

Christopher Alan Fuchs

Curriculum Vitae

8 November 2019

Personal:

Work address: Department of Physics
University of Massachusetts Boston
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Boston, Massachusetts 02125

Internet: QBism.Fuchs@gmail.com
<http://www.physics.umb.edu/Research/QBism/>
<http://scholar.google.com/citations?user=fe9uXzkAAAAJ>

Research Interests:

Quantum foundations in the light of quantum information
Quantum information theory

Professional Positions (beyond postdoctoral level):

Professor of Physics, University of Massachusetts Boston, 2015–
Research Fellow, Max Planck Institute for Quantum Optics, Garching, Germany, 2014
Senior Scientist, Raytheon BBN Technologies, Cambridge, Massachusetts, 2013–2014
Senior Researcher, Perimeter Institute for Theoretical Physics, Waterloo, Canada, 2007–2013
Member of Technical Staff, Bell Laboratories, Alcatel-Lucent, Murray Hill, New Jersey, 2000–2007

Education:

Ph. D. in Physics, May 1996, The University of New Mexico, Albuquerque, New Mexico
Dissertation: “Distinguishability and Accessible Information in Quantum Theory”
Advisor: Carlton M. Caves

B. S. in Physics with High Honors, December 1987
B. S. in Mathematics with High Honors, December 1987
The University of Texas at Austin, Austin, Texas
Research Supervisor: John Archibald Wheeler

Titles, Honors, Awards, Marks of Distinction:

Fellow of the American Physical Society. Elected 2012, “for powerful theorems and lucid expositions” that culminated in the view of quantum theory known as QBism.

International Quantum Communication Award, 2010, citation: “for contributions to the theory of quantum communication including quantum state disturbance.”

Lee A. DuBridge Prize Postdoctoral Fellowship, California Institute of Technology, Pasadena, California, 1996–1999.

Paper A45 was listed among the “top ten breakthroughs of the year 1998” by the editors of *Science*.

The Web of Science Citation Index gives a citation count of $\geq 6,200$, with a Hirsch index $h = 31$ and an average of 117/paper, on the 54 *journal articles* it lists for me. Google Scholar currently gives a citation count of $\geq 13,400$, with an $h = 49$, on my *full record* of 146 published or posted scholarly pieces.

Quoted in *The Oxford Dictionary of American Quotations*, Second Edition, selected and annotated by H. Rawson and M. Miner, (Oxford University Press, Oxford, UK, 2006), p. 742.

Fellow of the Stellenbosch Institute for Advanced Study (STIAS), in residence March/April 2012, May/June 2017, May/June 2018, and July/August 2019.

Chair, Executive Committee, American Physical Society Topical Group on Quantum Information, 2011. The 2011 office was the third of a four-year track, including the offices of Vice Chair 2009, Chair Elect 2010, Chair 2011, and Past Chair 2012. Elected when membership was $\approx 1,100$. Under my leadership, the number of topical-group submissions for the 2011 APS March Meeting grew 40% from the previous year's.

Adjunct Professor of Physics and Astronomy, University of New Mexico, Albuquerque, New Mexico, 2006 – today. (Adjunct Assistant Professor, 2000–2005.)

Adjunct Professor of Physics, University of Waterloo, Waterloo, Ontario, 2008–2016.

Academic Visitor, Faculty of Philosophy, University of Oxford, Summer 2017.

For Fun: Academic Lineage – F. S. Exner, F. Hasenöhr, K. Herzfeld, J. A. Wheeler, K. S. Thorne, C. M. Caves, C. A. Fuchs. Erdős number – 3 (but who doesn't have one). Einstein number – 3 (Einstein–Rosen–Peres–Fuchs). Bohr number – 4 (Bohr–Wheeler–Thorne–Caves–Fuchs).

Awarded, Endowed, or Keynote Lectures:

Special Lecture, International Seminar on Quantum Physics and Emptiness in Buddhist Philosophy, Namgyal Institute for Tibetology, Gangtok, Sikkim, India, 28 March 2018.

Keynote Lecture, 5th Tübingen Summer School in the History and Philosophy of Science, Probability and Quantum Mechanics, Tübingen, Germany, 2 August 2016.

CHAST Public Lecture, Committee for Human Aspects of Science and Technology, University of Sydney, Australia, March 2015.

Valedictory Talk, International School on Quantum & Nano Computing Systems and Applications, Dayalbagh Educational Institute, Agra, India, November 2013.

Keynote Speaker, Fifth International Quantum Interactions Symposium, Aberdeen, Scotland, June 2011.

Clifford Lecturer, Tulane University, New Orleans, Louisiana, March 2011.

Itamar Pitowsky Memorial Lecturer, Hebrew University, Jerusalem, Israel, February 2011.

Squire Lecturer, Grinnell College, Grinnell, Iowa, 2006.

Michelson Postdoctoral Prize Lectureship, Case Western Reserve University, Cleveland, Ohio, 1998.

Other Tokens of Recognition:

Member, Award Committee, *Paul Ehrenfest Best Paper Award for Quantum Foundations*, since 2019.

Member, Editorial Board, Springer book series *The Western Ontario Series in Philosophy of Science*, since 2010.

Invited Member, Foundational Questions Institute (FQXi), since 2010.

Member, Editorial Board, Springer book series *Fundamental Theories of Physics*, since 2009.

Board Member, International Center for Mathematical Modeling, Linnaeus University, Sweden, since 2001.

Guest Professor, Quantum ICT Research Institute, Tamagawa University, Tokyo, Japan, since 2000.

Affiliate, Institute for Quantum Computing, University of Waterloo, 2008–2016.

Associate Editor, *Quantum Information and Computation*, Rinton Press, 2000–2012.

Member, Steering Committee, International Conference Series on Quantum Communication, Measurement and Computing (QCMC), 2010–2014.

Member, Programme Committee, 11th International Conference on Quantum Communication, Measurement and Computing (QCMC 2012), Vienna University of Technology, Vienna, Austria, 30 July – 3 August, 2012.

Member, Scientific Committee, Centre de Recherche Mathématiques, Montréal, Canada, Thematic Semester June–December 2011.

2-Year Member-at-Large, Executive Committee, American Physical Society Topical Group on Quantum Information, 2007–2008.

Member, Judging Panel, Best Student-Paper Award, American Physical Society Topical Group on Quantum Information, 2007.

Member, Technology Experts Panel, United States Advanced Research and Development Activity (ARDA) Roadmap for Quantum Cryptography, 2003–2004.

Member, National Science Foundation Review Panel on Mathematical Physics, 2005.

Member, Pacific Institute of Theoretical Physics, University of British Columbia, Vancouver, Canada, 2004–2008.

Postdoctoral Fellowships:

Director-Funded Postdoctoral Fellowship, Los Alamos National Laboratory, Los Alamos, New Mexico. Sponsor: Salman Habib. (October 1999 – October 2000)

Lee A. DuBridge Prize Postdoctoral Fellowship, California Institute of Technology, Pasadena, California. Sponsors: H. Jeff Kimble and John Preskill. (October 1996 – October 1999)

Postdoctoral Fellowship, Département I.R.O., Université de Montréal, Montréal (Québec), Canada. Sponsor: Gilles Brassard. (January 1996 – October 1996)

Grant and Funding History (\$2.5M career total):

Project Leader, “QBism, from Pragmatism to Phenomenology,” Stellenbosch Institute for Advanced Study (STIAS), South Africa, 2019. **~45,000 USD.**

Principal Investigator, “Encapsulated Agents in Quantum Theory: Re-examining Wigner’s Friend,” contract for Fetzer Pioneers Fund, 12 January 2019 – 1 August 2019. **7,700 USD.**

Principal Investigator, “Encapsulated Agents in Quantum Theory: Re-examining Wigner’s Friend,” contract for Foundational Questions Institute (FQXi) & Fetzer Franklin Fund Partnership, 1 December 2018 – 1 December 2019. **7,000 USD.**

Co-Investigator (with P. Love and A. Harrow), “Quantum and Classical Bayesian Agents,” contract for Foundational Questions Institute (FQXi), Fall 2018 – Summer 2020. **119,942 USD.**

Project Leader (with co-leader B. C. Stacey), “Geometric Phases and Symmetric Quantum Measurements,” contract for John Templeton Foundation, 1 July 2018 – 30 June 2020. **211,370 USD.**

Principal Investigator, “Quantifying Participatory Realism, Quantifying QBism,” contract for the Fetzer Franklin Fund, 14 August 2018 – 31 August 2021. **375,000 USD.**

Faculty Mentor (for Joseph R. Farah), “Unlocking the Structure of Symmetric Quantum Measurements,” Oracle Undergraduate Research Fellowship, Fall 2018 – Spring 2019. **1,500 USD.**

Project Leader, “Is It Autonomy All the Way Down? The Search for a QBist Metaphysic,” Stellenbosch Institute for Advanced Study (STIAS), South Africa, 2018. **~45,000 USD.**

Principal Investigator, “Why the Quantum? A Video Series,” contract for Foundational Questions Institute (FQXi), 1 December 2016 – 31 December 2017. **4,500 USD.**

Project Leader, “International Workshop on Participatory Realism,” Stellenbosch Institute for Advanced Study (STIAS), South Africa, 2017. **~45,000 USD.**

Faculty Mentor (for Julio Salazar), “Number Theoretic Aspects of a Symmetric Quantum Measurement,” Oracle Undergraduate Research Fellowship, Spring 2017. **750 USD (deferred).**

Principal Investigator (with C. G. Timpson), “Does Participatory Realism Make Sense? The Role of Observership in Quantum Theory,” contract for Foundational Questions Institute (FQXi), 1 August 2016 – 31 July 2018. **140,959 USD.**

Faculty Mentor (for Michael C. Hoang), “Computer-Aided Explorations of Symmetric Quantum Measurements,” Oracle Undergraduate Research Fellowship, Fall 2016 – Spring 2017. **1,500 USD.**

- Principal Investigator, “Workshop on the Quanta within the Quantum,” contract for Foundational Questions Institute (FQXi), 1 July 2015 – 30 June 2016. **6,643 USD**.
- Principal Negotiator, “General Donation #57800, to UMass Boston Physics Department,” from John Templeton Foundation, 9 January 2015. **30,000 USD**.
- Project Leader, “That the World Can Be Shaped: Quantum Bayesianism, Counterfactuals, Free Will,” contract for John Templeton Foundation, 1 April 2011 – 31 March 2013. **50,000 USD**.
- Project Leader, “Tightening the Consistency of Quantum Bayesianism,” Stellenbosch Institute for Advanced Study (STIAS), South Africa, 2012. **~50,000 USD**.
- Principal Investigator, “SIC Representations for Quantum States and Quantum Channels” contract for United States Office of Naval Research, 1 October 2008 – 31 December 2012. **511,913 USD**.
- Senior Personnel, “REU Site: Susquehanna University REU in Mathematics,” contract for National Science Foundation Research Experience for Undergraduate (REU) Program, Spring 2008 – Spring 2011. **150,000 USD**.
- Principal Investigator (with C. Beisbart, S. Hartmann, and V. Palge), “Antrag zur Foerderungd einer Konferenz mit anschließender Sommerschule,” contract for German VolkswagenStiftung, (funds used to organize conference “Being Bayesian in a Quantum World,” 1–5 August 2005, Konstanz, Germany, and an associated summer school). **67,000 EUR ≈ 81,900 USD**.
- E. T. S. Walton Visitor Award, Science Foundation Ireland, Communications Network Research Institute, Dublin, Ireland, April 2003 – August 2004. **251,964 EUR ≈ 317,000 USD**.
- Principal Investigator (with C. M. Caves), “Theoretical Investigations in Quantum Information Science: Quantum Nonlocality and Entanglement,” contract for United States Office of Naval Research, 1 April 2000 – 31 March 2003. **300,000 USD**.

Organizational Activities:

- Member, Program Committee, *Quantum Limits of Knowledge II*, Université Grenoble Alpes, Grenoble, France, Winter 2021.
- Project Leader, *QBism, from Pragmatism to Phenomenology*, Stellenbosch Institute for Advanced Study (STIAS), Stellenbosch, South Africa, 15 July – 15 August 2019.
- Co-organizer (with R. Schack), Special Session “QBism in Väjjö: A Celebration,” *Quantum Information Revolution: Impact to Foundations!?* (QIR), Linnaeus University, Väjjö, Sweden, 10–13 June 2019.
- Member, Program Committee, *Quantum Limits of Knowledge*, Niels Bohr Institute, Copenhagen, Denmark, 19–21 June 2019.
- Co-organizer (with M. S. Leifer), *Workshop on Encapsulated Agents in Quantum Theory: Re-examining Wigner’s Friend*, Boston, Massachusetts, 9–10 March 2019.
- Organizer, Quantum Foundations Focus Sessions (Sessions V27, X27, Y27), *American Physical Society March Meeting*, Boston, Massachusetts, 4–8 March 2019.
- Project Leader, *Is It Autonomy All the Way Down? The Search for a QBist Metaphysic*, Stellenbosch Institute for Advanced Study (STIAS), Stellenbosch, South Africa, 20 May – 15 June 2018.
- Organizer (with R. Schack), *International Workshop on Participatory Realism*, Stellenbosch Institute for Advanced Study (STIAS), Stellenbosch, South Africa, 6–8 June 2017.
- Co-organizer (with J.-Å. Larsson), *Discrete Structures in Quantum Mechanics: Workshop on SICs and MUBs, Existence and Usefulness in Quantum Physics*, Linköping University, Linköping, Sweden, 20–22 June 2016.
- Co-organizer (with I. Bengtsson), Special Session “QBism and the Copenhagen Spirit Compared,” *Quantum Theory: From Foundations to Technologies*, Linnaeus University, Väjjö, Sweden, 8–11 June 2015.
- Member, Program Committee, *ASCR Workshop on Quantum Computing for Science*, Department of Energy (DOE) Office of Advanced Scientific Computing Research (ASCR), Washington, DC, 17–18 February 2015.

- Member, Program Committee, *17th UK and European Meeting on the Foundations of Physics*, Ludwig Maximilian University, Munich, Germany, 29–31 July 2013.
- Project Leader, *Tightening the Consistency of Quantum Bayesianism*, Stellenbosch Institute for Advanced Study (STIAS), Stellenbosch, South Africa, 10 March – 22 April 2012. Participating with STIAS Fellows D. M. Appleby, H. Barnum, N. D. Mermin, R. Schack, and C. G. Timpson.
- Co-organizer (with H. Atmanspacher), *The Pauli-Jung Dialog and Its Impact Today*, Filzbach, Switzerland, 23–27 September 2012.
- Co-organizer (with H. Atmanspacher), Special Session “Wolfgang Pauli’s Notion of Quantum Mechanical Incompleteness,” *Quantum Theory: Reconsideration of Foundations – 6*, Linnaeus University, Växjö, Sweden, 11–14 June 2012.
- Co-organizer (with G. Brassard), *Quantum Foundations in the Light of Quantum Information III / Fondements de la mécanique quantique à la lumière de l’information quantique III*, Université de Montréal, Montréal, Canada, 6–9 December 2012.
- Organizer and Chair for invited-speaker sessions, “Quantum Information: Featured Experiments,” “20 Years of Quantum Information in Physical Review Letters,” and “Symmetric Discrete Structures for Finite Dimensional Quantum Systems,” *American Physical Society March Meeting 2011*, Dallas, Texas, 21–25 March 2011.
- Co-organizer (with S. Weinstein and D. Wolpert), *Laws of Nature: Their Nature and Knowability*, Perimeter Institute for Theoretical Physics, Waterloo, Ontario, 20–22 May 2010.
- Member, Advisory Committee (with L. Hardy and H. Price), *PIAF ’09: New Perspectives on the Quantum State*, Perimeter Institute for Theoretical Physics, Waterloo, Ontario, 27 September – 2 October 2009.
- Member, International Program and Advisory Committee, *Feynman Festival 2009*, Olomouc, Czech Republic, 22–26 June 2009.
- Co-organizer (with S. T. Flammia), *Seeking SICs: An Intense Workshop on Quantum Frames and Designs*, Perimeter Institute for Theoretical Physics, Waterloo, Ontario, 26–31 October 2008.
- Co-organizer (with G. Bacciagaluppi, L. Hardy, and W. Struyve), *The Clock and the Quantum: Time in Quantum Foundations*, Perimeter Institute for Theoretical Physics, Waterloo, Ontario, 28 September – 2 October 2008.
- Co-organizer (with J.-Å. Larsson), Special Session “Contextuality and Kochen-Specker Theorems,” *Foundations of Probability and Physics – 5*, Växjö University, Växjö, Sweden, 25 August 2008.
- Co-organizer (with A. S. Holevo), *Osamu Hirota, a True Quantum Communication Channel*, Perimeter Institute for Theoretical Physics, Waterloo, Ontario, 25–27 June 2008.
- Co-organizer (with S. H. Simon), *Quantum Information Meets Nanotechnology*, Bell Labs, Lucent Technologies, Murray Hill, New Jersey, 11 July 2006.
- Member, Advisory and Award Committee, *Fifth, Sixth, Seventh, and Eighth International Conferences on Quantum Communication, Measurement, and Computing (QCMC)*, 2000, 2002, 2004, 2006.
- Member, Program Committee, American Physical Society Topical Group on Quantum Information, 2006–2007.
- Co-organizer (with A. Khrennikov), *Foundations of Probability and Physics – 4*, Växjö University, Växjö, Sweden, 4–9 June 2006.
- Member, Nominating Committee, American Physical Society Topical Group on Quantum Information, 2005–2006.
- Co-organizer (with M. O. Scully), *Wheelerfest, a Meeting for Quantum Information and Foundations*, Princeton University, Princeton, New Jersey, 24–25 February 2006.
- Co-organizer (with C. M. Caves, S. Hartmann, and R. Schack), *Being Bayesian in a Quantum World*, Konstanz, Germany, 1–5 August 2005.
- Co-organizer (with H. Barnum, R. Hudson, and A. Khrennikov), *Quantum Theory: Reconsideration of Foundations–2, Quantum Logic Meets Quantum Information*, Växjö University, Växjö, Sweden, 1–6 June 2003.

- Co-organizer (with G. Brassard), *Workshop on Quantum Foundations in the Light of Quantum Information II*, Université de Montréal, Montréal, Canada, 13 October – 3 November 2002.
- Co-organizer (with A. Barg, L. Fortnow, and P. W. Shor), *National Science Foundation Planning Workshop on Quantum Communications, Cryptography, and Coding*, Elmsford, New York, 17–18 January 2002.
- Co-organizer (with P. Lahti and A. Khrennikov), *Quantum Theory: Reconsideration of Foundations, Shannon meets Bohr*, Växjö University, Växjö, Sweden, 17–21 June 2001.
- Co-organizer (with O. Hirota), *Second Tokyo International Quantum Information Seminar*, Oiso Prince Hotel, Oiso, Japan, 11–15 March 2001.
- Co-organizer (with G. Brassard), *Meeting on Quantum Foundations in the Light of Quantum Information and Cryptography*, Université de Montréal, Montréal, Canada, 17–19 May 2000.
- Co-organizer (with O. Hirota), *First Tokyo International Quantum Information Seminar*, Tamagawa University, Tokyo, Japan, 13–14 March 2000.
- Co-organizer (with C. M. Caves and M. H. Holzscheiter), *Northern New Mexico Complexity, Entropy, and Physics of Information Seminar Series*, Santa Fe Institute, Santa Fe, New Mexico, January 2000 – October 2000.

Patents:

- C. A. Fuchs, M. Vasilyev and B. Yurke, “Optical Apparatus Having a Polarization Splitter and Multiple Interferometers,” patent number US 7,463,361 B2; issued 9 December 2008.
- C. A. Fuchs, M. Vasilyev and B. Yurke, “Optical Analyzers of Polarization Properties,” patent number US 7,206,069 B2; issued 17 April 2007.

Postdocs Supervised:

- Jacques Pienaar, University of Massachusetts Boston, March 2019 – present.
- Blake C. Stacey, University of Massachusetts Boston, Spring 2015 – Fall 2018.
- Huangjun Zhu, Perimeter Institute for Theoretical Physics, November 2012 – August 2013.
- Åsa Ericsson, Perimeter Institute for Theoretical Physics, March 2009 – July 2011.

Current Students:

- John B. DeBrotta, PhD candidate, University of Massachusetts Boston, Summer 2015 – present.
- Mohamed Sahbani, Masters student, University of Massachusetts Boston, Fall 2019 – present.
- Abhishek Khanal, Honors College research student, University of Massachusetts Boston, Spring 2019 – present.
- Kyler Mikulski, Honors College research student, University of Massachusetts Boston, Fall 2019 – present.

Students Supervised:

- J. R. Farah, Oracle Undergraduate Research Fellow, University of Massachusetts Boston, Spring 2018 – Spring 2019. (Farah was one of the 347 recipients of a \$3M 2020 Breakthrough Prize for his involvement in the Event Horizon Telescope Collaboration.)
- M. C. Hoang, University of Massachusetts Boston, “Computer-Aided Explorations of Symmetric Quantum Measurements,” Honors College thesis, Fall 2016 – Spring 2017.
- H. B. Dang, University of Waterloo, “Studies of Symmetries that Give Special Quantum States the ‘Right to Exist’,” PhD thesis, Fall 2009 – Spring 2015.
- G. N. Tabia, University of Waterloo, “Geometry of Quantum States from Symmetric Informationally Complete Probabilities,” PhD thesis, Fall 2009 – Fall 2013.
- M. A. Graydon, University of Waterloo, “Quaternions and Quantum Theory,” Master’s thesis, Fall 2009 – Summer 2011.

- E. S. Gould, Perimeter Scholars International, “Searching for Noncovariant Symmetric Informationally Complete Quantum Measurements,” Master’s research, Winter-Spring 2010–2011.
- A. Karlsson, Perimeter Scholars International, “Positive Operator Valued Measures, Frames and the Existence of Symmetric Informationally Complete Measurements,” Master’s research, Winter-Spring 2010–2011.
- L. Piispanen, Perimeter Scholars International, “Symmetric Informationally Complete Positive Operator Valued Measures and Their Connections to the Weyl-Heisenberg Group,” Master’s research, Winter-Spring 2010–2011.
- A. Fenyés, Perimeter Scholars International, “Maximal Consistent Sets and Non-Commutative Probability,” Master’s research, Spring 2010.
- R. Morris, University of Waterloo, “New Ways to Express Quantum Dynamics,” Master’s research, 2008 – 2009.
- Y. Shikano, Tokyo Institute of Technology, Japan, “Seeking SICs,” International Travel Scholarship, February–March 2008.
- H. B. Dang, California Institute of Technology and Princeton University, USA, “Quasi-Orthonormal Bases on the Cone of Positive Operators,” Bell Labs Summer Research Program, Summer 2006.
- M. Pérez-Suárez, University of Vigo, Spain, “Properties of Informationally Complete Measurements,” Communications Network Research Institute Visiting Ph. D. Student, Spring 2004.
- G. G. Plunk, Cornell University, USA, “Investigations on Informationally Complete Measurements,” Bell Labs Summer Research Program, Summer 2002.
- P. F. Scudo, Technion–Israel Institute of Technology, Israel, “Quantum de Finetti Representation Theorems for Completely Positive Maps,” DIMACS Graduate Research Fellowship, Spring 2002.
- F. Verstraete, Ghent University, Belgium, “Gleason-like Theorems for Entanglement and Completely Positive Maps,” DIMACS Graduate Research Fellowship, Spring 2002.
- J. M. Renes, University of New Mexico, USA, “Effect Algebras and the Quantum Probability Rule,” Summer Ph. D. Research, Summer 2001.
- R. A. Obajtek, Saint Louis University, USA, “Quantum Cryptography with Ternary Qutrit Alphabets,” Bell Labs Summer Research Program, Summer 2001.
- N. E. Baytch, Harvard University, USA, “Nonorthogonal Variations of Gleason’s Theorem in Quantum Mechanics,” Los Alamos National Laboratory Summer Intern Program, Summer 2000.
- P. Hayden, University of Oxford, England, “Distributing Quantum Information,” Los Alamos National Laboratory Visiting Student, April–May 2000.
- R. Schumann, University of Stellenbosch, South Africa, “Quantum Information Theory,” Master’s Thesis, Spring–Summer 2000.
- T. L. Poo, University of Oxford, England, “Entanglement–Information Relations in Quantum Information Processing,” Caltech Summer Undergraduate Research Fellowship, Summer 1998.
- J. A. Cortese, California Institute of Technology, USA, “Entanglement-Enhanced Classical Communication on the Amplitude Damping Channel,” beginning Ph. D. project, Spring–Summer 1997.

External Examiner for PhD Defense:

- B. Ibinson, “Quantum Information and Entropy,” University of Bristol, England, advisor A. Winter, 24 January 2008.
- Å. Ericsson, “Exploring the Set of Quantum States,” Stockholm University, Sweden, advisor I. Bengtsson, 17 August 2007.

Professional Affiliations:

- American Physical Society (fellow, since 2012)
- International Quantum Structures Association (member, since 1997)
- Society for Mind-Matter Research (member, since 2018)

William James Society (member, since 2005)

Foundations and Funding Agencies Advised:

Micius Quantum Foundation, China
Department of Energy, USA
John D. and Catherine T. MacArthur Foundation, USA
John Simon Guggenheim Memorial Foundation, USA
National Science Foundation, USA
European Science Foundation, EU
Austrian Academy of Sciences, Austria
Science Foundation Ireland, Republic of Ireland
Israel Science Foundation, Israel
Science and Technology Assistance Agency, Slovakia
Canadian Institute for Advanced Research, Canada
Netherlands Organisation for Scientific Research, Netherlands
Fonds National Suisse de la Recherche Scientifique, Switzerland

Journals Refereed Over the Years:

American Journal of Physics; Annals of Physics; European Physical Journal D; Europhysics Letters; Fortschritte der Physik; Foundations of Physics; Foundations of Science; IEEE Transactions on Information Theory; International Journal of Quantum Information; Journal of Applied Mathematics; Journal of Mathematical Physics; Journal of Modern Optics; Journal of Optics; Journal of Physics A; Nature; Open Systems & Information Dynamics; Physica Scripta; Physical Reviews A & E; Physical Review Letters; Physics Letters A; Physics Today; Proceedings of the Royal Society A; Quantum Information and Computation; Quantum Information Processing; Studies in History and Philosophy of Modern Physics

PUBLICATIONS:

All of my publications follow an alphabetical author-ordering convention with the exception of: Articles A52, A53, and C29 from my earliest student years, A7, A8, C7, and H1 from my brief foray into private industry, and A14, A45, C9, C12, and C24 which reported laboratory experiments.

A. Publications in Professional Journals and Trade Magazines

1. J. B. DeBrotta, C. A. Fuchs, and B. C. Stacey, “Symmetric Informationally Complete Measurements Identify the Irreducible Difference between Classical and Quantum,” to appear in *Physical Review Research*. [arXiv:1805.08721](https://arxiv.org/abs/1805.08721).
2. D. P. DiVincenzo and C. A. Fuchs, “Quantum Foundations,” *Physics Today* **72**(2), 50–51 (2019). Translated into Mandarin in *Physics Bimonthly* (The Physics Society of Taiwan), http://pb.ps-taiwan.org/catalog/ins.php?index_m1_id=5&index_id=474.
3. C. A. Fuchs, “Notwithstanding Bohr, the Reasons for QBism,” *Mind and Matter* **15**(2), 245–300 (2017). [arXiv:1705.03483](https://arxiv.org/abs/1705.03483).
4. C. A. Fuchs, M. C. Hoang, and B. C. Stacey, “The SIC Question: History and State of Play,” *Axioms* **6**(3), 21 (2017). [arXiv:1703.07901](https://arxiv.org/abs/1703.07901).
5. J. B. DeBrotta and C. A. Fuchs, “Negativity Bounds for Weyl-Heisenberg Quasiprobability Representations,” *Foundations of Physics* **47**(8), 1009–1030 (2017). [arXiv:1703.08272](https://arxiv.org/abs/1703.08272).
6. D. M. Appleby, C. A. Fuchs, B. C. Stacey, and H. Zhu, “Introducing the Qplex: A Novel Arena for Quantum Theory,” invited topical review, *The European Physical Journal D* **71**(7), 197 (2017). [arXiv:1612.03234](https://arxiv.org/abs/1612.03234).
7. S. Wein, K. Heshami, C. A. Fuchs, H. Krovi, Z. Dutton, W. Tittel, and C. Simon, “Efficiency of an Enhanced Linear Optical Bell-State Measurement Scheme with Realistic Imperfections,” *Physical Review A* **94**(3), 032332 (2016). [arXiv:1404.7183v4](https://arxiv.org/abs/1404.7183v4).

8. S. Guha, H. Krovi, C. A. Fuchs, Z. Dutton, J. A. Slater, C. Simon, W. Tittel, “Rate-Loss Analysis of an Efficient Quantum Repeater Architecture,” *Physical Review A* **92**(2), 022357 (2015). [arXiv:1404.7183v4](#).
9. C. A. Fuchs and R. Schack, “QBism and the Greeks: Why a Quantum State Does Not Represent an Element of Physical Reality,” *Physica Scripta* **90**(1), 015104 (2015). [arXiv:1412.4211](#).
10. D. M. Appleby, C. A. Fuchs, and H. Zhu, “Group Theoretic, Lie Algebraic and Jordan Algebraic Formulations of the SIC Existence Problem,” *Quantum Information and Computation* **15**(1,2), 61–94 (2015). [arXiv:1312.0555v2](#).
11. C. A. Fuchs, N. D. Mermin, and R. Schack, “An Introduction to QBism with an Application to the Locality of Quantum Mechanics,” *American Journal of Physics* **82**(8), 749–754 (2014). [arXiv:1311.5253](#).
12. D. M. Appleby, H. B. Dang, and C. A. Fuchs, “Symmetric Informationally-Complete Quantum States as Analogues to Orthonormal Bases and Minimum-Uncertainty States,” *Entropy* **16**(3), 1484–1492 (2014). [arXiv:0707.2071v2](#).
13. C. A. Fuchs and R. Schack, “Quantum-Bayesian Coherence,” *Reviews of Modern Physics* **85**(4), 1693–1715 (2013). [arXiv:1301.3274](#).
14. Z. E. D. Medendorp, F. A. Torres-Ruiz, L. K. Shalm, G. N. M. Tabia, C. A. Fuchs, and A. M. Steinberg, “Experimental Characterization of Qutrits Using Symmetric Informationally Complete Positive Operator-Valued Measurements,” *Physical Review A* **83**(5), 051801(R) (2011). [arXiv:1006.4905](#).
15. C. A. Fuchs, “Quantum Bayesianism at the Perimeter,” *Physics in Canada* **66**(2), 77–82 (2010). [arXiv:1003.5182](#).
16. D. M. Appleby, S. T. Flammia, and C. A. Fuchs, “The Lie Algebraic Significance of Symmetric Informationally Complete Measurements,” *Journal of Mathematical Physics* **52**(2), 022202 (2011). A significantly more detailed version posted at [arXiv:1001.0004](#).
17. D. M. Appleby, Å. Ericsson, and C. A. Fuchs, “Properties of QBist State Spaces,” *Foundations of Physics* **41**(3), 564–579 (2011). [arXiv:0910.2750](#).
18. C. A. Fuchs and R. Schack, “A Quantum-Bayesian Route to Quantum-State Space,” *Foundations of Physics* **41**(3), 345–356 (2011). [arXiv:0912.4252](#).
19. C. M. Caves, C. A. Fuchs, and R. Schack, “Subjective Probability and Quantum Certainty,” *Studies in History and Philosophy of Modern Physics* **38**(2), 255–274 (2007). [quant-ph/0608190](#).
20. C. A. Fuchs, M. Pérez-Suárez, and D. J. Santos, “Insights and Implications from a Bayesian Approach to Quantum Information,” *International Journal of Quantum Information* **3**(1), 233–237 (2005).
21. C. A. Fuchs, “On the Quantumness of a Hilbert Space,” *Quantum Information and Computation* **4**(6/7), 467–478 (2004). [Preprinted in *Quantum Information, Statistics, Probability: Dedicated to Alexander S. Holevo on the Occasion of His 60th Birthday*, edited by O. Hirota (Rinton Press, Princeton, NJ, 2004), pp. 65–77.] [quant-ph/0404122](#).
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24. M. Arndt, M. Aspelmeyer, H. J. Bernstein, R. Bertlmann, C. Brukner, J. P. Dowling, J. Eisert, A. Ekert, C. A. Fuchs, D. M. Greenberger, M. A. Horne, T. Jennewein, P. G. Kwiat, N. D. Mermin, J.-W. Pan, E. M. Rasel, H. Rauch, T. G. Rudolph, C. Salomon, A. V. Sergienko, J. Schmiedmayer, C. Simon, V. Vedral, P. Walther, G. Weihs, P. Zoller, M. Zukowski, “Quantum Physics from A to Z,” in *Proceedings of the Quantum Physics of Nature (QUPON) Conference, Vienna, Austria, May 22nd-26th, 2005*, edited by M. Arndt and G. Weihs. [arXiv:quant-ph/0505187v4](https://arxiv.org/abs/quant-ph/0505187v4).
25. C. A. Fuchs, “Advance Praise for ‘Converging Realities’,” (with R. Torretti) on back cover of *Converging Realities: Toward a Common Philosophy of Physics and Mathematics*, by R. Omnès, (Princeton University Press, Princeton, 2005).
26. C. A. Fuchs, “Soul-Searching at Caltech,” *Physics World* (November, 2003), p. 49.
27. C. A. Fuchs, “Book Review on ‘Statistical Structure of Quantum Theory,’ by Alexander S. Holevo,” *Quantum Information and Computation* **3**(2), 191–192 (2003).
28. J. Bub and C. A. Fuchs, “Introduction: Special Issue on Quantum Information and Computation,” *Studies in History and Philosophy of Modern Physics* **34**(3), 339–341 (2003).
29. C. A. Fuchs, brief appearance in The History Channel’s *History’s Mysteries*, episode titled “True Story of the Philadelphia Experiment,” originally aired 12 March 2001.

H. Published Abstracts

1. J. B. DeBrotta, C. A. Fuchs, and B. C. Stacey, “Symmetric Informationally Complete Measurements Identify the Essential Difference between Classical and Quantum,” *American Mathematical Society Spring Eastern Sectional Meeting*, http://www.ams.org/amsmtgs/2252_abstracts/1139-81-628.pdf, (2018).
2. S. Guha, H. Krovi, C. A. Fuchs, Z. Dutton, W. Tittel, J. A. Slater, C. Simon, and W. Tittel, “Exact Analysis and Numerical Evaluation of QKD over a Practical Repeater Chain,” *QCrypt 2015: 5th International Conference on Quantum Cryptography*, http://2015.qcrypt.net/wp-content/uploads/2015/09/Contributed15_Hari-Krovi.pdf, (2015).

3. C. Fuchs, “A New Alphabet for Quantum Information,” *The Rochester Conferences on Coherence and Quantum Optics and Quantum Information and Measurement: OSA Technical Digest (online)*, <https://doi.org/10.1364/QIM.2013.W4B.3>, paper W4B.3, (2013).
4. D. M. Appleby, H. B. Dang, and C. A. Fuchs, “SIC-POVMs and Lie Algebras,” *Bulletin of the American Physical Society* **57**(1), J29 (2012).
5. D. M. Appleby, I. Bengtsson, K. Blanchfield, Å. Ericsson, H. B. Dang, C. A. Fuchs, M. A. Graydon, and G. N. Tabia, “A Linear Dependency Structure Arising from Weyl-Heisenberg Symmetry,” *Bulletin of the American Physical Society* **56**(1), J29 (2011).
6. D. M. Appleby, H. B. Dang, and C. A. Fuchs, “Symmetric Informationally-Complete States Are Minimum Uncertainty States in Prime Dimensions,” *Bulletin of the American Physical Society* **55**(2), Y33 (2010).
7. C. A. Fuchs, “Quantum Bayesian Coherence,” *Bulletin of the American Physical Society* **55**(2), X33 (2010).
8. D. M. Appleby, H. B. Dang, and C. A. Fuchs, “Quasi-Orthonormal Bases for the Space of Density Operators,” *Bulletin of the American Physical Society* **52**(1), B33 (2007).
9. C. A. Fuchs, “Quantum Mechanics in Terms of Symmetric Measurements,” *Bulletin of the American Physical Society* **51**(1), D40 (2006).
10. G. Brassard and C. A. Fuchs, “Quantum Foundations in the Light of Quantum Cryptography,” in *Quantum Physics of Nature. Theory, Experiment and Interpretation. In Collaboration with the 6th European QIPC Workshop*, in International Nuclear Information System (INIS) Repository, https://inis.iaea.org/search/search.aspx?orig_q=RN:38074036, (2005).
11. C. A. Fuchs, “The Fragility and Resilience of Quantum Information,” *Bulletin of the American Physical Society* **44**(10), AA.02 (1999).
12. M. Ban, C. A. Fuchs, O. Hirota, M. Osaki, and M. Sasaki, “Some Problems in Quantum Channel Capacity for Shannon Information,” in *Quantum Algorithms: Dagstuhl Seminar Report 210*, edited by T. Beth and G. Brassard (Internationales Begegnungs- und Forschungszentrum für Informatik (IBFI), Wadern, Germany, 1998), p. 19.

I. Further Archived (but Unpublished) Materials

1. C. A. Fuchs, “QBism, the Perimeter of Quantum Bayesianism,” [arXiv:1003.5209](https://arxiv.org/abs/1003.5209). This unpublished paper counts as the first real statement of QBism over the earlier Quantum Bayesianism of Caves, Fuchs, and Schack. >200 citations on Google Scholar.
2. C. A. Fuchs and R. Schack, “Quantum-Bayesian Coherence,” [arXiv:0906.2187](https://arxiv.org/abs/0906.2187). This is the paper that introduced the term “QBism.” It is a longer, more philosophical version of the later, “Quantum-Bayesian Coherence,” *Rev. Mod. Phys.* **85**(4), 1693–1715 (2013).
3. H. Barnum, C. A. Fuchs, J. M. Renes, and A. Wilce, “Influence-Free States on Compound Quantum Systems,” [arXiv:quant-ph/0507108](https://arxiv.org/abs/quant-ph/0507108).
4. C. A. Fuchs, *Quantum States: What the Hell Are They?*, 229 pages, available at <http://www.physics.umb.edu/Research/QBism/>.
5. C. A. Fuchs, “The Structure of Quantum Information,” available at <http://www.physics.umb.edu/Research/QBism/>.
6. C. A. Fuchs, “578 References for Research in Quantum Distinguishability and State Disturbance,” available at <http://www.physics.umb.edu/Research/QBism/>.

J. Articles Submitted or in Preparation

(Preliminary drafts available upon request.)

1. J. B. DeBroda, C. A. Fuchs, and B. C. Stacey, “Triply Positive Matrices and Quantum Measurements Motivated by QBism,” to be submitted to *Physical Review A*. [arXiv:1812.08762](https://arxiv.org/abs/1812.08762).
2. J. B. DeBroda, C. A. Fuchs, and R. Schack, “Can Two QBists Know One Thing? QBism’s Response to Frauchiger and Renner,” to be submitted to *Foundations of Physics*.

- C. A. Fuchs, “The Activating Observer: Resource Material for a Paulian–Wheelerish Conception of Nature,” presently 194 pages, to be submitted somewhere as a monograph.

INVITED LECTURES AND SEMINARS:

To date, I have given over 250 invited lectures and seminars. Beyond traveling through or over most states of the United States (and over the North Pole even), this has allowed me to visit a number of places in the world. These include: Argentina (Buenos Aires), Australia (Brisbane, Sydney), Austria (Innsbrück, Salzburg, Traunkirchen, Vienna), Belgium (Brussels), Canada (Banff, Guelph, Hamilton, London, Montréal, Niagara, Toronto, Vancouver, Waterloo), China (Beijing, Shenzhen), Denmark (Aarhus, Copenhagen), England (Bristol, Cambridge, Egham, Hull, London, Nottingham, Oxford, Plymouth, Southampton, Stonehenge, York), Finland (Helsinki), France (Cessy, Nice, Paris, Tourtour), Germany (Berchtesgaden, Dagstuhl, Frankfurt, Freiburg, Garching, Günzburg, Konstanz, Mainz, Munich, Tübingen, Ulm), Greece (Athens, Mykonos), Hong Kong (Hong Kong), Hungary (Budapest), Iceland (Grindavik, Keflavik, Reykjavik), India (Agra, Bagdogra, Delhi), Ireland (Cork, Dublin, Wexford), Israel (Haifa, Jerusalem, Nazareth, Tel Aviv), Italy (Bertinoro, Bologna, Capri, Ischia, Milan, Naples, Pavia, Pisa, Rome, Turin, Varenna), Japan (Fuji-Hakone, Nagoya, Oiso, Okinawa, Sendai, Tokyo, Yokohama), Liechtenstein (Vaduz), Mexico (Acapulco), Netherlands (Amsterdam, Utrecht), New Zealand (Auckland), Northern Ireland (Belfast), Norway (Oslo), Poland (Warsaw, Wrocław), Portugal (Lisbon), Scotland (Aberdeen, Edinburgh, Glasgow), Sikkim (Gangtok), Slovakia (Bratislava), South Africa (Cape of Good Hope, Cape Town, Muizenberg, Paarl, Stellenbosch), Spain (Barcelona, Benasque, Madrid, Oviedo), Sweden (Linköping, Malmö, Stockholm, Växjö), Switzerland (Amden, Bern, Filzbach, Geneva, Interlaken, Trogen, Zürich), and Wales (Bangor, Hay-on-Wye, Swansea). (*I compile this list in tribute to my stepfather William T. “Red” Spears, who would say to me as a child, “Chris, travel is the best form of education.”*)

A. Expository, Tutorial, and Summer-School Talks

- History for Physics: Quantum Foundations, University of Vienna, Austria, 23 September 2019, “Two Tales from the Quantum Information Closet.”
- Fellows’ Seminar, Stellenbosch Institute for Advanced Study (STIAS), Stellenbosch, South Africa, 5 June 2018, “QBism, Quantum Bettability.”
- Lecture Series on Foundations of Science: Scientific Realism, University of Vienna, Austria, 17 May 2018, “QBism, or Bettability for a World Teeming with Novelty.”
- Boston QuarkNet Center Winter Meeting, The Roxbury Latin School, West Roxbury, Massachusetts, 8 February 2018, “Elements of a QBist Formulation of Quantum Theory.”
- Fellows’ Seminar, Stellenbosch Institute for Advanced Study (STIAS), Stellenbosch, South Africa, 1 June 2017, “QBism: From the Modern Quantum Mysteries to Early American Pragmatism.”
- Public Lecture, Quantum ICT Research Institute, Tamagawa University, Tokyo, Japan, 12 March 2017, “QBism: From the Q to the B!”
- International School of Physics “Enrico Fermi”, Course 197 – Foundations of Quantum Physics, Varenna, Italy, 8–13 July 2016.
- CHAST Public Lecture, Committee for Human Aspects of Science and Technology, University of Sydney, Australia, 25 March 2015, “A World on The Make: From Modern Quantum Mysteries to Early American Pragmatism.”
- Scientific Development Program Seminar Series, Raytheon BBN Technologies, Cambridge, MA, 8 October 2013, “Repainting Quantum Theory in a QBist Style.”
- Fellows’ Seminar, Stellenbosch Institute for Advanced Study (STIAS), Stellenbosch, South Africa, 12 April 2012, “How Quantum Theory Changes the Way We Think of the World.”
- Asher Peres International School for Theoretical Physics, Chowder Bay, Sydney, Australia, 17–21 November 2008, “Quantum Foundations, Asher Peres Style.”

“The Physics of Information: What the Universe Doesn’t Want You to Know,” a panel discussion with Sir Anthony Leggett, Seth Lloyd, and Leonard Susskind. Perimeter Institute Public Lecture, 17 December 2007, with 605 people attending; aired on CBC Radio 1 as an episode of *Quirks and Quarks with Bob McDonald*, 5 January 2008, approximate number of listeners 500,000. Available for viewing at <http://pirsa.org/>.

Quantum Foundations Summer School, Perimeter Institute for Theoretical Physics, Waterloo, Canada, 27–31 August 2007, “Quantum States as Uncertainty, pure and simple. But, Uncertainty about What?” Available for viewing at <http://pirsa.org/>.

Squire Public Lecture, Grinnell College, Grinnell, Iowa, 3 May 2006, “Quantum Information and the Reactive World.”

Computing Beyond Silicon Summer School 2004, California Institute of Technology, Pasadena, California, 16–18 June 2004, “Introduction to Quantum Mechanics” and “Quantum Cryptography.”

Instructional Course in Quantum Computing, Edinburgh, Scotland, 27–31 March 2000, course on “Quantum Communication.”

TMR Network School on Quantum Computation and Quantum Information Theory, Villa Gualino, Turin, Italy, 12–23 July 1999, course on “Quantum Channels.”

Physics Colloquium, Amherst College, Amherst, Massachusetts, 2 April 1999, “Quantum Teleportation: Using Entanglement as a Resource.”

Physics Colloquium, Case Western Reserve University, Cleveland, Ohio, 5 February 1998, “Quantum Entanglement: What Good Is It?”

Michelson Lecture Series, Case Western Reserve University, Cleveland, Ohio, 2-6 February 1998, lectures on “Quantum Information Theory.”

DIMACS Quantum Computing Tutorial and Workshop, Princeton University, Princeton, New Jersey, 11–15 August 1997, tutorials on “Basic Quantum Mechanics” and “Sending Classical Information on Quantum Channels.”

B. Invited Research Talks

Vienna Quantum Foundations Conference, Vienna, Austria, 8–11 September 2020 (scheduled).

QBism and Phenomenology, Linköping, Sweden, 15–17 June 2020 (scheduled).

Buddhism, Physics, and Philosophy Redux, University of California, Berkeley, 17–19 April 2020 (scheduled).

Plenary Talk, The Science of Consciousness 2019, Interlaken, Switzerland, 26 June 2019.

Panelist and Speaker, The Eighth Integrated East-West Forum, Interlaken, Switzerland, 25 June 2019.

Quantum Limits of Knowledge, Niels Bohr Institute, Copenhagen, Denmark, 19 June 2019.

Quantum Information Revolution: Impact to Foundations!? (QIR), Linnaeus University, Växjö, Sweden, 12 June 2019.

The Blind Spot: Experience, Science, and the Search for ‘Truth’, Dartmouth College, Hanover, New Hampshire, 22 April 2019.

Subjectivistic Interpretations of Quantum Probabilities, École Normale Supérieure, Paris, France, 13 March 2019.

Physics Department Invited Talk, Southern University of Science and Technology (SUSTech), Shenzhen, China, 2 May 2018.

C3QS: Coherent Control of Complex Quantum Systems, Okinawa Institute of Science and Technology, Onna Village, Okinawa, Japan, 20 April 2018.

Physics Colloquium, University of Massachusetts Boston, 22 February 2018.

Physics Colloquium, University of Rochester, Rochester, New York, 14 February 2018.

Hong Kong Workshop on Quantum Information and Foundations: Focus on Physics of the Observer, Hong Kong, China, 8 January 2018.

Mind, Matter and the New Real, Esalen Institute, Big Sur, California, 6 December 2017.

Physics Colloquium, Tufts University, Medford, Massachusetts, 1 December 2017.

Physics Colloquium, University of Massachusetts Lowell, 25 October 2017.

Solstice of Foundations: Workshop on Contextuality, ETH, Zürich, Switzerland, 23 June 2017.

Workshop on Participatory Realism, Stellenbosch Institute for Advanced Study, Stellenbosch, South Africa, 6 June 2017.

Seminar, Harvard-Smithsonian Center for Astrophysics, Cambridge, Massachusetts, 18 May 2017.

Seminar, Quantum ICT Research Institute, Tamagawa University, Tokyo, Japan, 13 March 2017.

Physics Colloquium, Kenyon College, Gambier, Ohio, 9 December 2016.

Computer Science Seminar, Oxford University, Oxford, England, 25 November 2016.

Pioneers in Quantum Optics and Quantum Information Science, Albuquerque, New Mexico, 14 October 2016.

Agency and (quantum) Physics, Konstanz, Germany, 22 September 2016.

Seminar, Quantum Information Theory Group, University of Pavia, Pavia, Italy, 5 July 2016.

Quantum and Beyond (QB), Linnaeus University, Växjö, Sweden, 14 June 2016.

Physics Colloquium, Boston College, Chestnut Hill, Massachusetts, 20 April 2016.

Q3 Symposium: Moment, Matter, Mind and Metaphysics, Quarantine Station, Sydney, Australia, 13 February 2016.

The Emergence of Quantum Information: A Conference in Honour of Gilles Brassard, Bromont, Canada, 2 November 2015.

Colloquium, Applied Research Laboratories, Austin, Texas, 12 August 2015.

Theoretical Physics Seminar, University of Texas at Austin, 11 August 2015.

Conference on Time, Identity, and Future, Blue Lagoon, Grindavik, Iceland, 8 July 2015.

Antinomies Quantiques et Réalité, Fondation des Treilles, Tourtour, France, 2 June 2015.

International Workshop: What is Quantum Information?, Buenos Aires, Argentina, 19 May 2015.

Physics Colloquium, Michigan State University, East Lansing, Michigan, 30 April 2015.

New Directions in the Foundations of Physics, Mathematical Association of America Carriage House, Washington, DC, 24 April 2015.

Physics Colloquium, University of North Carolina, Chapel Hill, North Carolina, 13 April 2015.

Q2 Symposium: The Space-Time of War and Diplomacy, Quarantine Station, Sydney, Australia, 27 March 2015.

Colloquium, Munich Center for Mathematical Philosophy, Ludwig Maximilian University, Munich, Germany, 20 November 2014.

Seminar, Institute of Physics, Slovak Academy of Sciences, Bratislava, Slovakia, 19 November 2014.

ITS-ETH Workshop on Quantum Foundations, Zürich, Switzerland, 16 October 2014.

Research Seminar, Naval Research Laboratory, Washington, DC, 22 July 2014.

Physics Colloquium, University of Massachusetts Boston, 11 April 2014.

The 2nd Princeton Workshop on Classical, Semi-classical and Quantum Noise, Princeton University, 22 March 2014.

Physics Colloquium, City College of New York, New York, 24 February 2014.

Colloquium, Max Planck Institute for Quantum Optics, Garching, Germany, 11 February 2014.

44th Winter Colloquium on the Physics of Quantum Electronics, Snowbird, Utah, 6 January 2014.

7th Workshop on Control of Quantum Correlations in Tailored Matter: Common Perspectives of Mesoscopic Systems and Quantum Gases, Schloss Reisenberg, Günzburg, Germany, 28 October 2013.

Quantum Theory: Advances and Problems – QTAP, Linnaeus University, Växjö, Sweden, 10 June 2013.

Joint Philosophy-Physics Colloquium, University of Queensland, Brisbane, Australia, 9 November 2012.
 European Science Foundation Programme “The Philosophy of Science in a European Perspective” Final Conference, Bertinoro, Italy, 20 October 2012. Ha, I was invited as one of the “three senior philosophers of physics / natural sciences” to present at the meeting.)
 Symposium on Foundations of Quantum Mechanics, Joint Quantum Institute, University of Maryland and National Institute of Standards and Technology (NIST), College Park, Maryland, 10 October 2012.
 Colloquium, Institute for Quantum Computing, University of Waterloo, Waterloo, Canada, 10 September 2012.
 2012 Karles Invitational Conference: Quantum Information Science and Technology, Naval Research Laboratory, Washington, DC, 27 August 2012.
 Quantum Information Seminar, MIT Lincoln Laboratory, Lexington, Massachusetts, 23 July 2012.
 Physics and Applied Physics Departments Colloquium, Stanford University, Stanford, California, 22 May 2012.
 National Institute for Theoretical Physics (NITheP) Seminar, Stellenbosch, South Africa, 18 April 2012.
 Physics Department Colloquium, Dartmouth College, Hanover, New Hampshire, 11 November 2011.
 Foundations of Quantum Theory: Measurement, the Quantum to Classical Transition, and the Flow of Time, Stellenbosch, South Africa, 26 October 2011.
 Physics Department Colloquium, Michigan Technological University, Houghton, Michigan, 22 September 2011.
 Colloquium, Joint Quantum Institute, University of Maryland and National Institute of Standards and Technology (NIST), College Park, Maryland, 14 September 2011.
 Quantum Physics and the Nature of Reality, International Academy, Traunkirchen, Austria, 4 July 2011.
 Quantum States: Ontic or Epistemic?, University of Aberdeen, Aberdeen, Scotland, 26 June 2011.
 Foundations of Probability and Physics – 6, Linnaeus University, Växjö, Sweden, 14 June 2011.
 Conceptual Foundations and Foils for Quantum Information Processing, Perimeter Institute for Theoretical Physics, Waterloo, Canada, 10 May 2011.
 Difficult Problems in Quantum Information Theory II, Massachusetts Institute of Technology, Cambridge, Massachusetts, 3 May 2011.
 Clifford Lectures, Tulane University, New Orleans, Louisiana, 14–17 March 2011.
 Itamar Pitowsky Memorial Lecture, Hebrew University, Jerusalem, Israel, 16 February 2011.
 Stellenbosch Institute for Advanced Study (STIAS), Stellenbosch, South Africa, 2–11 November 2010.
 NORDITA Workshop on the Foundations of Quantum Mechanics, Stockholm, Sweden, 27 September – 1 October 2010.
 Quantum Physics in Higher-Dimensional Hilbert Spaces, International Academy, Traunkirchen, Austria, 29 July 2010.
 Tenth International Conference on Quantum Communication, Measurement and Computation (QCMC 2010), University of Queensland, Brisbane, Australia, 20 July 2010.
 Advances in Quantum Theory, Linnaeus University, Växjö, Sweden, 14 June 2010.
 Fundamentals of Physics and Information, ETH, Zürich, Switzerland, 11 June 2010.
 Physics Colloquium, University of North Carolina, Chapel Hill, North Carolina, 20 April 2010.
 Colloquium, Perimeter Institute for Theoretical Physics, Waterloo, Canada, 10 March 2010.
 Nagoya Winter Workshop on Quantum Information, Measurement, and Foundations, Nagoya, Japan, 20 February 2010.
 IQOQI Seminar, University of Vienna, Vienna, Austria, 18 January 2010.
 Philosophy of Science Seminar, University of Toronto, Toronto, Canada, 29 October 2009.

Physics Department Colloquium, University of Guelph, Guelph, Canada, 20 October 2009.

Second Annual Workshop on Informatic Phenomena, Tulane University, New Orleans, Louisiana, 8 October 2009.

Conference on Quantum Information & Quantum Control III (CQIQC-III), Fields Institute for Research in Mathematical Sciences, Toronto, Canada, 25 August 2009.

Reconstructing Quantum Theory, Perimeter Institute for Theoretical Physics, Waterloo, Canada, 13 August 2009.

Quantum Theory: Reconsideration of Foundations – 5, Växjö, Sweden, 17 June 2009.

Philosophy of Science Colloquium, University of Western Ontario, London, Canada, 20 May 2009.

Joint Physics and Philosophy Colloquium, University of Rochester, Rochester, New York, 25 March 2009.

Workshop on Informatic Phenomena, Tulane University, New Orleans, Louisiana, 16 October 2008.

Seminar, Inst. für Grenzgebiete der Psychologie und Psychohygiene, Freiburg, Germany, 30 July 2008.

Seminar, Max Planck Institute for Quantum Optics, Garching, Germany, 28 July 2008.

Perspectives in Physics and Philosophy, Carré des Sciences, Paris, France, 19 June 2008.

Information Primitives and the Laws of Nature, ETH, Zürich, Switzerland, 15 May 2008.

Physics Colloquium, McMaster University, Hamilton, Ontario, Canada, 9 April 2008.

Physics Colloquium, University of Oregon, Eugene, Oregon, 28 February 2008.

PIAF Workshop in Quantum Foundations, Sydney, Australia, 3 February 2008.

Mathematics Seminar, University of Bristol, England, 25 January 2008.

Colloquium, Perimeter Institute for Theoretical Physics, Waterloo, Canada, 16 January 2008.

Computer Science Seminar, Tsinghua University, Beijing, China, 7 November 2007.

Many Worlds at 50, Perimeter Institute for Theoretical Physics, Waterloo, Canada, 24 August 2007.

Workshop on Operational Probabilistic Theories as Foils to Quantum Theory, University of Cambridge, England, 11 July 2007.

Vienna Symposium on the Foundations of Modern Physics, Vienna, Austria, 9 June 2007.

Mathematics Seminar, Susquehanna University, Selinsgrove, Pennsylvania, 21 March 2007.

Pragmatisme et Mécanique Quantique, École Polytechnique, Paris, France, 23 February 2007.

Physics Colloquium, State University of New York, Albany, New York, 10 November 2006.

Quantum Reality, Relativistic Causality, and Closing the Epistemic Circle: An International Conference, Perimeter Institute for Theoretical Physics, Waterloo, Canada, 22 July 2006.

Workshop on Quantum Mechanics: Axiomatics of Measurements and Connections with Computing and Information Retrieval, University of Pavia, Pavia, Italy, 25 June 2006.

Quantum Computation and Information Seminar, Center for Logic and Computation, Technical University of Lisbon, Lisbon, Portugal, 31 March 2006.

Applied Mathematics Colloquium, Princeton University, Princeton, New Jersey, 20 February 2006.

36th Winter Colloquium on The Physics of Quantum Electronics, Snowbird, Utah, 5 January 2006.

Physics Colloquium, College of William and Mary, Williamsburg, Virginia, 28 October 2005.

Physics Colloquium, Dartmouth College, Hanover, New Hampshire, 30 September 2005.

Twenty-Fifth International Workshop on Bayesian Inference and Maximum Entropy Methods in Science and Engineering, San Jose, California, 11 August 2005.

Quantum Information, Computation and Logic: Exploring New Connections, Perimeter Institute for Theoretical Physics, Waterloo, Canada, 19 July 2005.

J. T. Lewis Memorial Conference on Mathematics and Applications, Dublin, Ireland, 13 June 2005.

Quantum Theory: Reconsideration of Foundations – 3, Växjö, Sweden, 4 June 2005.

Quantum Physics of Nature & The 6th European Quantum Information Processing and Communication (QIPC) Workshop, Vienna, Austria, 23 May 2005.

AMO Physics Seminar, University of Toronto, Toronto, Canada, 5 April 2005.

II Sympozyjum LFPPi Informatyki I Inżynierii Kwantowej, Wrocław University of Technology, Wrocław, Poland, 4 March 2005.

Philosophy of Science Seminar, University of Maryland, College Park, Maryland, 16 December 2004.

Quantum Physics Seminar, New York University, New York, New York, 13 December 2004.

Summer Workshop: Time-Asymmetry and Quantum Reality, Sydney, Australia, 4 December 2004.

Philosophy of Science Association Annual Meeting, Austin, Texas, 20 November 2004.

Quantum Physics Seminar, New York University, New York, New York, 15 November 2004.

Seven Pines Symposium VIII: Quantum Mechanics, Quantum Information, and Quantum Computation, Minneapolis, Minnesota, 7 May 2004.

New Directions in the Foundations of Physics, American Institute of Physics, College Park, Maryland, 30 April 2004.

Seminar, Institut für Grenzgebiete der Psychologie und Psychohygiene, Freiburg, Germany, 1 April 2004.

Physics Colloquium, University of British Columbia, Vancouver, Canada, 11 March 2004.

Physics Colloquium, National University of Ireland, Maynooth, Ireland, 5 March 2004.

Philosophy of Physics Research Seminar, Oxford University, Oxford, England, 19 February 2004.

Probability in Quantum Mechanics, London School of Economics, London, England, 16 February 2004.

AMO Physics Seminar, Niels Bohr Institute for Astronomy, Physics, and Geophysics, University of Copenhagen, Copenhagen, Denmark, 2 February 2004.

Seminaire du Constitutions d'Objectivite, Centre de Recherches en Epistémologie Appliqué, Paris, France, 8 December 2003.

European Science Foundation Conference on Philosophical and Foundational Issues in Statistical Physics, Utrecht, Netherlands, 30 November 2003.

Physics Colloquium, Perimeter Institute for Theoretical Physics, Waterloo, Canada, 19 November 2003.

Institute for Quantum Information Seminar Series, California Institute of Technology, Pasadena, California, 15 October 2003.

Workshop on Quantum Measurements and Quantum Stochastics, University of Aarhus, Aarhus, Denmark, 7 August 2003.

Dublin Theoretical Physics Colloquium, Trinity College, Dublin, Ireland, 6 October 2003.

Mathematical Analysis of Quantum Systems, Dublin Institute for Advanced Studies, Dublin, Ireland, 2 October 2003.

Mathematics Seminar, University of York, York, England, 22 July 2003.

Quantum Theory: Reconsideration of Foundations II, Växjö University, Växjö, Sweden, 1 June 2003.

Quantum Mechanics On The Large Scale Exploratory Workshop, Peter Wall Institute of Advanced Studies, University of British Columbia, Vancouver, Canada, 21 April 2003.

Communication Networks Research Institute, Dublin Institute of Technology, Dublin, Ireland, 27 March 2003.

Physics Colloquium, City College of New York, New York, 4 December 2002. University of Copenhagen Mathematics Department Seminar, Copenhagen, Denmark, 13 September 2002.

International Center for Mathematical Modeling Center, Växjö University, Växjö, Sweden, 10 September 2002.

Quantum Lunch, Los Alamos National Laboratory, Los Alamos, New Mexico, 29 August 2002.

Feynman Festival, University of Maryland, College Park, Maryland, 23 August 2002.

Sixth International Conference on Quantum Communication, Measurement and Computing, Massachusetts Institute of Technology, Cambridge, Massachusetts, 24 July 2002.

International Conference on Quantum Information: Conceptual Foundations, Developments and Perspectives, Oviedo, Spain, 15 July 2002.

Physics Seminar, Griffith University, Nathan, Australia, 13 June 2002.

Center for Quantum Computer Technology Seminar, University of Queensland, Brisbane, Australia, 6 June 2002.

Symmetries and Mysteries: A Symposium on the Occasion of David Mermin's Retirement, Cornell University, Ithaca, New York, 12 May 2002.

AMO Physics Seminar, New York University, New York, New York, 17 April 2002

CNRI Quantum Information Theory Workshop, Dublin Institute of Technology, Dublin, Ireland, 22 March 2002.

American Mathematical Society Meeting, Atlanta, Georgia, 8 March 2002.

Research Seminar, Graduate School of Information Sciences, Tohoku University, Sendai, Japan, 22 February 2002.

Workshop on Information Technology Solutions for Challenges Facing the 21st Century Army, National Defense University, Washington, DC, 14 November 2001.

10th UK Conference on the Foundations of Modern Physics, Belfast, Ireland, 13 September 2001.

Quantum Theory: Reconsideration of Foundations, Växjö, Sweden, 17 June 2001.

Information Theory and Its Applications to Biology, Finance and Physics, Warsaw, Poland, 23 May 2001.

American Mathematical Society Meeting, Hoboken, New Jersey, 28 April 2001.

Second Tokyo International Quantum Information Seminar, Tokyo, Japan, 13 March, 2001.

Research Program on Quantum Measurement and Information, Erwin Schrödinger International Institute for Mathematical Physics, Vienna, Austria, 8 December 2000.

Mathematical Physics Seminar, Technical University of Budapest, Budapest, Hungary, 4 December 2000.

Workshop on Quantum Computation and Information, California Institute of Technology, Pasadena, California, 15 November 2000.

Annual Meeting, Optical Society of America, Rhode Island Convention Center, Providence, Rhode Island, 23 October 2000.

Physics Colloquium, University of North Carolina, Chapel Hill, North Carolina, 29 September 2000.

Quantum Information Seminar, Bell Labs, Lucent Technologies, Murray Hill, New Jersey, 16 August 2000.

Fifth International Conference on Quantum Communication Measurement & Computing (QCMC-Y2K), Capri, Italy, 5 July 2000.

NATO Advanced Research Workshop on Decoherence and its Implications in Quantum Computation and Information Transfer, Mykonos, Greece, 26 June 2000.

Department of Applied Mathematics, University of Bristol, Bristol, England, 7 June 2000.

Bell Labs, Lucent Technologies, Murray Hill, New Jersey, 31 May 2000.

952nd American Mathematical Society Meeting, University of Massachusetts Lowell, Lowell, Massachusetts, 1 April 2000.

Quantum Communication Seminar, Tamagawa University, Tokyo, Japan, 8–9 March 2000.

Physics Colloquium, Technion–Israel Institute of Technology, Haifa, Israel, 24 February 2000.

Symposium on Quantum Information Theory, Technion–Israel Institute of Technology, Haifa, Israel, 21 February 2000.

Physics Colloquium, Amherst College, Amherst, Massachusetts, 10 February 2000.

American Mathematical Society Annual Meeting, Washington, DC, 19 January 2000.

QIP 2000, Third Workshop on Quantum Information Processing, Université de Montréal, Montréal, Canada, 11 December 1999.

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