Stephanie Wehner

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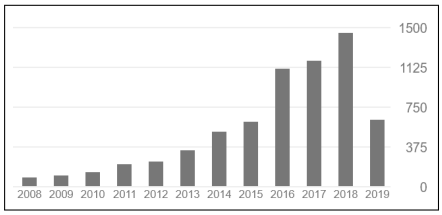
Born: 8 May 1977
Nationality: German
Languages: German, Dutch, English

Highlights Over 90 publications (> 6500 citations of which 1448 in 2018, hindex 39, i10-index 77, Google Scholar May 2019) in Science (2x), Nature (1x), Nature Communications (8x), PNAS (1x), IEEE Transactions on Information Theory (7x), SIGCOMM (1x), CRYPTO (2x), Physical Review Letters (9x, 2x Editor's suggestion) and others. Works selected for Science's "Top 10 Breakthroughs of 2015", Nature's "Science Events that shaped 2015", and voted in Top 10 of 2014 in physics news at phys.org.



Leadership Co-Founder QCRYPT, now the largest annual international conference on quantum cryptography. Coordinator Quantum Internet Alliance, EU Flagship on Quantum Technologies

Funding Personal grants: ERC Starting Grant 2015 (1.5M EUR), NWO VIDI Grant 2015 (800k EUR). Collaborative grants Netherlands (19.4M EUR), EU (10M EUR).

Press Popular science coverage in New York Times (Front Page), The Economist, TIME, The Times, Huffington Post, New Scientist, Wired, Vice, and others.

Outreach Talks at TEDx, New Scientist Live, Public Audience MOOC, and others.

Education 11 distinct classes, of which one has received a perfect score on teaching evaluation. edX MOOC Quantum cryptography in fall 2016.

Employment Background

Academic appointments

2016-now **Antoni van Leeuwenhoek Professor**, QuTech, TU Delft, Delft, Netherlands. Roadmap Leader Quantum Internet and Networked Computing

2014-2016 **Associate Professor**, QuTech, TU Delft, Delft, Netherlands.

2013-2014 **Associate Professor**, School of Computing, National University of Singapore (NUS), Singapore.

2010-2013 **Assistant Professor**, School of Computing, National University of Singapore, Singapore.

2010-2016 **Principal Investigator**, Centre for Quantum Technologies (CQT), Singapore.

2008-2010 **Postdoctoral Scholar**, California Institute of Technology, Pasadena, USA.

Industry appointments

1999-2002 **Hacker**, ITSX BV, Amsterdam, Netherlands.
Security analysis and penetration testing. Full time and part time (0.4 fte)

1997-1999 **Network administrator**, XS4ALL INTERNET BV, Amsterdam, Netherlands.
Adminstration and custom solutions (some still in use today).

Academic Background

1 September 2004- 27 February 2008 **PhD**, *University of Amsterdam*, Netherlands.

2002-2004 **MSc (Doctorandus)**, *University of Amsterdam*, Netherlands.

1999-2002 **BSc (Kandidaat)**, *University of Amsterdam*, Netherlands.
Exchange to University of New South Wales, Sydney, Australia in 2003

Awards

2019 KNAW Ammodo Science Award

2016 Paul Ehrenfest award, international award for quantum foundations

2015 ERC Starting Grant

2015 NWO VIDI Grant

2014 Dean's Chair, National University of Singapore

2004 KHMW Jong Talent Afstudeerprijs (Prize given by Royal Dutch Society to best master's student graduating in NL in computer science in 2004)

2003 STUNT Grant for Exchange to UNSW, Sydney

10 Selected Publications

- A link layer protocol for quantum networks, A. Dahlberg, M. Skrzypczyk, T. Coopmans, L. Wubben, F. Rozpedek, M. Pompili, A. Stolk, P. Pawelczak, R. Knegjens, J. Filho, R. Hanson, S. Wehner, *ACM SIGCOMM 2019, To appear.*
- Quantum internet: A Vision for the road ahead, S. Wehner, D. Elkouss, R. Hanson, *Science*, Vol. 362, Issue 6412 (2018)
- Capacity estimation and verification of quantum channels with arbitrarily correlated errors, C. Pfister, M. A. Rol, A. Mantri, M. Tomamichel, S. Wehner, *Nature Communications*, 9, 27 (2018)
- A universal test for gravitational decoherence, C. Pfister, J. Kaniewski, M. Tomamichel, A. Mantri, R. Schmucker, N. McMahon, G. Milburn, S. Wehner, *Nature Communications*,7, 13022 (2016)
- The second laws of quantum thermodynamics, F. Brandao, M. Horodecki, N. Ng, J. Oppenheim, S. Wehner, *Proceedings of the National Academy of Sciences*, 112 (11), 3275-3279 (2015)
- Loophole-free Bell inequality violation using electron spins separated by 1.3 kilometres, B. Hensen, H. Bernien, A. Dréau, A. Reiserer, N. Kalb, M. Blok, J. Ruitenberg, R. Vermeulen, R. Schouten, C. Abellán, W. Amaya, V. Pruneri, M. Mitchell, M. Markham, D. Twitchen, D. Elkouss, S. Wehner, T. Taminiau, R. Hanson, *Nature*, 526 (7575), 682-686 (2015)
- Experimental implementation of bit commitment in the noisy-storage model, N. Ng, S. K. Joshi, C. Ming, C. Kurtsiefer, S. Wehner, *Nature Communications*, 3, 1326 (2012)

- The uncertainty principle determines the non-locality of quantum mechanics, J. Oppenheim, S. Wehner, *Science*, 330, 6007, 1072-1074 (2010)
- A strong converse for classical channel coding using entangled inputs, R. Koenig and S. Wehner, *Physical Review Letters*, 103, 070504 (2009).
- Cryptography from noisy storage, S. Wehner, C. Schaffner and B. Terhal, *Physical Review Letters*, 100, 220502 (2008)

Leadership

- Coordinator, Quantum Internet Alliance, EU Flagship on Quantum Technologies
- SEB Co-Chair, Elected Science Co-Chair of the Science and Engineering Board, EU Flagship on Quantum technologies
- Roadmap leader, Quantum Internet and Networked Computing, QuTech, 2017-
- Roadmap leader, QuTech Academy, QuTech, 2015-2017
- Co-Founder QCRYPT, Now largest annual international conference on quantum cryptography, 2010
- Co-Initiator QIRG (Quantum Internet Research Group), Internet Engineering Task Force (IETF), 2018
- Main organizer, QIP 2018 (550+ people)
- Steering Committees, QCRYPT 2011-2016, QIP 2013-2017 (Largest annual event in theoretical quantum computer science), QCMC 2014-2017 (International conference on quantum computing, measurement and communication), WQRN 2017- (International workshop on quantum repeaters and networks)
- Board, FP7 QUTE Virtual Institute on Theoretical Quantum Information 2014-2016

Other Service

Scientific Community

- Expert Group Quantum Communication Infrastructure to European Commission
- NQC, National Quantum Coordinator 2017-2018, representic Netherlands in Scientific Body in EU Flagship CSA (Coordination and Support Action).
- Member of the core team of the SRA WG (Scientific Research Agenda Working Group), EU Flagship on Quantum Technologies
- Elected member at-large, Executive Committee Division of Quantum Information, American Physical Society 2016-2019
- NWO Veni Grant Panel member exact sciences (computer science, math, astronomy), 2016 and 2017
- Editorial Board, New Journal of Physics, 2016-2017
- Program Committees
  - ACM Nanocom 2019
  - Chair, MP1209 COST Quantum Thermodynamics, Valetta, Malta, Feburary 2015
  - AQIS Asian Conference Quantum Information Science 2010, 2011, 2012, 2013, 2014
  - QIP Quantum Information Processing 2010, 2012
  - ICITS International Conference on Information Theoretic Security 2012, 2013
  - Hacking at Random 2009, What the Hack 2005, Hackers at Large 2001 (Computer security festivals, ca 3000 participants, mentioned on BBC News and others) (Program team)

- Initial member EU COST Action MP1209 "Thermodynamics in the quantum regime"
- Journal referee: Nature (free subscriptions in 2012-2015 in recognition of numerous referee reports), Science, Nature Communications, Communications in Mathematical Physics, Physical Review Letters, and others
- Conference referee: CRYPTO, QIP, ITCS, STOC, FOCS, and others

Conference organization

- QIP 2018 (main organizer)
- IMS workshop on inverse moment problems (2013, organizer topical week)
- IMS workshop on quantum thermodynamics (2013, main organizer)
- QCRYPT 2012 (main organizer)
- QIP 2011 (Rump session organizer)
- Workshop on Cryptography from Storage Imperfections, Caltech, March 2010 (main organizer)

University service
- Chair Faculty Meeting, QuTech, 2016-2017
- QuTech Academy, TU Delft, 2015-2017 (Established QuTech Academy, a new education effort spanning three departments: Physics, EE and CS)
- QuTech Management Team 2015-
- Organizer and Inititiator, QuTech Colloquium 2015-2017
- Member faculty hiring committees (2015-)
- NUS PhD Program Revision Team 2013
- NUS 2013-2014 Welfare officer CQT (counseling)
- NUS 2011-2014 Chair IT/Media Committee at CQT, NUS 2010-2013

Funding

Europe
- Quantum Internet Alliance, EU Flagship on Quantum Technologies, 2018-2021, EUR 10M, Coordinator (main PI)
- Distributed systems protocols for quantum networks, 2018-2021, NWA Netherlands, EUR 167.000, joint with Michael Walter (UvA, Amsterdam).
- Quantum Software Consortium, 2017-2027, NWO Zwaartekracht, EUR 19.5M, Consortium grant (6 PIs), including funding two tenure track positions at TU Delft.
- Quantum Communication Networks, 2016-2021, ERC Starting Grant, EUR 1.5M, Personal Grant.
- Large quantum networks from small quantum devices, 2015-2020, EUR 800.000, NWO VIDI, Personal Grant.

Singapore
- Space-based QKD, 2014-2019, S$6.3 million ($\approx 3.9$M EUR), National Research Foundation Singapore, CRP Grant, joint with Alex Ling, Resigned due to move to Europe.
- Quantum information as a tool, 2014-2016, S$1.26 M ($\approx 743$k EUR), Ministry of Education, Singapore/Centre for Quantum Technologies, Resigned due to move.
- Random numbers from quantum processes, 2013-2018, S$ 10M (≈ 6.2 M EUR), Ministry of Education, Academic Research Fund Tier 3 Grant, 13 Investigators, personal share S$1.03 million. Lead PI Cluster "Random numbers from complex systems" (7 PIs at 2 universities in Singapore), Resigned due to move to Europe.
- Resources for cryptography, 2011-2013, S$1 million ($\approx 590$k EUR), Ministry of Education, Singapore/Centre for Quantum Technologies, sole Principal Investigator.

Education

QuTech Academy
Established QuTech Academy. Defined initial program, MOOC productions (QuCryptoX and General MOOC 1 - Quantum computing and internet applications), defined vision and planning. See http://qutech.nl/academy/ for details.

Classes

2019/2020 MOOC edX "Quantum Cryptography", Taught at TU Delft in an inverted classroom format. Lecture notes and course materials presently being compiled for book publication. We (my Caltech co-lecturers Thomas Vidkck and myself) have had offers from all major publishers and are currently discussing an arrangement with Cambridge University Press in which the lecture notes are made available as a book and Julia labs and other electronic materials from our class may be made available via their new eduKado website, which offers quizzes and online content to be used directly in conjunction with CUP textbooks. We have not yet finalized this arrangement, but will likely do so sometime this spring. We prefer CUP over other publishers since they will consent to us offering the PDF freely online, have excellent services and print materials, and offer modern integration of eletronic materials into books.

2017/2018 MOOC edX "Quantum Cryptography", Taught at TU Delft in an inverted classroom format. Added new course aspect programming on SimulaQron simulator. MOOC edX "Quantum computing and internet: Applications"

2016/2017 MOOC edX "Quantum Cryptography", Taught at TU Delft in an inverted classroom format. Joint venture with Caltech. Developed extensive course materials, including lecture notes, Julia lab practise sessions.

2015/2016 Fundamentals of Quantum Information, TU Delft (joint with Leo DiCarlo)

Quantum communication and cryptography, TU Delft

2014/2015 Quantum computation and Computation, TU Delft

Supervision

- Graduated 4 PhD students who came with me from Singapore. 3 degree from Singapore, 1 degree from TU Delft
- Currently supervising: 10 PhD students (2 joint supervision), 2 MEP
- Past supervision at TU Delft 2015-2018: 13 Masster Students, 8 Bachelor Students

Invited Talks

2018

- UK-Netherlands Bilateral International Meeting, Royal Society, London, UK (February)
- MORE-IP, Amsterdam, Netherlands (May)
- NetSci - Quantum Networks, Paris, France (June)
- German Parliament (Bundestag), Berlin, Germany (June)
- Gordon Conference, Quantum Science, Easton MA, USA (July)
- QCRYPT, Shanghai, China (August)
- Symposium on Hybrid Quantum Optics, Copenhagen, Denmark (September)
- Inauguration Hy-Q Center, Copenhagen, Denmark (September)
- Young Quantum Information Scientists, Vienna, Austria (September)
- QTech 2018, Paris, France (September)
- EU Flagship kickoff, Represented Quantum Communication Pillar (October)
- International Symposium on Quantum Technologies, Madrid, Spain (November)
- ICT 2018, Vienna, Austria (December)

2017

- Foundations of quantum mechanics and their impact on contemporary society, Royal Society, London, UK (December)
- Analysis in Quantum Information Theory, Institute Henri Poincare, Paris, France (December)
- Quantum elements of secure communication, NSF Quantum Leap workshop, Arlington, USA (November)
- 2nd Workshop on Quantum Repeaters and Quantum Networks, Seefeld, Austria (September)
- SPIE Photonics, San Diego, USA (August)
- Quantum Networks Workshop, Oxford, UK (August)
- Microsoft Faculty Summit, Redmond, USA (July)
- SHA 2017, Netherlands (July)
- CEWQO, Copenhagen, Denmark (June)
- Hereaus Seminar on Gravitational Decoherence, Bad Honnef, Germany (June)
- Colloquium Innsbruck, Austria (May)
- RIPE 74, Budapest, Hungary (May)
- Frontiers in Quantum Safe Cryptography (FOQUS), Paris, France (May)
- ICT Open, Netherlands (March)
- Colloquium University of Sydney, Sydney, Australia (January)
- Coogee Workshop on Quantum Information, Sydney, Australia (January)

2016
- French GdR Quantum Information, Paris, France (November)
- ESOF, UK (July)
- Quantum Programming Languages and Logic, Glagow, UK (June)
- COST Conference on Quantum Thermodynamics, Erice, Italy (May)
- Secrecy and Privacy, IHP, Paris (April)
- Colloquium, Physics Department, Eindhoven, Netherlands (March)
- APS March Meeting, Baltimore, USA (March)
- FOM Veldhoven, Focus Session on the physics of quanutm information, Veldhoven, Netherlands (January)

2015
- Colloquium, Physics Department, University of Ulm, Germany (December)
- Colloquium, Physics Department, St. Andrews University, UK (December)
- Workshop on Quantum Cryptography and Quantum Information Semantic Security and Indistinguishability in the Quantum World, Aarhus, Denmark (October)
- QUICC Summer School, Imperial CDTL, Warwick, UK (September)
- QIPC, Leeds, UK (September)
- ICMP International Congress of Mathematical Physics, Santiago de Chile, Chile (August) (primary event in mathematical physics held only every three years)
- Trustworthy Quantum Cryptography, Michigan, USA (July)
- Google Sci Foo Conference, Mountain View, USA (June)
- Quantum systems and technology, Monte Verita, Switzerland (June)
- Randomness in quantum physics, May, ICFO, Barcelona, Spain (May)
- APS March Meeting, San Antonio, Texas, USA (March)
- Coogee Workshop on Quantum Information, Sydney, Australia (January)

2014
- Quantum Computation, Measurement and Communication (QCMC), Hefei, China (November)
- Algorithmic spectral graph theory: Semidefinite optimization, approximation and applications, Simon's Institute, Berkeley, USA (September)
- The greatest inspriration surely is non-locality (GISIN '14), Riederalp, Switzerland (September)
- New frontiers of quantum information theory, Ascoli Piceno, Italy (July)
- Seefeld Workshop on Quantum Information, Seefeld, Austraia (July)
- New perspectives on thermalization - Interdisciplinary Physics, Aspen Center for Theoretical Physics, Aspen, USA (March)
- ICERM Semidefinite Programming and Graph Algorithms, Providence, USA (Feburary)

2013
- University Colloquium, University of Wuerzburg, Germany (December)
- Symposium in Theoretical Physics, Freie Universitaet Berlin, Germany (October)
- IEEE Summer Topicals on Quantum Communication and Photonics, Hawaii, USA (July)
- Thematic Program on Quantum Foundations and Cryptography, Madrid, Spain (July)
- QSTART Inauguration Conference for the Quantum Information Science Center, Hebrew University, Jerusalem, Israel (June)
- Conference on the Theory of Quantum Computing, Communication and Cryptography (TQC), Guelph, Canada (May)
- 4th SDP Days Workshop, Amsterdam, Netherlands (March)
- Symposium on Quantum Information Theory, Vienna, Austria (March)

2012
- CIFAR Quantum Information Processing, Ottawa, Canada (November)
- Symposium on Quantum Foundations, Baltimore, USA (October)
- Q+ Hangouts, online talk series (September)
- Japan-Singapore Workshop on Multi-user Qu. Networks, Singapore (Sept)
- Quantum Physics of Information, Shanghai, China (August)
- Quantum information workshop, Seefeld, Austria (July), Plenary
- University colloquium, IST Austria, Vienna (June)
- SQUINT (Southwest Quant, Inf. and Technology), Albuquerque, USA (April)

2011
- Conceptual Foundations for Quantum Information Processing, Waterloo, Canada (May)
- Central European Conference on Quantum Information Processing (CEQIP), Znojmo, Czech Republic (June)
- Scottish Universities Summer School in Physics (SSUSP67) (August)
- Quantum information and foundations of thermodynamics, Zurich (August)

2010
- IPAM Workshop on Convex Optimization and Algebraic Geometry, Los Angeles, USA (September)
- DOE Roundtable on Cybersecurity, San Jose, USA (March)
- APS March Meeting, Portland, USA (March)
- Caltech Lunch Bunch (colloquium), Pasadena, USA (February)

2009
- 4th TQC (Conf. on theory of computation, communication and cryptography), Waterloo, Canada (May)
- Operator Structures in Quantum Information, Fields Institute, Toronto, Canada (July) 2008
- Workshop on Quantum Algorithms and Complexity, Singapore (Nov)
- CIFAR Quantum Information Processing, Kelowna, Canada (Nov)
- Workshop on information primitives and laws of nature, Zurich (May)

2007
- China Theory Week, Beijing, China (September)
- Bellairs Cryptography Workshop, McGill University Research Center, Barbados (March)

2006
- IPAM Securing Cyberspace, UCLA, Los Angeles, USA (September)
- 7th European workshop on quantum information processing and communication, Royal Society, London, UK

Selected Recent Outreach and Press

- Inside Europe's Quest to build an unhackable Quantum Internet, MIT Technology Review, 2018, https://www.technologyreview.com/s/612327/europes-quest-for-an-unhackable-quantum-internet/
- The quantum internet has arrived (and it hasn't), Nature News, 2018, https://www.nature.com/articles/d41586-018-01835-3
- TEDxVienna "Quantum Internet", Vienna (October 2017),
- Popular science coverage in New York Times (Front Page), The Economist, TIME, The Times, as well as on several occasions in Huffington Post, New Scientist, Wired, Vice, and others.
- Classical internet events , such as RIPE 74 Budapest and SHA1.
- TEDxDelft "Hacking nature", Delft (March 2015)
- KNAW Talk "De ultieme privacy van de natuur", Amsterdam (January 2016)
- NWA Eureka Festival, Amsterdam (November 2015)
- New Scientist Live, London (2x, February at Inaugural Event, and November 2015)

Publications

Each research result is listed **only once**, even if it first appeared in conference proceedings and later as a much longer journal version under a potentially different title.

Due to the interdisciplinary nature of quantum information my publications are both in journals (more important in physics) and in conferences (more important in computer science).

Following my mathematical background author ordering of my papers prior to supervising my own students (prior to 2011) is generally alphabetical, with only two exceptions during my PhD (when I collaborated with physicists). Now, when working with my physics students, I consider it appropriate to adopt the physics convention of non-alphabetical author ordering, typically making the student the first and myself as the supervisor the last author.

(Accepted) preprints and selected software contributions can be found in the next sections.

92. Quantum internet: A Vision for the road ahead, S. Wehner, D. Elkouss, R. Hanson, *Science*, Vol. 362, Issue 6412, 2018

91. Benchmarking Gate Fidelities in a Si/SiGe Two-Qubit Device, X. Xue, T. F. Watson, J. Helsen, D. R. Ward, D. E. Savage, M. G. Lagally, S. N. Coppersmith, M. A. Eriksson, S. Wehner, L. M. K. Vandersypen, *Physical Review X*, 9, 021011 (2019)

90. Quantum codes for quantum simulation of Fermions on a square lattice of qubits, Mark Steudtner

and Stephanie Wehner, *Physical Review A*, 99, 022308 (2019)

89. Efficient Unitarity Randomized Benchmarking of Few-qubit Clifford Gates, Bas Dirkse, Jonas Helsen, Stephanie Wehner, *Physical Review A*, 99, 012315 (2019)

88. Practical and reliable error bars for quantum process tomography, Le Phuc Thinh, Philippe Faist, Jonas Helsen, David Elkouss, Stephanie Wehner, *Physical Review A*, 99, 052311 (2019)

87. Representations of the multi-qubit Clifford group, J. Helsen, J. J Wallman, S. Wehner, *Journal of Mathematical Physics*, 59, 072201 (2018)

86. SimulaQron - A simulator for developing quantum internet software, A. Dahlberg and S. Wehner, *Quantum Science and Technology*, Volume 4, Number 1 (2018) (Also invited talk FOSDEM and Quantum Software and Quantum Machine Learning given by student A. Dahlberg)

85. A crossbar network for silicon quantum dot qubits, R.Li, L. Petit, D. P Franke, J. Dehollain, J. Helsen, M. Steudtner, N. K Thomas, Z. R Yoscovits, K. J Singh, S. Wehner, L. MK Vandersypen, J. S Clarke, M. Veldhorst, *Science advances*, 4, 7 (July 6, 2018)

84. Optimizing practical entanglement distillation, F. Rozpedek, T. Schiet, L. Thinh, D. Elkouss, A. C. Doherty, S. Wehner, *Physical Review A*, 97, 062333 (June 21, 2018), Open source software implementation at https://github.com/StephanieWehner/EntanglementDist.jl

83. Fermion-to-qubit mappings with varying resource requirements for quantum simulation, M. Steudtner and S. Wehner, *New Journal of Physics*, 20 (June 7, 2018)

82. Quantum error correction in crossbar architectures, J. Helsen, M. Steudtner, M. Veldhorst and S. Wehner, *Quantum Science and Technology*, 3, 3, May (2018)

81. Transforming graph states using single-qubit operations, A. Dahlberg and S. Wehner, *Special issue foundations of quantum mechanics, Philosophical Transactions of the Royal Society A*, 376, 20170325 (2018)

80. Device-independence for two-party cryptography and position verification for memory less devices, J. Ribeiro, T. Le Phuc , J. Kaniewski, J. Helsen, and Stephanie Wehner, *Physical Review A*, 97, 062307 (2018)

79. Anonymous transmission in a noisy quantum network using the W state, Victoria Lipinska, Glaucia Murta, Stephanie Wehner, Phys. Rev. A 98, 052320 (2018)

78. Fully device independent Conference Key Agreement, J. Ribeiro, G. Murta, and S. Wehner, *Physical Review A*, 97, 022307 (2018)

77. Continuous-variable protocol for oblivious transfer in the noisy-storage model, F. Furrer, T. Gehring, C. Schaffner, C. Pacher, R. Schabel and S. Wehner, *Nature Communications*, 9, 1450 (2018)

76. Parameter regimes for a single sequential quantum repeater, F. Rozpedek, K. Goodenough, J. Ribeiro, N. Kalb, V. Vivoli, A. Reiserer, R. Hanson, S. Wehner, and D. Elkouss, *Quantum Science and Technology*, 3,3, April (2018)

75. Capacity estimation and verification of quantum channels with arbitrarily correlated errors, C. Pfister, M. A. Rol, A. Mantri, M. Tomamichel, and S. Wehner, *Nature Communications*, 9, 27 (2018)

74. Smoothed generalized free energies for thermodynamics, R. van der Meer, N. Ng, S. Wehner, *Physical Review A*, 96, 062135 (2017)

73. Multiplexed entanglement generation over quantum networks using multi-qubit nodes, S. B. van Dam, P. C. Humphreys, F. Rozpedek, S. Wehner, and R. Hanson *Quantum Science and Technology*, 2 (3) (2017)

72. Quantum preparation uncertainty and lack of information, F. Rozpedek, J. Kaniewski, P. Coles and S. Wehner, *New Journal of Physics* (2017)

71. Entropic uncertainty relations and their applications, P. J. Coles, M. Berta, M. Tomamichel, and S. Wehner, *Reviews of Modern Physics*, 89, 015002 (2017)

70. (Nearly) optimal P-values for all Bell inequalities, D. Elkouss and S. Wehner, *Nature Partner Journal Quantum Information*, 2, 16026 (2016)

69. A universal test for gravitational decoherence, C. Pfister, J. Kaniewski, M. Tomamichel, A. Mantri, R. Schmucker, N. McMahon, G. Milburn and S. Wehner, *Nature Communications*,7, 13022 (2016)

68. Loophole-free Bell test using electron spins in diamond: second experiment and additional analysis, B. Hensen, N. Kalb, M.S. Blok, A. Dreau, A. Reiserer, R.F.L. Vermeulen, R.N. Schouten, M. Markham, D.J. Twitchen, K. Goodenough, D. Elkouss, S. Wehner, T. H. Taminiau, and R. Hanson, *Scientific Reports*, 6:30289 (2016)

67. Relative thermalization, Lidia del Rio, Adrian Hutter, Renato Renner, and Stephanie Wehner, *Physical Review E*, 94, 022104 (2016)

66. Contextuality without nonlocality in a superconducting quantum system, M. Jerger, Y. Reshitnyk, M. Oppliger, A. Potocnik, M. Mondal, A. Wallraff, K. Goodenough, S. Wehner, K. Juliusson, N. K. Langford and A. Fedorov, *Nature Communications*, 12930 (2016)

65. Entropic uncertainty and measurement reversibility, M. Berta, S. Wehner and M. M. Wilde, *New Journal of Physics*, 18 (2016)

64. To see the world in a grain of spins, S. Wehner, *Science*, Perspective, 351 (6278), pp. 1156 (2016)

63. Assessing the performance of quantum repeaters for all phase-insensitive Gaussian bosonic channels, K. Goodenough, D. Elkouss, and S. Wehner, *New Journal of Physics*, 18 (2016).

62. Device-independent two-party cryptography secure against sequential attacks, J. Kaniewski and S. Wehner, *New Journal of Physics*, 18 (2016).

61. Sifting attacks in finite-size quantum key distribution, C. Pfister, N. Lütkenhaus, S. Wehner and P. J. Coles, *New Journal of Physics*, 18 (2016).

60. Asynchronous reference frame agreement in a quantum network, T. Islam and S. Wehner, *New Journal of Physics*, 18 (2016).

59. Loophole-free Bell inequality violation using electron spins separated by 1.3 kilometres, B. Hensen, H. Bernien, A. Dréau, A. Reiserer, N. Kalb, M. Blok, J. Ruitenberg, R. Vermeulen, R. Schouten, C. Abellán, W. Amaya, V. Pruneri, M. Mitchell, M. Markham, D. Twitchen, D. Elkouss, S. Wehner, T. Taminiau, R. Hanson, *Nature*, 526 (7575), 682-686 (2015). Science's "Top 10 Breakthroughs of 2015", Nature's "Science Events that shaped 2015". Cover New York Times, TIME, The Economist, Huffington Post, New Scientist, and others.

58. Limits to catalysis in quantum thermodynamics, N. Ng, C. Cirstoiu, J. Eisert, and S. Wehner, *New Journal of Physics* 17 (8), 085004 (2015). Perspective article in NJP 17, 075004 (2015).

57. Practical relativistic bit commitment, T. Lunghi, J. Kaniewski, F. Bussieres, R. Houlmann, M. Tomamichel, S. Wehner, and H. Zbinden, *Physical Review Letters*, 115 (3), 030502 (2015).

56. The second laws of quantum thermodynamics, F. Brandao, M. Horodecki, N. Ng, J. Oppenheim, S. Wehner, *Proceedings of the National Academy of Sciences*, 112 (11), 3275-3279 (2015).

55. Entanglement-assisted guessing of complementary measurement outcomes, M. Berta, P. Coles, and S. Wehner, *Physical Review A*, 90 (6), 062127 (2014).

54. Equivalence of wave particle duality to entropic uncertainty, P. Coles, J. Kaniewski, and S. Wehner, *Nature Communications*, 5, 5814 (2014). Voted top 10 of physics results on phys.org in 2014. Huffington Post, Vice, and others.

53. An experimental implementation of oblivious transfer in the noisy-storage model, C. Erven, N. Ng, N. Gigov, R. LaFlamme, S. Wehner and G. Weihs, *Nature Communications*, 5, 3418 (2014), Also appeared as a talk at QCRYPT 2013.

52. Spatial reference frame agreement in quantum networks, T. Islam, L. Magnin, B. Sorg and S. Wehner, *New Journal of Physics*, 16, 063040 (2014), Also appeared as a talk at QCRYPT 2013.

51. Entropic uncertainty from effective anticommutators, J. Kaniewski, M. Tomamichel and S. Wehner, *Physical Review A*, 90, 012332 (2014), Also appeared as a talk at QCRYPT 2014.

50. Finite blocklength converse bounds for quantum channels, W. Matthews and S. Wehner, *IEEE Transactions on Information Theory*, 60 (11), 7317-7329 (2015). Also appeared as a talk at QIP 2013.

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Selected Software

- SimulaQron - A simulator for application development for a quantum internet, http://www.simulaqron.org - Used for example at RIPE NCC Hackathon.
- NetSquid - Discrete event simulator for quantum networks, http://www.netsquid.org
- Authentication for PHP Scripting language for Web Servers, former Committer, creator YP/NIS module (1999) (PHP was deployed on 244 million web sites in 2012)
- IP Layer encryption ports SKIP (BSD/OS kernel) and IPSec (FreeBSD kernel) (1997) This software enabled encrypted communication of e.g. B92 Radio Station in Belgrade with the outside world.