönen, **invited talk** on *New superconducting qubit and millikelvin electronics for it* in Niels Bohr Centennial Symposium: Frontiers in Quantum Science and Technology, October 2022, Denmark.
12. M. Möttönen, **invited talk** on *New superconducting qubit and millikelvin electronics boost it* in Nordita Workshop on Quantum Machine Learning for Quantum Control and Quantum Computing, August 2022, Sweden
13. M. Möttönen, **invited talk** on *Introduction to Quantum Technology* in Virtual Plenary Keynote Panel: Quantum Communication, IEEE 95th Vehicular Technology Conference: VTC2022-Spring, June 2022, Helsinki
14. M. Möttönen, **invited talk** on *Heat-based measurement and on-demand dissipation for a superconducting qubit*, Quantum Microwaves, Heat Transfer and Many-Body Physics in Superconducting Devices, May 2022, Italy
15. 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.
16. M. Möttönen, **invited talk** on *Superconducting Quantum Computers*, 19th International Conference on Unconventional Computation and Natural Computation, October 2021, Finland, online.
17. 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.

18. 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.
19. M. Möttönen et al., **invited talk** on *Towards calorimetric detection of single microwave photons*, Quantum Nanophotonics, March 2021, Spain (online).
20. M. Möttönen et al., **invited talk** on *Bolometer operating at the threshold for circuit quantum electrodynamics*, Nanoscience Days, October 2020, Finland (online).
21. 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).
22. 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.
23. M. Möttönen et al., **invited talk** on *Readout and control for a superconducting quantum computer*, Quantum Technology: Academia Meets Industry, September 2019, China.
24. M. Möttönen et al., **invited talk** on *Quantum Detectors*, Axion Experiments in Germany, August 2019, Germany.
25. M. Möttönen et al., **invited talk** on *Ultrasensitive Microwave Bolometer*, 18th International Workshop on Low Temperature Detectors, July 2019, Italy.
26. M. Möttönen et al., **invited talk** on *Fast measurement and initialization of superconducting qubits*, FQMT'19, July 2019, Czech Republic.
27. M. Möttönen et al., **invited plenary talk** on *Techniques for qubit initialization and readout*, European Quantum Technologies Conference EQTC 2019, Feb 2019, France.
28. 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.
29. 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.
30. M. Möttönen et al., **invited talk** on *In-situ-controllable dissipators for superconducting electronics*, International conference on quantum technologies, Sep 2018, Russia.
31. M. Möttönen et al., **invited talk** on *Superconducting Quantum Computer*, ICPS 2018, Aug 2018, Finland.
32. M. Möttönen et al., **invited (midnight) talk** on *Quantum Technology – Quantum electronics*, 16th NAMIS Workshop, June 2018, Finland.
33. M. Möttönen et al., **invited talk** on *Computational Challenges and Opportunities Provided by Quantum Mechanics*, Innovative Methods in Scientific Computing, October 2017, Finland.

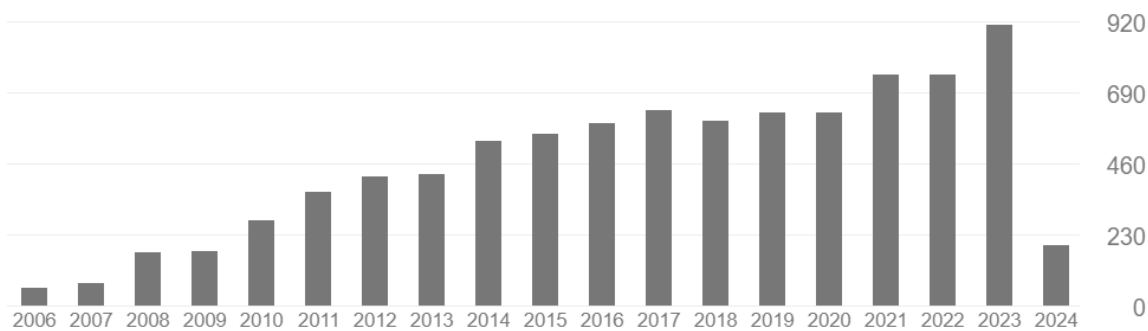
34. M. Möttönen et al., **invited talk** on *Experiments on temporally controllable dissipation in superconducting quantum circuits*, FQMT'17, July 2017, Czech Republic.
35. M. Möttönen et al., **invited talk** on *Quantum knots and monopoles*, Topological Effects in Ultra-Cold Atoms, November 2016, Brazil.
36. M. Möttönen et al., **invited talk** on *Quantum-limited heat conduction over macroscopic distances*, Energy Materials and Nanotechnology meeting on Quantum, April 2016, Thailand.
37. 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.
38. 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.
39. M. Möttönen et al., **invited talk** on *Discoveries of magnetic-monopole analogues in Bose–Einstein condensates*, FQMT'15, July 2015, Czech Republic.
40. M. Möttönen et al., **invited talk** on *Fluctuation relations in single-electron devices*, Quantum Information and Thermodynamics, February 2015, Brazil.
41. M. Möttönen et al., **invited talk** on *Integrating normal-metal components into the framework of circuit quantum electrodynamics*, Superconducting Nanocircuits, September 2014, Maratea, Italy.
42. 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.
43. M. Möttönen, **invited talk** on *QCD Labs*, Quantum Technologies for Metrology and Sensing, Lancaster, UK, 30.6.2014.
44. 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.
45. 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.
46. M. Möttönen, **invited talk** on *Single-atom transistor: study of single donors in silicon*, Nanowires 2010, 2010, Heraklion, Greece.
47. M. Möttönen, **invited talk** on *Topological vortex formation*, Symposia on superfluids under rotation: vortices, superfluid dynamics, and quantum turbulence, 2010, Lammi, Finland.
48. 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.

49. 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.
50. 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.
51. 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)
- **150** peer-reviewed journal articles (tracked by ISI)
- **9107** Google Scholar citations in total (**5500** in ISI)
- H-index **48** (**38** in ISI)
- **3** Nature, **1** Science, **1** Reviews of Modern Physics, **5** Nature Physics, **2** Nature Electronics, **1** Science Advances, **2** Physical Review X, **3** Nano Letters, **4** Nature Communications, **15** Physical Review Letters, **2** npj Quantum Information, **1** Communications Physics, **1** PRX Quantum

Citations per year



2024 (including preprints and submitted articles)

1. A. M. Gunyhó, S. Kundu, J. Ma, W. Liu, S. Niemelä, G. Catto, V. Vadimov, V. Vesterinen, P. Singh, Q. Chen, and M. Möttönen, *Single-Shot Readout of a Superconducting Qubit Using a Thermal Detector*, Nature Electronics, DOI:10.1038/s41928-024-01147-7 (2024).
2. A. Viitanen, T. Mörstedt, W. S. Teixeira, M. Tiiri, J. Rabinä, M. Silveri, M. Möttönen, *Quantum-circuit refrigeration of a superconducting microwave resonator well below a single quantum*, Phys. Rev. Res. (submitted, 2024), arXiv:2308.00397.

3. S. Tuohino, V. Vadimov, W. S. Teixeira, T. Malmelin, M. Silveri, and M. Möttönen, *Multimode physics of the unimon circuit*, Phys. Rev. Res., submitted (2023), arXiv:2309.09732.
4. T. Annala, T. Mikkonen, and M. Möttönen, *Optically Induced Monopoles, Knots, and Skyrmions in Quantum Gases*, Communications in Mathematical Physics, submitted (2023), arXiv:2301.09532.
5. T. Annala, H. Rajamäki, and M. Möttönen, *Bordism invariants of colored links and topologically protected tricolorings*, Phys. Rev. Lett., submitted (2023), arXiv:2311.15972.
6. M. Rasola and M. Möttönen, *Autonomous Quantum Heat Engine Based on Non-Markovian Dynamics of an Optomechanical Hamiltonian*, Sci. Rep. (accepted, 2024), arXiv:2403.18515.
7. A. A. Generalov, K. L. Viisanen, J. Senior, J. Ma, M. Möttönen, M. Prunnila, H. Bohuslavskiy, *Wafer-scale CMOS-compatible graphene Josephson field-effect transistors*, ACS Nano (submitted, 2024), arXiv:2401.05089.
8. W. Teixeira, T. Mörstedt, A. Viitanen, H. Kivijärvi, A. Gunyhó, M. Tiiri, S. Kundu, A. Sah, V. Vadimov, and M. Möttönen, *Many-excitation removal of a transmon qubit using a single-junction quantum-circuit refrigerator and a two-tone microwave drive*, Sci. Rep., submitted (2024), arXiv: 2401.14912.
9. H. Rajamäki, T. Annala, and M. Möttönen, *Topologically Protected Vortex Knots in an Experimentally Realizable System*, Phys. Rev. Lett., submitted (2023), arXiv:2308.09825.
10. A. Mäkinen, J. Ikonen, T. Aoki, J. Tuorila, Y. Matsuzaki, M. Möttönen, *Efficient classical simulation of open bosonic quantum systems*, Phys. Rev. Lett. (submitted, 2023), arXiv:2203.05526.
11. V. Vadimov, M. Xu, J. T. Stockburger, J. Ankerhold, M. Möttönen, *Nonlinear response theory for lossy superconducting quantum circuits*, arXiv:2310.15802 (2023).
12. T. F. Mörstedt, W. S. Teixeira, A. Viitanen, H. Kivijärvi, M. Tiiri, M. Rasola, A. M. Gunyhó, S. Kundu, L. Lattier, V. Vadimov, G. Catelani, V. Sevriuk, J. Heinsoo, J. Rabinä, J. Ankerhold, and M. Möttönen, *Rapid on-demand generation of thermal states in superconducting quantum circuits*, arXiv:2402.09594 (2024).
13. A. Sah, S. Kundu, H. Suominen, Q. Chen, and M. Möttönen, *Decay-protected superconducting qubit with fast control enabled by integrated on-chip filters*, arXiv:2402.08906 (2024).

2023 (including preprints and submitted articles)

14. F. Marxer, A. Vepsäläinen, S. W. Jolin, J. Tuorila, A. Landra, C. Ockeloen-Korppi, W. Liu, O. Ahonen, A. Auer, L. Belzane, V. Bergholm, C. F. Chan, K. W. Chan, T. Hiltunen, J. Hotari, E. Hyyppä, J. Ikonen, D. Janzso, M. Koistinen, J. Kotilahti, T. Li, J. Luus, M. Papic, M. Partanen, J. Rabinä, J. Rosti, M. Savytskyi, M. Seppälä, V. Sevriuk, E. Takala, B. Tarasinski, M. J. Thapa, F. Tosto, N. Vorobeva, L. Yu, K. Y. Tan, J. Hassel, M. Möttönen, and Johannes Heinsoo, *Long-distance transmon coupler with CZ gate fidelity above 99.8%*, PRX Quantum **4**, 010314 (2023).
15. A. Blinova, R. Zamora-Zamora, T. Ollikainen, M. Kivioja, M. Möttönen, and D. S. Hall, *Observation of an Alice Ring in a Bose-Einstein Condensate*, Nat. Commun. **14**, 5100 (2023).
16. Q.-M. Chen, P. Singh, R. Duda, G. Catto, A. Keränen, A. Alizadeh, T. Mörstedt, A. Sah, A. Gunyhó, W. Liu, and M. Möttönen, *Compact inductor-capacitor resonators at sub-gigahertz frequencies*, Phys. Rev. Res. **5**, 043126 (2023).
17. J.-P. Girard, W. Liu, R. Kokkonen, E. Visakorpi, J. Govenius, M. Möttönen, *Cryogenic power sensor enabling broad-band and traceable measurements*, Rev. Sci. Instrum. **94**, 054710 (2023).
18. W. S. Teixeira, V. Vadimov, T. Mörstedt, S. Kundu, and M. Möttönen, *Exceptional-point-assisted entanglement, squeezing, and reset in a chain of three superconducting resonators*, Phys. Rev. Res. **5**, 033119 (2023).
19. A. P. Babu, T. Orell, V. Vadimov, W. Teixeira, M. Möttönen, M. Silveri, *Quantum error correction under numerically exact open-quantum-system dynamics*, Phys. Rev. Res. **5**, 043161 (2023).
20. M. Casariego, E. Z. Cruzeiro, S. Gherardini, T. Gonzalez-Raya, R. André, G. Frazão, G. Catto, M. Möttönen, D. Datta, K. Viisanen, J. Govenius, M. Prunnila, K. Tuominen, M. Reichert, M. Renger, K. G. Fedorov, F. Deppe, H. van der Vliet, A. J. Matthews, Y. Fernández, R. Assouly, R. Dassonneville, B. Huard, M. Sanz, Y. Omar, *Propagating Quantum Microwaves: Towards Applications in Communication and Sensing*, Quant. Sci. Tech. **8**, 023001 (2023).
21. M. Kivioja, R. Zamora-Zamora, S. Mönkölä, T. Rossi, and M. Möttönen, *Evolution and decay of an Alice ring in a spinor Bose-Einstein condensate*, Phys. Rev. Res. **5**, 023104 (2023).

2022

22. E. Hyyppä, S. Kundu, C. F. Chan, A. Gunyhó, J. Hotari, O. Kiuru, A. Landra, W. Liu, F. Marxer, A. Mäkinen, J.-L. Orgiazzi, M. Palma, M. Savytskyi, F. Tosto, J. Tuorila, V. Vadimov, T. Li, C. Ockeloen-Korppi, J. Heinsoo, K. Yen Tan, J. Hassel, and M. Möttönen, *Unimon qubit*, Nat. Commun., **13**, 6895 (2022). (This paper made it to top 25 papers in downloads in Nature Communications in 2022.)
23. 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).

24. 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. **12**, 6822 (2022).
25. 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*, Ann. Phys. (Berlin) **534**, 2100543 (2022).
26. T. Annala and M. Möttönen, *Charge ambiguity and splitting of monopoles*, Phys. Rev. Res. **4**, 023209 (2022).
27. V. Vadimov, A. Viitanen, T. Mörstedt, T. Ala-Nissila, and M. Möttönen, *Single-junction quantum-circuit refrigerator*, AIP Adv. **12**, 075005 (2022).
28. T. Gonzalez-Raya, M. Casariego, F. Fesquet, M. Renger, V. Salari, M. Möttönen, Y. Omar, F. Deppe, K. G. Fedorov, M. Sanz, *Open-Air Microwave Entanglement Distribution for Quantum Teleportation*, Phys. Rev. Appl. **18**, 044002 (2022).
29. V. A. Sevriuk, W. Liu, J. Rönkkö, H. Hsu, F. Marxer, T. F. Mörstedt, M. Partanen, J. Räbinä, M. Venkatesh, J. Hotari, L. Grönberg, J. Heinsoo, T. Li, J. Tuorila, K.W. Chan, J. Hassel, K. Y. Tan, and M. Möttönen, *Initial experimental results on a superconducting-qubit reset based on photon-assisted quasiparticle tunneling*, Appl. Phys. Lett. **121**, 234002 (2022).
30. T. Annala, R. Zamora-Zamora, and M. Möttönen, *Topologically protected vortex knots and links*, Commun. Phys. **5**, 309 (2022).
31. M. Möttönen, *Kvanttitietokoneet vihdoinkin lyöneet läpi*, Arkhimedes (journal of the Finnish Physical Society) **1/2022**, 11 (2022).

2021

32. 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).
33. 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).
34. 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).
35. 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).
36. M. Räsänen, H. Mäkynen, M. Möttönen, and J. Goetz, *Path to European quantum unicorns*, EPJ Quant. Techn. **8**, 5 (2021).
37. 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).

2020

38. 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).
39. S. Alipour, A. T. Rezaekhani, 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).
40. 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).
41. S. Giblin, E. Mykkänen, A. Kemppinen, P. Immonen, A. Manninen, M. Jenei, M. Möttönen, G. Yamahata, A. Fujiwara, and M. Kataoka, *Realisation of a quantum current standard at liquid helium temperature with sub-ppm reproducibility*, Metrologia **75**, 025013 (2020).
42. J. Zhang, T. Li, R. Kokkonen, C. Yan, W. Liu, M. Partanen, K. Y. Tan, M. He, L. Ji, L. Grönberg, and Mikko Möttönen, *Broadband Tunable Phase Shifter for Microwaves*, AIP Adv. **10**, 065128 (2020).
43. V. Vadimov, T. Ala-Nissilä, and M. Möttönen, *Persistence of correlations in many-body localized spin chains*, Phys. Rev. Res. **2**, 043154 (2020).
44. V. Lahtinen and M. Möttönen, *Effects of device geometry and material properties on dielectric losses in superconducting coplanar-waveguide resonators*, J. Phys.: Condens. Matter. **32**, 405702 (2020).
45. M. Partanen, K.Y. Tan, S. Masuda, E. Hyppä, M. Jenei, J. Goetz, V. Sevriuk, M. Silveri, M. Möttönen, *Quantum-Circuit Refrigeration for Superconducting Devices*, in Book 21st Century Nanoscience – A Handbook , CRC Press, ISBN 9780429351594 (2020).

2019

46. M. Silveri, S. Masuda, V. Sevriuk, K. Y. Tan, Eric Hyppä, M. Partanen, J. Goetz, R. E. Lake, L. Grönberg, and M. Möttönen, *Broadband Lamb shift in an engineered quantum*, Nat. Phys. **15**, 533 (2019).
47. L. S. Weiss, M. O. Borgh, A. Blinova, T. Ollikainen, M. Möttönen, J. Ruostekoski, and D. S. Hall, *Controlled Creation of a Singular Spinor Vortex by Skirting the Dirac Belt Trick*, Nature Commun. **10**, 4772 (2019).
48. J. Ikonen, J. Goetz, J. Ilves, A. Keränen, A. M. Gunyho, M. Partanen, K. Y. Tan, L. Grönberg, V. Vesterinen, S. Simbierowicz, J. Hassel, and M. Möttönen, *Qubit Measurement by Multichannel Driving*, Phys. Rev. Lett. **122**, 080503 (2019).
49. R. Kokkonen, J. Govenius, V. Vesterinen, R. E. Lake, A. M. Gunyho, K. Y. Tan, S. Simbierowicz, L. Grönberg, J. Lehtinen, M. Prunnila, J. Hassel, O.-P. Saira, and M. Möttönen, *Nanobolometer with Ultralow Noise Equivalent Power*, Commun. Phys. **2**, 124 (2019).

50. T. Ollikainen, A. Blinova, M. Möttönen, and D. S. Hall, *Decay of a Quantum Knot*, Phys. Rev. Lett. **123**, 163003 (2019), Editors' Suggestion.
51. J. Tuorila, J. Stockburger, T. Ala-Nissila, J. Ankerhold, M. Möttönen, *System-Environment Correlations in Qubit Initialization and Control*, Phys. Rev. Res. **1**, 013004 (2019).
52. K. Tiurev, P. Kuopanportti, and M. Möttönen, *Creation of a Dirac monopole-antimonopole pair in a spin-1 Bose-Einstein condensate*, Phys. Rev. A **99**, 023621 (2019).
53. E. Hyypä, M. Jenei, S. Masuda, K. Yen Tan, M. Silveri, J. Goetz, M. Partanen, R. E. Lake, L. Grönberg, M. Möttönen, *Calibration of cryogenic amplification chains using normal-metal-insulator-superconductor junctions*, Appl. Phys. Lett. **114**, 192603 (2019).
54. S. P. Giblin, A. Fujiwara, G. Yamahata, M.-H. Bae, N. Kim, A. Rossi, M. Möttönen, M. Kataoka, *Evidence for robustness and universality of tunable-barrier electron pumps*, Metrologia **56**, 044004 (2019).
55. V. Sevriuk, K. Y. Tan, E. Hyypä, M. Silveri, M. Partanen, M. Jenei, S. Masuda, J. Goetz, V. Vesterinen, L. Grönberg, and M. Möttönen, *Fast control of dissipation in a superconducting resonator*, Appl. Phys. Lett. **115**, 082601 (2019).
56. D. Basilewitsch, F. Cosco, N. Lo Gullo, M. Möttönen, T. Ala-Nissilä, C. P. Koch, S. Maniscalco, *Reservoir Engineering via Quantum Optimal Control for Qubit Reset*, New J. Phys. **21**, 093054 (2019).
57. A. Mäkinen, J. Ikonen, M. Partanen, M. Möttönen, *Reconstruction Approach to Quantum Dynamics of Bosonic Systems*, Phys. Rev. A **100**, 042109 (2019).
58. M. Partanen, J. Goetz, K. Y. Tan, K. Kohvakka, V. Sevriuk, R. E. Lake, R. Kokkonen, J. Ikonen, D. Hazra, A. Mäkinen, E. Hyypä, L. Grönberg, V. Vesterinen, M. Silveri, M. Möttönen, *Exceptional points in tunable superconducting resonators*, Phys. Rev. B **100**, 134505 (2019), Editor's Suggestion.
59. Máté Jenei, Elina Potanina, Ruichen Zhao, Kuan Y. Tan, Alessandro Rossi, Tuomo Tanttu, Kok W. Chan, Vasilii Sevriuk, Mikko Möttönen, and Andrew Dzurak, *Waiting time distributions in a two-level fluctuator coupled to a superconducting charge detector*, Phys. Rev. Research **1**, 033163 (2019), Editor's Suggestion.

2018

60. W. Lee, A.H. Gheorghe, K. Tiurev, T. Ollikainen, M. Möttönen, and D.S. Hall, *Synthetic Electromagnetic Knot in a Three-Dimensional Skyrmion*, Science Adv. **4**, eaao3820 (2018).
61. A. Rossi, J. Klochan, J. Timoshenko, F. E. Hudson, M. Möttönen, S. Rogge, A. S. Dzurak, V. Kashcheyevs, and G. C. Tettamanzi, *Gigahertz Single-Electron Pumping Mediated by Parasitic States*, Nano Lett. **18**, 4141 (2018).


62. S. Masuda, K. Y. Tan, M. Partanen, R. E. Lake, J. Govenius, M. Silveri, H. Grabert, and M. Möttönen, *Observation of microwave emission from incoherent electron tunneling through a normal-metal–insulator–superconductor junction*, *Sci. Rep.* **8**, 3966 (2018).
63. M. Partanen, K. Yen Tan, S. Masuda, J. Govenius, R. E. Lake, M. Jenei, L. Grönberg, J. Hassel, S. Simbierowicz, V. Vesterinen, J. Tuorila, T. Ala-Nissila, M. Möttönen, *Flux-tunable heat sink for quantum electric circuits*, *Sci. Rep.* **8**, 6325 (2018).
64. K. Tiurev, T. Ollikainen, P. Kuopanportti, M. Nakahara, D. S. Hall, M. Möttönen, *Three-dimensional skyrmions in spin-2 Bose-Einstein condensates*, *New J. Phys.* **20**, 055011 (2018).
65. J. Råbinä, P. Kuopanportti, M. Kivioja, M. Möttönen, and T. Rossi, *Three-dimensional splitting dynamics of giant vortices in Bose-Einstein condensates*, *Phys. Rev. A* **98**, 023624 (2018).
66. J. Ikonen and M. Möttönen, *Accelerated stabilization of coherent photon states*, *New J. Phys.* **20**, 103047 (2018).

2017

67. K. Y. Tan, M. Partanen, R. E. Lake, J. Govenius, S. Masuda, and M. Möttönen, *Quantum-Circuit Refrigerator*, *Nature Commun.* **8**, 15189 (2017).
68. T. Ollikainen, K. Tiurev, A. Blinova, W. Lee, D. S. Hall, and M. Möttönen, *Experimental realization of a Dirac monopole through the decay of an isolated monopole*, *Phys. Rev. X* **7**, 021023 (2017).
69. R. E. Lake, J. Govenius, R. Kokkonen, K. Y. Tan, M. Partanen, P. Virtanen, and M. Möttönen, *Microwave admittance of gold-palladium nanowires with proximity-induced superconductivity*, *Adv. Electron. Mat.* **3**, 1600227 (2017).
70. J. Ikonen, J. Salmilehto, and M. Möttönen, *Energy-efficient quantum computing*, *njp Quant. Inf.* **3**, 17 (2017).
71. T. Ollikainen, S. Masuda, M. Möttönen, and M. Nakahara, *Counterdiabatic vortex pump in spinor Bose-Einstein condensates*, *Phys. Rev. A* **95**, 013615 (2017).
72. V. Vesterinen, O.-P. Saira, I. Räisänen, Mikko Möttönen, Leif Grönberg, Jukka Pekola, and Juha Hassel, *Lumped-element Josephson parametric amplifier at 650 MHz for nano-calorimeter readout*, *Supercond. Sci. Technol.* **30**, 085001 (2017).
73. J. Tuorila, M. Partanen, T. Ala-Nissilä, M. Möttönen, *Efficient protocol for qubit initialization with a tunable environment*, *npj Quantum Information* **3**, 27 (2017).
74. M. Silveri, H. Grabert, S. Masuda, K. Y. Tan, and M. Möttönen, *Theory of quantum-circuit refrigeration by photon-assisted electron tunneling*, *Phys. Rev. B* **96**, 094524 (2017).
75. R. Zhao, A. Rossi, S. P. Giblin, J. D. Fletcher, F. E. Hudson, M. Möttönen, M. Kataoka, and A. S. Dzurak, *Thermal-error regime in high-accuracy gigahertz single-electron pumping*, *Phys. Rev. Appl.* **8**, 044021 (2017).

76. R. Kokkonen, T. Ollikainen, R. E. Lake, S. Saarenpää, K. Y. Tan, J. I. Kokkala, C. B. Dag, J. Govenius, and Mikko Möttönen, *Flux-tunable phase shifter for microwaves*, Sci. Rep. **7**, 14713 (2017).
77. T. Ollikainen, S. Masuda, M. Möttönen, and M. Nakahara, *Quantum knots in Bose–Einstein condensates created by counterdiabatic control*, Phys. Rev. A **96**, 063609 (2017).

2016

78. D. S. Hall, M. W. Ray, K. Tiurev, E. Ruokokoski, A. H. Gheorghe, and M. Möttönen, *Tying Quantum Knots*, Nature Phys. **12**, 478 (2016). Cover image of May issue.
79. M. Partanen, K. Y. Tan, J. Govenius, R. E. Lake, M. K. Mäkelä, T. Tanttu, and M. Möttönen, *Quantum-limited heat conduction over macroscopic distances*, Nature Phys. **12**, 460 (2016).
80. J. Govenius, R. E. Lake, K. Y. Tan, and M. Möttönen, *Detection of zeptojoule microwave pulses using electrothermal feedback in proximity-induced Josephson junctions*, Phys. Rev. Lett. **117**, 030802 (2016).
81. K. Tiurev, E. Ruokokoski, H. Mäkelä, D. S. Hall, and M. Möttönen, *Decay of an isolated monopole into a Dirac monopole configuration*, Phys. Rev. A **93**, 033638 (2016).
82. T. Tanttu, A. Rossi, K. Y. Tan, A. Mäkinen, K. W. Chan, A. S. Dzurak, and M. Möttönen, *Three-waveform bidirectional pumping of single electrons with a silicon quantum dot*, Sci. Rep. **6**, 36381 (2016).
-  83. K. Tiurev, P. Kuopanportti, A. M. Gunyhó, M. Ueda, and M. Möttönen, *Evolution of an isolated monopole in a spin-1 Bose-Einstein condensate*, Phys. Rev. A **94**, 053616 (2016). Editors' suggestion.

2015

84. M. W. Ray, E. Ruokokoski, K. Tiurev, M. Möttönen, and D. S. Hall, *Observation of Isolated Monopoles in a Quantum Field*, Science **348**, 544 (2015).
85. S. Suomela, J. Salmilehto, I. G. Savenko, T. Ala-Nissila, and M. Möttönen, *Fluctuations of work in nearly adiabatically driven open quantum systems*, Phys. Rev. E **91**, 022126 (2015).
86. J. Govenius, Y. Matsuzaki, I. G. Savenko, and M. Möttönen, *Parity measurement of remote qubits using dispersive coupling and photodetection*, Phys. Rev. A **92**, 042305 (2015).
87. A. Rossi, T. Tanttu, F. E. Hudson, M. Möttönen, and A. S. Dzurak, *Silicon Metal-Oxide-Semiconductor Quantum Dots for Single-Electron Pumping*, J. Vis. Exp. **100**, e52852 (2015).
88. H. Flayac, I. Savenko, M. Möttönen, T. Ala-Nissila, *Quantum treatment for Bose-Einstein condensation in non-equilibrium systems*, Phys. Rev. B **92**, 115117 (2015).

89. T. Tantt, A. Rossi, K. Y. Tan, K.-E. Huhtinen, K. W. Chan, M. Möttönen, A. S. Dzurak, *Electron counting in a silicon single-electron pump*, New J. Phys. **17**, 103030 (2015).


2014

90. M. W. Ray, E. Ruokokoski, S. Kandel, M. Möttönen, and D. S. Hall, *Observation of Dirac Monopoles in a Synthetic Magnetic Field*, Nature (London) **505**, 657 (2014).
Mentioned in journal cover.
91. A. Rossi, T. Tantt, K. Y. Tan, I. Iisakka, R. Zhao, K. W. Chan, G. C. Tettamanzi, S. Rogge, A. S. Dzurak, and M. Möttönen, *An accurate single-electron pump based on a highly tunable silicon quantum dot*, Nano Lett. **14**, 3405 (2014).
92. J. Govenius, R. E. Lake, K. Y. Tan, V. Pietilä, J. K. Julin, I. J. Maasilta, P. Virtanen, and M. Möttönen, *Microwave nanobolometer based on proximity Josephson junctions*, Phys. Rev. B **90**, 064505 (2014).
93. J. Salmilehto, P. Solinas, and M. Möttönen, *Quantum Driving and Work*, Phys. Rev. E **89**, 052128 (2014).
94. T. Ollikainen, E. Ruokokoski, and M. Möttönen, *Creation and dynamics of two-dimensional skyrmions in antiferromagnetic spin-1 Bose-Einstein condensates*, Phys. Rev. A **89**, 033629 (2014).

2013

95. J. V. Koski, T. Sagawa, O.-P. Saira, Y. Yoon, A. Kutvonen, P. Solinas, M. Möttönen, T. Ala-Nissila, and J. P. Pekola, *Distribution of Entropy Production in a Single-Electron Box*, Nature Phys. **9**, 644 (2013).
96. J. P. Pekola, O.-P. Saira, V. F. Maisi, A. Kemppinen, M. Möttönen, Yu. A. Pashkin, D. V. Averin, *Single-electron current sources: towards a refined definition of ampere*, Rev. Mod. Phys. **85**, 1421 (2013).
97. P. Kuopanportti, B. P. Anderson, and M. Möttönen, *Vortex pump for a Bose-Einstein condensate utilizing a time-averaged orbiting potential trap*, Phys. Rev. A **87**, 033623 (2013).
98. H. Wu, E. M. Gauger, R. E. George, M. Möttönen, H. Riemann, N. V. Abrosimov, P. Becker, H.-J. Pohl, K. M. Itoh, M. L. W. Thewalt, J. J. L. Morton, *Geometric Phase Gates with Adiabatic Control in Electron Spin Resonance*, Phys. Rev. A **87**, 032326 (2013).
99. P. Jones, J. Salmilehto, and M. Möttönen, *Highly controllable qubit-bath coupling based on a sequence of resonators*, J. Low Temp. Phys. **173**, 152 (2013).
100. P. Jones, J. A. M. Huhtamäki, J. Salmilehto, K. Y. Tan, and M. Möttönen, *Tunable electromagnetic environment for superconducting quantum bits*, Sci. Rep. **3**, 1987 (2013).
101. H. Mäkelä and M. Möttönen, *Effects of the rotating wave and secular approximations on non-Markovianity*, Phys. Rev. A **88**, 052111 (2013).

2012

102. O.-P. Saira, Y. Yoon, T. Tantt, M. Möttönen, D. V. Averin, and J. P. Pekola, *Test of Jarzynski and Crooks fluctuation relations in an electronic system*, Phys. Rev. Lett. **109**, 180601 (2012).
-  103. F. Hoehne, Yu. A. Pashkin, O. V. Astafiev, M. Möttönen, J. P. Pekola, J. S. Tsai, *Coherent superconducting quantum pump*, Phys. Rev. B **85**, 140504(R) (2012).
Editors' suggestion.
104. J. Salmilehto and M. Möttönen, *Quantum effect of inductance on geometric Cooper pair transport*, Physical Review B **86**, 184512 (2012).
105. E. Ruokokoski, J. A. M. Huhtamäki, and M. Möttönen, *Stationary States of Trapped Spin-Orbit-Coupled Bose-Einstein Condensates*, submitted to Phys. Rev. A **86**, 051607(R) (2012).
106. P. J. Jones, J. A. M. Huhtamäki, M. Partanen, K. Y. Tan, and M. Möttönen, *Tunable single-photon heat conduction in electrical circuits*, Phys. Rev. B **86**, 035313 (2012).
107. P. Kuopanportti, J. A. M. Huhtamäki, and M. Möttönen, *Exotic vortex lattices in two-species Bose-Einstein condensates*, Phys. Rev. A **85**, 043613 (2012).
108. J. Salmilehto, P. Solinas, and M. Möttönen, *Conservation law of operator current in open quantum systems*, Phys. Rev. A **85**, 032110 (2012).
109. P. J. Jones, J. A. M. Huhtamäki, K. Y. Tan, and M. Möttönen, *Single-photon heat conduction in electrical circuits*, Phys. Rev. B **85**, 075413 (2012).
110. P. Solinas, M. Möttönen, J. Salmilehto, and J. P. Pekola, *Cooper pair current in the presence of flux noise*, submitted to Phys. Rev. B **85**, 024527 (2012).

2011

111. E. Ruokokoski, V. Pietilä, and M. Möttönen, *Ground-State Dirac Monopole*, Phys. Rev. A **84**, 063627 (2011).
112. D. V. Averin, M. Möttönen, and J. P. Pekola, *Maxwell's demon based on a single-electron pump*, Phys. Rev. B **84**, 032338 (2011).
113. V. Gramich, P. Solinas, M. Möttönen, J. P. Pekola, J. Ankerhold, *Measurement scheme for the Lamb shift in a superconducting circuit with broadband environment*, Phys. Rev. A **84**, 052103 (2011).
114. J. Salmilehto and M. Möttönen, *Superadiabatic theory for Cooper pair pumping under decoherence*, Phys. Rev. B **84**, 174507 (2011).
115. Y. Matsuzaki, P. Solinas, and M. Möttönen, *Entanglement generation between unstable optically active qubits without photodetectors*, Phys. Rev. A **84**, 032338 (2011).
116. V. Pietilä and M. Möttönen, *Phase transitions in dipolar spin-1 Bose gases*, Physical Review A **84**, 013605 (2011).
117. I. Kamleitner, P. Solinas, C. Müller, A. Shnirman, and M. Möttönen, *Geometric quantum gates with superconducting qubits*, Phys. Rev. B **83**, 214518 (2011).

118. K. W. Chan, M. Möttönen, A. Kemppinen, N. S. Lai, K. Y. Tan, W. H. Lim, and A. S. Dzurak, *Single-electron shuttle based on a silicon quantum dot*, Appl. Phys. Lett. **98**, 212103 (2011).
119. Y. Yoon, S. Gasparinetti, M. Möttönen, and J. P. Pekola, *Capacitively Enhanced Thermal Escape in Underdamped Josephson Junctions*, Journal of Low Temperature Physics **163**, 164 (2011).
120. P. Kuopanportti, J. A. M. Huhtamäki, and M. Möttönen, *Size and Dynamics of Vortex Dipoles in Dilute Bose-Einstein Condensates*, Physical Review A **83**, 011603(R) (2011).

2010

121. A. Morello, J. J. Pla, F. A. Zwanenburg, K. W. Chan, H. Huebl, M. Möttönen, C. D. Nugroho, C. Yang, J. A. van Donkelaar, A. Alves, D. N. Jamieson, C. C. Escott, L. C. L. Hollenberg, R. G. Clark, A. S. Dzurak, *Single-shot readout of an electron spin in silicon*, Nature (London) **467**, 687 (2010).
122. J. P. Pekola, V. F. Maisi, S. Kafanov, N. Chekurov, A. Kemppinen, Yu. A. Pashkin, O.-P. Saira, M. Möttönen, and J. S. Tsai, *Environment-assisted tunneling as an origin of the Dynes density of states*, Phys. Rev. Lett. **105**, 026803 (2010).
123. J. P. Pekola, V. Brosco, M. Möttönen, P. Solinas, and A. Shnirman, *Decoherence in adiabatic quantum evolution: application to Cooper pair pumping*, Phys. Rev. Lett. **105**, 030401 (2010).
124. J. Salmilehto, P. Solinas, J. Ankerhold, and M. Möttönen, *Adiabatically steered open quantum systems: Master equation and optimal phase*, Physical Review A **82**, 062112 (2010).
125. P. Solinas, J.-M. Pirkkalainen, and M. Möttönen, *Ground-state geometric quantum computation in superconducting systems*, Physical Review A **82**, 052304 (2010).
126. P. Kuopanportti and M. Möttönen, *Stabilization and pumping of giant vortices in dilute Bose-Einstein condensates*, J. Low Temp. Phys. ST **161**, 561 (2010).
127. O.-P. Saira, M. Möttönen, V. F. Maisi, and J. P. Pekola, *Environmentally Activated Tunneling Events in a Hybrid Single-Electron Box*, Phys. Rev. B **82**, 155443 (2010).
128. P. Solinas, M. Möttönen, J. Salmilehto, and J. P. Pekola, *Decoherence of adiabatically steered quantum systems*, Physical Review B **82**, 134517 (2010).
129. J.-M. Pirkkalainen, P. Solinas, J. P. Pekola, and M. Möttönen, *Non-Abelian geometric phases in ground state Josephson devices*, Phys. Rev. B **81**, 174506 (2010).
130. M. Möttönen, K. Y. Tan, K. W. Chan, F. A. Zwanenburg, W. H. Lim, C. C. Escott, J.-M. Pirkkalainen, A. Morello, C. Yang, J. A. van Donkelaar, A. D. C. Alves, D. N. Jamieson, L. C. L. Hollenberg, A. S. Dzurak, *Probe and Control of the Reservoir Density of States in Single-Electron Devices*, Phys. Rev. B **81**, 161304(R) (2010).
131. K. Y. Tan, K. W. Chan, M. Möttönen, A. Morello, C. Yang, J. van Donkelaar, A. Alves, J.-M. Pirkkalainen, D. N. Jamison, R. G. Clark, and A. S. Dzurak, *Transport spectroscopy of single phosphorus donors in a silicon nanoscale transistor*, Nano Lett. **10**, 11 (2010).

132. P. Kuopanportti and M. Möttönen, *Splitting dynamics of giant vortices in dilute Bose-Einstein condensates*, Phys. Rev. A **81**, 033627 (2010).
133. V. Pietilä, T. Simula, and M. Möttönen, *Finite-temperature phase transitions in quasi-two-dimensional spin-1 Bose gases*, Phys. Rev. A **81**, 033616 (2010).
134. P. Kuopanportti, E. Lundh, J. A. M. Huhtamäki, V. Pietilä, and M. Möttönen, *Core sizes and dynamic instabilities of giant vortices in dilute Bose-Einstein condensates*, Phys. Rev. A **81**, 023603 (2010).

2009



135. V. Pietilä and M. Möttönen, *Creation of Dirac monopoles in spinor Bose-Einstein condensates*, Phys. Rev. Lett. **103**, 030401 (2009). Editors' suggestion.
136. A. V. Timofeev, M. Helle, M. Meschke, M. Möttönen, and J. P. Pekola, *Electronic refrigeration at the quantum limit*, Phys. Rev. Lett. **102**, 200801 (2009).
137. V. Pietilä and M. Möttönen, *Non-Abelian magnetic monopole in a Bose-Einstein condensate*, Phys. Rev. Lett. **102**, 080403 (2009).
138. W. H. Lim, F. A. Zwanenburg, H. Huebl, M. Möttönen, K. W. Chan, A. Morello, A. S. Dzurak, *Observation of the single-electron regime in a highly tunable silicon quantum dot*, Appl. Phys. Lett. **95**, 242102 (2009).
139. M. Takahashi, V. Pietilä, M. Möttönen, T. Mizushima, and K. Machida, *Vortex splitting and phase separating instabilities of coreless vortices in $F=1$ spinor Bose-Einstein condensates*, Phys. Rev. A **79**, 023618 (2009).
140. A. Kemppinen, M. Meschke, M. Möttönen, D. V. Averin, and J. P. Pekola, *Quantized current of a hybrid single-electron transistor with superconducting leads and a normal-metal island*, European Physical Journal Special Topics **172**, 311 (2009).


2008



141. M. Möttönen, J. J. Vartiainen, and J. P. Pekola, *Experimental determination of the Berry phase in a superconducting charge pump*, Phys. Rev. Lett. **100**, 177201 (2008), Editors' suggestion.
142. J. P. Pekola, J. J. Vartiainen, M. Möttönen, O.-P. Saira, M. Meschke, and D. Averin, *Hybrid single-electron transistor as a source of quantized electric current*, Nature Phys. **4**, 120 (2008).
143. O. Ahonen, M. Möttönen, and J. O'Brien, *Entanglement-Enhanced Quantum Key Distribution*, Phys. Rev. A **78**, 032314 (2008).
144. V. Pietilä, M. Möttönen, and M. Nakahara, *Topological vortex creation in spinor Bose-Einstein condensates*, in a book *Electromagnetic, magnetostatic, and exchange-interaction vortices in confined magnetic structures*, E. O. Kamenetskii (Eds.), (Research signpost, Kerala), ISBN 978-81-7895-373-1, 2008.
145. P. Kuopanportti, M. Möttönen, V. Bergholm, O.-P. Saira, J. Zhang, and K. B. Whaley, *Suppression of $1/f^\alpha$ noise in one-qubit systems*, Phys. Rev. A **77**, 032334 (2008).

146. M. Möttönen, *Kvantti-informaatio — tämän vuosisadan vallankumous!?*, Arkhimeses (journal of the Finnish Physical Society) **1/2008**, 24 (2008).
147. A. Kemppinen, A. J. Manninen, M. Möttönen, J. J. Vartiainen, J. T. Peltonen, and J. P. Pekola, Suppression of the critical current of a balanced superconducting quantum interference device, *Appl. Phys. Lett.* **92**, 052110 (2008).

2007

148. M. Möttönen, V. Pietilä, and S. M. M. Virtanen, *Vortex pump for dilute Bose-Einstein condensates*, *Phys. Rev. Lett.* **99**, 250406 (2007).
149. J. A. M. Huhtamäki, M. Möttönen, J. Ankerhold, and S. M. M. Virtanen, *Effects of interactions and noise on tunneling of Bose-Einstein condensates through a potential barrier*, *Phys. Rev. A* **76**, 033605 (2007).
150. V. Pietilä, M. Möttönen, and S. M. M. Virtanen, *Stability of coreless vortices in ferromagnetic spinor Bose-Einstein condensates*, *Phys. Rev. A* **76**, 023610 (2007).
-  151. O.-P. Saira, M. Meschke, F. Giazotto, A. M. Savin, M. Möttönen, and J. P. Pekola, *Heat Transistor: Demonstration of Gate-Controlled Electron Refrigeration*, *Phys. Rev. Lett.* **99**, 027203 (2007), Editors' suggestion.
152. J. J. Vartiainen, M. Möttönen, J. P. Pekola, and A. Kemppinen, *Nanoampere pumping of Cooper pairs*, *Appl. Phys. Lett.* **90**, 082102 (2007).
153. O.-P. Saira, V. Bergholm, T. Ojanen, and M. Möttönen, *Equivalent qubit dynamics under classical and quantum noise*, *Phys. Rev. A* **75**, 012308 (2007).

2006

154. J.A.M. Huhtamäki, M. Möttönen, T. Isoshima, V. Pietilä, and S. M. M. Virtanen, *Splitting times of doubly quantized vortices in dilute Bose-Einstein condensates*, *Phys. Rev. Lett.* **97**, 110406 (2006).
155. J.A.M. Huhtamäki, M. Möttönen, and S. M. M. Virtanen, *Dynamically stable multiply quantized vortices in dilute Bose-Einstein condensates*, *Phys. Rev. A* **74**, 063619 (2006).
156. V. Pietilä, M. Möttönen, T. Isoshima, J.A.M. Huhtamäki, and S. M. M. Virtanen, *Stability and dynamics of vortex clusters in nonrotated Bose-Einstein condensates*, *Phys. Rev. A* **74**, 023603 (2006).
157. M. Möttönen, J. P. Pekola, J. J. Vartiainen, V. Brosco, and F. W. J. Hekking, *Measurement scheme of the Berry phase in superconducting circuits*, *Phys. Rev. B* **73**, 214523 (2006).
158. 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).
159. 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).

2005

160. M. Möttönen, S. M. M. Virtanen, T. Isoshima, and M. M. Salomaa, *Stationary vortex clusters in nonrotating Bose-Einstein condensates*, Phys. Rev. A **71**, 033626 (2005).
161. 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).
162. M. Möttönen, S. M. M. Virtanen, and M. M. Salomaa, *Collapse and revival of excitations in Bose-Einstein condensates*, Phys. Rev. A **71**, 023604 (2005).
163. 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).

2004

164. M. Möttönen, J. J. Vartiainen, V. Bergholm, and M. M. Salomaa, *Quantum circuits for general multiqubit gates*, Phys. Rev. Lett. **93**, 130502 (2004).
165. J. J. Vartiainen, M. Möttönen, and M. M. Salomaa, *Efficient decomposition of quantum gates*, Phys. Rev. Lett. **92**, 177902 (2004).
166. M. Möttönen, *Vortices and elementary excitations in dilute Bose-Einstein condensates*, PhD Thesis, Helsinki University of Technology (2004).

2003

167. 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).

2002

168. 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).
169. 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).
170. 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. *Low-temperature detectors can boost superconducting quantum computers*, **invited talk**, Quantum Science Colloquium, Sweden, 27.10.2023
2. *Quantum-Computer and Computing Efforts in Finland and QTF Scientific Program*, **invited talks**, Nordic Quantum Meeting, Sweden, 13.-14.9.2023
3. *Unimon qubit and single-shot readout using a thermal detector*, **invited talk**, Seminar of Centre for Quantum Engineering, Research and Education (CQuERE), India, (organized online), 30.5.2023

4. *Quantum computers by IQM*, **invited talk**, ETH Zurich Quantum Engineering MSc Program in Quantum Engineering annual seminar, Switzerland, 18.1.2023
5. *New superconducting qubit and millikelvin electronics to boost it*, **invited talk**, Grenoble Quantum Nanoelectronics Seminars, France (organized online), 28.6.2022
6. *New superconducting qubit and millikelvin electronics for it*, **invited talk**, Seminar series of the Huazhong University of Science and Technology, China (organized online), 21.6.2022
7. *New superconducting qubit and millikelvin electronics for it*, **invited talk**, Seminar series of the University of Glasgow Centre for Quantum Technology, UK (organized online), 10.6.2022
8. *IQM – Building useful quantum computers*, **invited talk**, Danish Quantum Community conference, Denmark (organized online), 8.10.2020
9. *Quantum Computer Development*, **invited talk**, CoE EQUiTANT Seminar, National Institute of Chemical Physics and Biophysics, Tallinn, Estonia (organized online), 14.4.2020
10. *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.
11. *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.
12. *Aalto Partner Presentation*, **invited talk**, kickoff meeting of the EU Quantum Technology Flagship project OpenSuperQ, Bad Honnef, Germany, 17.1.2019.
13. *Aalto Partner Presentation*, **invited talk**, kickoff meeting of the EU Quantum Technology Flagship project QMiCS, Garching, Germany, 22.11.2018.
14. *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.
15. *Tunable dissipators for superconducting quantum electronics*, **invited talk**, Workshop on Exact Dynamics of Open Quantum Systems, Ulm University, Ulm, Germany, 7.8.2018.
16. *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.
17. *Tunable dissipators for superconducting quantum electronics*, **invited talk**, Google Quantum AI seminar, Google SBA, Santa Barbara, USA, 8.5.2018.
18. *Superconducting electric circuits for future technologies*, **invited talk**, Memento Physics Institute, EPFL, Lausanne, Switzerland, 10.4.2018.
19. *Refrigerator that absorbs photons from your circuit only when switched on*, Engineering Quantum Systems group, MIT, Cambridge, USA, 17.1.2018.

20. *Thermal-error regime in high-accuracy gigahertz single-electron pumping*, EURAMET DC and Quantum Metrology Meeting, VTT MIKES, Espoo, Finland, 2.6.2017
21. *Quantum Knots and Monopoles*, **invited talk**, University of Sao Paolo, Sao Paolo, Brazil, 11.5.2017
22. *Quantum Knots and Monopoles*, **invited talk**, Sao Carlos Institute of Physics, Sao Carlos, Brazil, 9.5.2017
23. *Quantum-Circuit Refrigerator*, **invited talk**, CNR NEST, Pisa, Italy, 15.2.2017.
24. *Tunable Engineered Reservoirs for Electric Quantum Circuits*, **invited talk**, Walther-Meissner-Institut, Garching, Germany, 19.1.2017.
25. *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.
26. *Quantum Reservoir Engineering for Electric Quantum Circuits*, **invited talk**, Physics and Astronomy colloquium at University of Victoria, Canada 14.9.2016.
27. *On-Demand Dissipation for Electric Quantum Circuits*, D-Wave Systems Inc., Vancouver, Canada 12.9.2016.
28. *Quantum-Circuit Refrigerator*, Superconducting Quantum Devices, 2016, Cambridge, UK 9.9.2016.
29. *On-demand Dissipation for Quantum Devices*, Workshop on Quantum Computing and Computational Quantum Mechanics, **keynote talk**, Jyväskylä, Finland 12.8.2016.
30. *e-SI-Amp Aalto Partner Presentation*, e-SI-Amp EMPIR project kick-off meeting, London, UK 27.6.2016.
31. *Quantum reservoir engineering for circuit quantum electrodynamics*, Seminar series of London Centre for Nanotechnology, London, UK, 20.5.2016.
32. *Recent progress at Quantum Computing and Devices Laboratories*, **invited talk**, Cavendish Laboratory Seminar, Cambridge, UK, 19.5.2016.
33. *Recent results from the Quantum Computing and Devices group*, **invited talk**, Symposium for Experimental Physics, Ulm, Germany, 7.8.2015.
34. *Quantum Electronics Meets Dissipation*, **invited talk**, ETH Symposium on Quantum Engineering, Zurich, Switzerland, 14.4.2015.
35. *SNS detector and Incoherent photon sources*, MICROPHOTO EMRP project meeting, Torino, Italy, 10.6.2014.
36. *Thermometry and power sensing with superconductor-normal-superconductor proximity structures*, MICROPHOTO EMRP project kick-off, Braunschweig, Germany, 10.6.2013.
37. *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.

38. *Electron transport and spin qubit experiments on single-donor silicon devices*, Alan Aspuru-Guzik group seminar, Harvard/Cambridge, USA, Aug. 26th 2009.
39. *Topological phase imprinting and monopoles in coherent matter fields*, **invited talk**, Sydney Quantum Information Workshop, Sydney, Australia, Feb. 6th 2009.
40. *Experimental determination of the Berry phase in a superconducting charge pump*, **invited talk**, QSciTech seminar, Macquarie University, Sydney, Australia, Dec. 11th 2008.
41. *Single Cooper pair electronics at PICO group*, kick-off meeting for the European Research Council project SCOPE, KTH, Stockholm, Sweden, Oct. 15th 2008.
42. *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.
43. *BEC research at QCD group*, **invited talk**, Machida group seminar, Okayama, Japan, Feb. 13th 2008.
44. *Observation of the Berry phase in a superconducting charge pump*, **invited talk**, Nakahara group seminar, Kinki University, Osaka, Japan, Feb. 11th 2008.
45. *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.
46. *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.
47. *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.
48. *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.
49. *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.
50. *Measurement of the Berry phase in superconducting circuits*, J. Clarke group seminar, University of California, Berkeley, USA, Feb. 17th 2006.
51. *Topological creation and stability of vortices in dilute Bose-Einstein condensates*, **invited talk**, Research seminar, Intitute for Scientific Interchange, Torino, Italy, Oct. 10th 2005.
52. *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.

53. *Efficient decompositions of arbitrary n-qubit gates*, Berkeley Quantum Information and Computation seminar, University of California, Berkeley, USA, Apr. 4th 2005.
54. *Vortices and elementary excitations in dilute Bose-Einstein condensates*, Nordic Project Meeting: Manipulating atomic matter, Nordita, Copenhagen, Denmark, Jan. 12th 2005.
55. *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 *Quantum-circuit refrigerator for reset of superconducting qubits*, APS March Meeting 2023, 2023, Las Vegas, USA.
2. M. Möttönen et al., talk on *Readout of Superconducting Qubits Based on a Power Sensor*, APS March Meeting 2022, 2022, Chicago, USA.
3. M. Möttönen et al., talk on *Low-noise on-chip coherent microwave source*, European Quantum Technologies Conference EQTC 2021, Dec 2021, Online.
4. 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.
5. M. Möttönen et al., talk on *Photon-number-dependent effective Lamb shift induced by radio frequency quantum-circuit refrigerator*, APS March Meeting 2021, 2021, Online/USA.
6. M. Möttönen et al., talk on *Cryoelectronics for detection and on-demand absorption of microwave photons*, Kryo 2021 meeting, 2021, Online/Germany.
7. M. Möttönen et al., talk on *Observation of a Broadband Lamb Shift in a Superconducting Resonator*, APS March Meeting 2019, 2019, Boston, USA.
8. 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.
9. M. Möttönen et al., talk on *Superconducting Bolometer with Ultralow Noise Equivalent Power*, Kryo 2018 meeting, 2018, Schöntal, Germany.
10. 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.
11. M. Möttönen et al., talk on *Ultrasensitive microwave detector*, The 27th Conference of the EPS Condensed Matter Division, 2018, Berlin, Germany.
12. M. Möttönen et al., talk on *Quickly Tunable Refrigerator for Superconducting Quantum Circuits*, APS March Meeting 2018, 2018, Los Angeles, USA.

13. M. Möttönen et al., poster on *Microwave Bolometer with Low Noise-Equivalent Power*, Nanoscience Days, 2017, Jyväskylä, Finland.
14. M. Möttönen et al., poster on *Tying quantum knots*, Bose-Einstein Condensation 2017: Frontiers in Quantum Gases, 2017, Sant Feliu, Spain.
15. M. Möttönen et al., talk on *High-precision transport of single electrons using a silicon quantum dot*, Silicon Quantum Electronics Workshop, 2017, Portland, USA.
16. M. Möttönen et al., poster on *Quantum-circuit refrigerator*, 28th International Conference on Low Temperature Physics, 2017, Gothenburg, Sweden.
17. M. Möttönen et al., talk on *Extremely Sensitive Microwave Bolometer Suitable for Quantum Sensing*, Mesoscopic Transport and Quantum Coherence, 2017, Espoo, Finland.
18. 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.
19. M. Möttönen et al., talk on *Quantum-circuit refrigerator*, APS March Meeting 2017, 2017, New Orleans, USA.
20. M. Möttönen et al., poster on *Integrating normal-metal components into the framework of circuit quantum electrodynamics*, QuantERA partnering meeting, February 2017, Valetta, Malta.
21. 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.
22. 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.
23. M. Möttönen et al., talk on *Superconductor/normal-metal hybrids for quantum technology*, Silicon Quantum Information Processing 2016, Cambridge, UK.
24. M. Möttönen et al., poster on *Bidirectional electron pumping using a silicon quantum dot*, Silicon Quantum Information Processing 2016, Cambridge, UK.
25. M. Möttönen et al., poster on *Bidirectional electron pumping using a silicon quantum dot*, Silicon Quantum Electronics Workshop, 2016, Delft, Netherlands.
26. M. Möttönen et al., talk on *Engineered dissipative reservoirs for superconducting circuits*, Statistical Mechanics of Quantum Dynamics, 2016, Mariehamn, Åland.
27. 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.
28. M. Möttönen et al., talk on *Detection of zeptojoule microwave pulses using electrothermal feedback*, MICROPHOTON 2016 Workshop, 2016, London, UK.
29. M. Möttönen et al., talk on *Quantum-limited heat conduction over macroscopic distances*, APS March Meeting 2016, 2016, Baltimore, USA.

30. 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.
31. 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.
32. 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.
33. M. Möttönen et al., talk on *Observations of Quantum-Mechanical Monopoles*, 27th International Conference on Low Temperature Physics, August 2014, Buenos Aires, Argentina.
34. 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.
35. 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.
36. 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.
37. M. Möttönen, O.-P. Saira, Y. Yoon, T. Tantt, 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.
38. 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.
39. 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.
40. 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.
41. 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.
42. 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.
43. 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.

44. 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.
45. 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.
46. 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.
47. M. Möttönen, R. de Sousa, J. Zhang, and K. B. Whaley, *High fidelity one-qubit operations under random telegraph noise*, EQIS, 2005, Tokyo, Japan.
48. 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.
49. 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.
30. J. Salmilehto, P. Solinas, M. Möttönen, J. Ankerhold, and J. P. Pekola, *Addressing open quantum systems in adiabatic steering*, XLV Annual Conference of the Finnish Physical Society, 2011 Helsinki, Finland.

31. E. Ruokokoski and M. Möttönen, *Monopoles and dipoles in spinor Bose–Einstein condensates*, XLV Annual Conference of the Finnish Physical Society, 2011 Helsinki, Finland.

2010

32. V. F. Maisi, S. Kafanov, Yu. A. Pashkin, A. Kemppinen, N. Chekurov, O.-P. Saira, M. Möttönen, J. S. Tsai, A. Manninen, and J. P. Pekola, *Performance improvements of a single electron turnstile*, XLIV Annual Conference of the Finnish Physical Society, 2010 Jyväskylä, Finland.
33. M. Möttönen, K. Y. Tan, K. W. Chan, A. Morello, C. Yang, J. van Donkelaar, A. Alves, J.-M. Pirkkalainen, D. N. Jamieson, R. G. Clark, and A. S. Dzurak, *Single-atom transistor*, XLIV Annual Conference of the Finnish Physical Society, 2010 Jyväskylä, Finland.
34. O.-P. Saira, M. Möttönen, and J. P. Pekola, *Effect of environmental fluctuations on single-electron processes in hybrid tunnel junctions*, XLIV Annual Conference of the Finnish Physical Society, 2010 Jyväskylä, Finland.
35. V. F. Maisi, S. Kafanov, Yu. A. Pashkin, A. Kemppinen, N. Chekurov, O.-P. Saira, M. Möttönen, J. S. Tsai, A. Manninen, and J. P. Pekola, *Performance improvements of a single electron turnstile*, XLIV Annual Conference of the Finnish Physical Society, 2010 Jyväskylä, Finland.
36. J. P. Pekola, V. Brosco, M. Möttönen, P. Solinas, and A. Shnirman, *Decoherence in adiabatic quantum evolution – application to cooper pair pumping*, XLIV Annual Conference of the Finnish Physical Society, 2010 Jyväskylä, Finland.
37. J.-M. Pirkkalainen, P. Solinas, J. P. Pekola, and M. Möttönen, *Proposal for a ground state geometric qubit in superconducting circuits*, XLIV Annual Conference of the Finnish Physical Society, 2010 Jyväskylä, Finland.
38. P. Kuopanportti, E. Lundh, J. A. M. Huhtamäki, V. Pietilä, and M. Möttönen, *Dynamics of giant vortices in dilute bose-einstein condensates*, XLIV Annual Conference of the Finnish Physical Society, 2010 Jyväskylä, Finland.

2009

39. M. Helle, M. Möttönen, J. J. Vartiainen, and J. P. Pekola, *Experimental determination of the Berry phase in a superconducting charge pump*, XLIII Annual Conference of the Finnish Physical Society, 2009 Espoo, Finland.
40. P. Kuopanportti, M. Möttönen, and E. Lundh, *Dynamic instabilities of giant vortices in dilute Bose-Einstein condensates*, XLIII Annual Conference of the Finnish Physical Society, 2009 Espoo, Finland.
41. A. Kemppinen, S. Kafanov, Yu. A. Pashkin, M. Meschke, M. Möttönen, D. V. Averin, and J. P. Pekola, *Quantized current of the SINIS turnstile*, XLIII Annual Conference of the Finnish Physical Society, 2009 Espoo, Finland.

42. A. V. Timofeev, M. Helle, M. Meschke, M. Möttönen, and J. P. Pekola, *Electronic refrigeration at the quantum limit*, XLIII Annual Conference of the Finnish Physical Society, 2009 Espoo, Finland.
43. S. Kafanov, A. Kemppinen, Yu. A. Pashkin, M. Meschke, M. Möttönen, D. V. Averin, and J. P. Pekola, *Experimental observation of the microwave cooling in the (SINIS) turnstile*, XLIII Annual Conference of the Finnish Physical Society, 2009 Espoo, Finland.

2008

44. O. Ahonen, M. Möttönen, and J. O'Brien, *Entanglement-enhanced quantum key distribution*, XLII Annual Conference of the Finnish Physical Society, 2008 Turku, Finland.
45. M. Möttönen, V. Pietilä, and S. M. M. Virtanen, *Vortex pump for dilute Bose-Einstein condensates*, XLII Annual Conference of the Finnish Physical Society, 2008 Turku, Finland.
46. M. Meschke, O.-P. Saira, F. Giazotto, A. M. Savin, M. Möttönen, and J. P. Pekola, *Gate-controlled electronic refrigeration in a normal metal-superconductor hybrid single-electron transistor*, XLII Annual Conference of the Finnish Physical Society, 2008 Turku, Finland.
47. A. Kemppinen, M. Meschke, M. Möttönen, J. J. Vartiainen, J. T. Peltonen, A. J. Manninen, O.-P. Saira, D. V. Averin, and J. P. Pekola, *Towards a quantum current standard*, XLII Annual Conference of the Finnish Physical Society, 2008 Turku, Finland.

2007

48. A. Kemppinen, J. J. Vartiainen, M. Möttönen, J. T. Peltonen, and J. P. Pekola, *Development of a Cooper pair pump: Towards a quantum current standard*, XLI Annual Conference of the Finnish Physical Society, 2007 Tallin, Estonia.
49. O.-P. Saira, V. Bergholm, T. Ojanen, and M. Möttönen, *Equivalent qubit dynamics under classical and quantum noise*, XLI Annual Conference of the Finnish Physical Society, 2007 Tallin, Estonia.
50. J. A. M. Huhtamäki, M. Möttönen, and S. M. M. Virtanen, *Dynamical stability of multiply quantized vortices in Bose-Einstein condensates*, XLI Annual Conference of the Finnish Physical Society, 2007 Tallin, Estonia.
51. V. Bergholm, P. Kuopanportti, M. Möttönen, O.-P. Saira, J. Zhang, and K. B. Whaley, *Suppression of $1/f$ noise in one-qubit systems*, XLI Annual Conference of the Finnish Physical Society, 2007 Tallin, Estonia.
52. V. Pietilä, M. Möttönen, and S. M. M. Virtanen, *Stability of coreless vortices in ferromagnetic spinor Bose-Einstein condensates*, XLI Annual Conference of the Finnish Physical Society, 2007 Tallin, Estonia.

2006

53. M. Möttönen, J. J. Vartiainen, J. P. Pekola, and F. W. K. Hekking, *Measurement scheme for Berry phase in superconducting circuits*, XL Annual Conference of the Finnish Physical Society, 2006 Tampere, Finland.
54. A. Kemppinen, J. J. Vartiainen, A. O. Niskanen, M. Möttönen, K. H. A. Baarman, A. Manninen, H. Seppä, and J. P. Pekola, *Development of a Cooper pair pump: towards a quantum current standard*, XL Annual Conference of the Finnish Physical Society, 2006 Tampere, Finland.
55. J. A. M. Huhtamäki, M. Möttönen, and S. M. M. Virtanen, *Splitting of doubly quantized vortices in dilute Bose-Einstein condensates*, XL Annual Conference of the Finnish Physical Society, 2006 Tampere, Finland.
56. V. Pietilä, M. Möttönen, S. M. M. Virtanen, and T. Isoshima, *Dynamics and stability of vortex clusters in nonrotating Bose-Einstein condensates*, XL Annual Conference of the Finnish Physical Society, 2006 Tampere, Finland.

2005

57. M. Möttönen, S. M. M. Virtanen, and M. M. Salomaa, *Collapse and revival of excitations in Bose-Einstein condensates*, XXXIX Annual Conference of the Finnish Physical Society, 2005 Espoo, Finland.
58. J. J. Vartiainen, M. Möttönen, and V. Bergholm, *Reducing unstructured unitary transformations to elementary gate sequences*, XXXIX Annual Conference of the Finnish Physical Society, 2005 Espoo, Finland.
59. S. M. M. Virtanen, M. Möttönen, T. Isoshima, and M. M. Salomaa, *Stationary vortex clusters in nonrotating Bose-Einstein condensates, theory*, XXXIX Annual Conference of the Finnish Physical Society, 2005 Espoo, Finland.

2004

60. M. Möttönen, S. M. M. Virtanen, and M. M. Salomaa, *Calculation of excitations in Bose-Einstein condensates within second order theory*, XXXVIII Annual Conference of the Finnish Physical Society, 2004 Oulu, Finland.
61. S. M. M. Virtanen, M. Möttönen, and M. M. Salomaa, *Stability of vortices in dilute Bose-Einstein condensates within mean-field theories*, XXXVIII Annual Conference of the Finnish Physical Society, 2004 Oulu, Finland.
62. J. Vartiainen, M. Möttönen, and M. M. Salomaa, *Efficient decomposition of quantum gates*, XXXVIII Annual Conference of the Finnish Physical Society, 2004 Oulu, Finland.

2003

63. M. Möttönen, T. Isoshima, and M. M. Salomaa, *Splitting of a multiply quantized vortex in Bose-Einstein condensates*, XXXVII Annual Conference of the Finnish Physical Society, 2003 Helsinki, Finland.

2002

64. Mikko Möttönen, *Creation of a vortex in Bose-Einstein condensate with hyperfine spin $F=2$* , XXXVI Annual Conference of the Finnish Physical Society, 2002 Joensuu, Finland.

2001

65. Mikko Möttönen, *Qbits with spins in quantum dots: physical basis*, HUT Report TKK-F-A810: "Quantum computing - physical realizations", 2001.