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CURRICULUM VITAE

Personal Details

Name	Prof. Howard M. Wiseman
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Phone	+61 7 3735 7279
Fax	+61 7 3735 4426
E-mail	H.Wiseman@griffith.edu.au
Web page	https://howardwiseman.me
Year of Birth	1968
Nationality	Australian

Education

1992-4	Doctorate of Philosophy in Physics The University of Queensland Thesis title: <i>Quantum Trajectories and Feedback</i> Supervisor: A/Prof. G. J. Milburn Submitted: May 17, 1994; Awarded 22 November 1994.
1988-91	Bachelor of Science with First Class Honours (Physics), The University of Queensland

Substantive Positions Held

Jan. 2010–	Professor, Centre for Quantum Dynamics, Griffith U.
Dec. 2004–Jan. 2010	Professor & Federation Fellow, Centre for Quantum Dynamics, Griffith U.
July 2004–Nov. 2004	Professor, School of Science, Griffith U.
Jan. 2004–June 2004	Assoc. Professor & QEII Research Fellow, School of Science, Griffith U.
Jan. 2001–Dec. 2003	Senior Lecturer & QEII Research Fellow, School of Science, Griffith U.
July 1999–Dec. 2000	Lecturer & QEII Research Fellow, School of Science, Griffith U.
May 1999–July 1999	Research Fellow (ARC), Dept. of Physics, U. of Queensland
May 1996–May 1999	Postdoc. Research Fellow (ARC), Dept. of Physics, U. of Queensland.
May 1994–May 1996	Postdoc. Research Fellow, Dept. of Physics, Auckland U.

Other Positions Held

Jan. 2021–	Executive Committee Member, Centre for Quantum Computation and Communication Technology (ARC CoE)
Oct. 2018–	Founding Faculty Member, John Bell Institute for the Foundations of Physics
July 2018–	Node Manager and Program Manager, Centre for Quantum Computation and Communication Technology (ARC CoE)
Aug. 2016–	Affiliated Scholar, Institute for Quantum Studies, Chapman University
July 2012–June 2018	Honorary Professor, Faculty of Science, University of Queensland
April 2012–March 2017	Coördinator, Physical Sciences (Area of Strategic Investment), Griffith U.
Jan. 2011–June 2018	Executive Committee Member, Node Manager, and Program Manager, Centre for Quantum Computation and Communication Technology (ARC CoE)
Feb. 2007–	Director, Centre for Quantum Dynamics, Griffith U.
Jan. 2003–Dec. 2010	Program Manager, Centre for Quantum Computer Technology (ARC CoE)
July 1999–June 2012	Honorary Research Advisor, Dept. of Physics, University of Queensland

Awards and Fellowships

National Medals and Elected Life Fellowships

- 2021 The Walter Boas Medal and Prize of the Australian Institute of Physics (for physics research carried out in the preceding five years).
- 2017 Elected as Fellow of OSA (the Optical Society of America) (0.4% of membership per year)
- 2012 Elected as Fellow of the American Physical Society (0.5% of membership per year)
- 2008 Elected as Fellow of the Australian Academy of Science (16 per year)
- 2003 The Malcolm McIntosh Medal and Prize for Physical Scientist of the Year (under 35), Prime Minister's Science Awards
- 2003 The Pawsey Medal and Prize of the Australian Academy of Science, for Physicists under 40
- 1995 The Bragg Medal for best Ph.D. thesis of 1994/5, Australian Institute of Physics

Other Awards and Fellowships

- 2019 School of Environment and Science (Griffith University) Sustainability Award.
- 2018 Fellowship of the Institute of Physics (UK)
- 2012 The Griffith Media Award for Outstanding Communication of Research, Griffith U.
- 2011 The Vice Chancellor's Research Excellence Award for Team Research as leader of the "Quantum Information Science" team, Griffith U.
- 2006 *Cosmos* magazine inaugural "Bright Sparks" award for young Australian scientists under 45 (one of 10)
- 2004 Federation Fellowship, Australian Research Council (~20 per year)
- 2001 The Excellence in Supervision Award, Griffith University Postgraduate Students Association
- 1999 Australian Research Council QEII Research Fellowship
- 1996 Australian Research Council Postdoctoral Research Fellowship
- 1994 The Postgraduate Student Prize, Australian Optical Society
- 1991 University of Queensland Medal
- 1991 The Duncan McNaughton Scholarship to undertake Honours Science, U. of Queensland
- 1990 Summer Vacation Scholarship, Theoretical Physics, Australian National University
- 1989 The Priest Memorial Prize for Applied Mathematics, University of Queensland

Evidence of Scholarly Contributions

Professional Affiliations

- 2018– Fellow, Institute of Physics
- 2017–20 Member, International Arthurian Society, British branch
- 2017– Fellow, OSA / Optica (formerly the Optical Society of America)
- 2013–16 Member, Optical Society of America
- 2011– Fellow, American Physical Society, Division of Quantum Information
- 2008– Fellow, Australian Academy of Science
- 2002–10 Member, American Physical Society, Division of Laser Science
- 2002–17 Member, Institute of Physics
- 1992– Member, Australian Optical Society
- 1990– Member, Australian Institute of Physics

Membership of Editorial Boards for Refereed Journals / Series

- 2020– *Physical Review X – Quantum* (APS) (2023 Impact Factor 7.5)
- 2012–2018 *Physical Review X* (APS) (2017 Impact Factor: 14.4)
- 2010– *Quantum Science and Technology* book series (Springer)
- 2008–2011 *Quantum Information Processing* (Springer) (2010 Impact Factor: 2.1)
- 2002–2007 *Physical Review A* (APS) (2005 Impact Factor: 3.0)

Refereeing Awards

- 2022 One of the Reviewers of the Year from *npj Quantum Information* (2022 Impact Factor 12.3)
- 2015, 2016 Outstanding referee commendation from *New Journal of Physics* (2013 Impact Factor: 3.7)
- 2009 Outstanding referee award from *American Physical Society* (0.25% per year)

Refereeing for International Publishing Houses / Societies

- 2021– Scientific Research Publishing (SciRP)
- 2020– Multidisciplinary Digital Publishing Institute (MDPI).
- 2019– SciPost [journal]
- 2018– Quantum [journal]
- 2018– Studies in History and Philosophy of Modern Physics [journal]
- 2015– CSIRO publishing.
- 2013– Royal Society of London.
- 2011– Optical Society of America.
- 2011– International Federation of Automatic Control.
- 2009– American Association for the Advancement of Science.
- 2007– Institute of Electrical and Electronics Engineers (IEEE).
- 2007– American Association of Physics Teachers.
- 2006– National Academy of Sciences.
- 2006– Nature Publishing Group.
- 2006– British Society for the Philosophy of Science.
- 2003– Rinton Press.
- 2000– Kluwer Academic Publishers.
- 1998– European Physical Society / European Optical Society.
- 1997– Taylor and Francis Publishing.
- 1997– Institute of Physics Publishing.
- 1996– Elsevier Science.
- 1993– American Physical Society.

Invited Talks at International Meetings

- 2022 [Conference on Quantum Non-Markovianity](#), 7–10 Dec., Newcastle, Australia.
- 2022 [Laws of Nature Conference 2022 remembering Detlef Dürr](#), August 8–12, Munich.
- 2022 **Plenary** talk at *Frontiers of Quantum and Mesoscopic Thermodynamics*, 1–6 August, Prague.
- 2022 Panelist at *Mind and Agency in the Foundations of Quantum Physics*, 31 May–3 June, Chapman University, USA [virtual appearance by me and some others]
- 2022 **Opening** talk at *International Conference on Quantum Information and Foundations*, 14–24 February, IISER Kolkata, India [virtual].
- 2021 *Quantum Engineering: Fundamental Aspects to Applications*, 3–5 November, Lyon [virtual appearance by me and some others]
- 2021 **Keynote** talk at *Quantum Technology Research Initiative* conference, 16–17 September, Thailand [virtual].
- 2021 NASA Quantum Information Sciences Conference, August, 17-19, 2021 [virtual].
- 2021 **Keynote** talk at *Central European Workshop on Quantum Optics* Online event, 28–30 June [virtual].
- 2021 Summer School on *Quantum Information and Quantum Technology*, 14 June–14 July, IISER Kolkata, India [virtual].
- 2021 American Physical Society *March Meeting*, Keithley Prize Session (metrology), 15–19 March, [virtual].
- 2021 Centre for Quantum Technologies 13th annual Symposium, 7 January, Singapore [virtual].
- 2020 Workshop: *Is Quantum Theory exact? Exploring Quantum Boundaries*, 10–11 December, Frascati, Italy [virtual].
- 2020 Workshop on *Agency at the Interface of Quantum and Complexity Science*, 13–16 January, Singapore.
- 2019 *Coherence and Quantum Optics XI*, 4–8 August, Rochester, New York.
- 2019 **Plenary** talk at XVI International Conference on *Quantum Optics and Quantum Information* May 13-17, Minsk, Belarus.
- 2019 **Opening** talk at *Quantum Measurement: Fundamentals, Twists, and Applications*, 20 April – 4 May, ICTP, Trieste, Italy.
- 2019 *Time and Fundamentals of Quantum Mechanics*, January 28–31, Weizmann Institute of Science, Israel.
- 2018 *Cosmology and Consciousness VII*, “Observation and Reality”, Gangtok, Sikkim, India
- 2018 **Plenary** talk at 18th *Asian Quantum Information Science* Conference, Nagoya
- 2018 Workshop on *Principles and Applications of Control in Quantum Systems*, Paris
- 2018 **Keynote** talk at *Quantum Frontiers and Fundamentals*, Raman Research Institute, Bangalore.
- 2017 *Emergent Quantum Mechanics 4*, including the *David Bohm Centennial* celebration, University of London

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- 2017 **Opening Plenary** talk at International Conference on *Squeezed States and Uncertainty Relations*, Jeju, Korea
- 2017 5th *International Summer School in Philosophy of Physics*, Saig, Germany
- 2017 **Plenary** talk at *Frontiers of Quantum and Mesoscopic Thermodynamics*, Prague
- 2017 American Physical Society *March Meeting*, New Orleans
- 2017 Workshop on *Interdisciplinary Frontiers of Quantum and Complexity Science*, Singapore.
- 2016 **Opening keynote** talk at 4th *Australia–China Quantum Control Workshop*, USTC, Hefei.
- 2016 *Hong Kong Workshop on Quantum Information and Foundations*, Hong Kong.
- 2015 Workshop on *Quantum Nonlocality, Causal Structures and Device-Independent Quantum Information*, Tainan, Taiwan.
- 2015 *Asia-Pacific Conference & Workshop on Quantum Information Science*, Auckland, New Zealand.
- 2015 **Keynote** talk at *Emergent Quantum Mechanics 3*, Vienna.
- 2015 **Plenary** talk at 22nd *Central European Workshop on Quantum Optics*, Warsaw.
- 2015 **Plenary talk** at 14th International Conference on *Squeezed States and Uncertainty Relations*, Sopot, Poland.
- 2015 American Physical Society *March Meeting*, San Antonio
- 2015 **Plenary** talk at 17th *Southwest Quantum Information Technology Workshop*, Berkeley
- 2015 **Opening** talk at *Nonlinear Physics at the Nanoscale: A Cross-Fertilization on Stochastic Methods*, Rotorua
- 2014 Isaac Newton Institute Workshop on *Quantum Control Engineering*, Cambridge
- 2014 8th Workshop on *Principles and Applications of Control in Quantum Systems*, Cambridge
- 2014 *Quantum [Un]speakables II – 50 years of Bell’s Theorem*, Vienna
- 2014 *Arthur, War, and the Sea*, Boulogne-sur-Mer
- 2014 *Nonlinear Physics at the Nanoscale: A Cross-Fertilization on Stochastic Methods*, Dresden
- 2014 *Sydney Meeting on Quantum Foundations*, Sydney
- 2013 *Emergent Quantum Mechanics 2*, Vienna.
- 2013 *Quantum Information Processing and Communication*, Florence, Italy.
- 2013 *Coherence and Quantum Optics X*, Rochester, New York.
- 2013 *Quantum Theory Without Observers III*, Bielefeld, Germany.
- 2013 *New Directions in the Quantum Control Landscape*, Kavli Institute for Theoretical Physics, UCSB
- 2013 **Plenary** talk at 15th *Southwest Quantum Information Technology Workshop*, Santa Barbara
- 2012 6th *Asia-Pacific Conference & Workshop on Quantum Information Science*, Putrajaya, Malaysia
- 2012 2nd *Australia–China Quantum Control Workshop*, CAS, Beijing
- 2012 6th Workshop on *Principles and Applications of Control in Quantum Systems*, Tokyo
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- 2012 *Quantum Theory without Observers II*, Sexton Center for Astrophysics, Italy.
- 2012 First *Control of Quantum Systems* MURI Retreat, Berkeley, California.
- 2012 First NASA *Quantum Future Technologies* Conference, NASA Ames, California
- 2011 Royal Society workshop on *Principles and applications of quantum control engineering*, Kavli Centre, Chicheley Hall, UK.
- 2011 **Lecture series** at CEA-EDF-INRIA School, *Quantum Information, Measurement, and Control*, (4 lectures), INRIA, Paris
- 2011 **Plenary** talk at 5th *International Scientific Conference on Physics and Control*, León, Spain
- 2011 **Plenary** talk at *Frontiers of Quantum and Mesoscopic Thermodynamics*, Prague.
- 2011 5th *Asia-Pacific Workshop on Quantum Information Science*, Singapore.
- 2011 2nd Conference on *Extreme Quantum Information Theory*, MIT.
- 2010 **Opening Tutorial** at 1st *Australia–China Quantum Control Workshop*, ANU.
- 2010 5th Workshop on *Principles and Applications of Control in Quantum Systems*. Sandbjerg Estate, University of Aarhus
- 2010 *Workshop on Entanglement and Quantum Control*, Qufu, Shandong
- 2010 *International Program on Quantum Information*, Institute of Physics, Bhubaneswar, Orissa
- 2010 **Plenary** talk at 40th *Physics of Quantum Electronics Conference*, Snowbird, Utah
- 2009 PIAF '09 *New Perspectives on the Quantum State*, Perimeter Institute, Waterloo
- 2009 Workshop on *Cooling & Calculating, Quantum Walks & Feedback*, Bonn
- 2009 *Concepts and Methods in Quantum Control: Theory and Experiment*, Kavli Institute for Theoretical Physics, UCSB
- 2008 4th Workshop on *Principles and Applications of Control in Quantum Systems*, Eugene
- 2008 9th International Conference on *Quantum Communication, Measurement, and Computing*, Calgary
- 2008 **Opening Tutorial** at OSA workshop on *Entanglement and Quantum Decoherence*, Nara, Japan
- 2007 **Opening Keynote** at *Noise, Information and Complexity at the Quantum Scale*, Erice, Italy.
- 2007 3rd Workshop on *Principles and Applications of Control in Quantum Systems*, Sydney
- 2007 Workshop on *Weak Values and Weak Measurements*, Arizona State
- 2007 **Plenary** talk at 37th *Physics of Quantum Electronics Conference*, Snowbird, Utah
- 2006 *Frontiers of Quantum Decoherence* International Workshop, Fields Institute, Toronto
- 2006 2nd Workshop on *Principles and Applications of Control in Quantum Systems*, Harvard
- 2005 **Lecture Series** at *Quantum Control Summer School* (3 lectures), Caltech.
- 2005 Conference on *Being Bayesian in a Quantum World*, Konstanz, Germany.
- 2005 *APS Division of Atomic, Molecular, and Optical Physics*, Lincoln, Nebraska.
- 2004 First Asia-Pacific Conference on *Quantum Information*, Tainan, Taiwan.
- 2004 *Frontiers in Optics* (OSA Annual Meeting), Rochester.
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- 2004 1st Workshop on *Principles and Applications of Control in Quantum Systems*, Caltech.
 - 2004 Workshop on *Reference Frames and Superselection Rules in Quantum Information Theory*, Perimeter Institute
 - 2004 International Symposium on *Fluctuations and Noise*, Canary Islands.
 - 2004 Gordon Research Conference on *Quantum Information Science*, Ventura, California.
 - 2003 Workshop on *Quantum Measurements and Quantum Stochastics*, University of Aarhus.
 - 2003 16th *International Conference on Laser Spectroscopy*, Palm Cove, Queensland.
 - 2003 8th International Conference on *Squeezed States and Uncertainty Relations*, Puebla, Mexico.
 - 2003 First International Symposium on *Fluctuations and Noise*, Santa Fe.
 - 2003 US-Australia Workshop on *Quantum Information Science*, Sydney.
 - 2002 *Quantum Engineering, Science and Technology* Workshop, Santa Fe.
 - 2001 One-day Meeting on *Environments, Control and Quantum Circuits*, University of Liverpool.
 - 2001 Workshop on *Quantum Information* at Coolangatta, University of Queensland.
 - 1999 One-day International Workshop on *Bose-Einstein Condensates and Atom Lasers*, Australian National University.
 - 1999 Workshop on *Stochastics and Quantum Physics*, University of Aarhus, Denmark.
 - 1998 Garda Workshop on *Mysteries, Puzzles and Paradoxes in Quantum Mechanics*, Garda, Italy.
 - 1997 5th International Conference on *Squeezed States and Uncertainty Relations*, Balaton, Hungary.
 - 1996 3rd International Workshop on *Quantum Communication and Measurement*, Fuji, Japan.
 - 1996 Les Houches Workshop on *Collective Effects in Ultracold Atomic Gases*, Les Houches, France.

Invited Talks at National Meetings

- 2023 *Jon Dowling Memorial Conference*, 9–11 January, Quantum Terminal, Sydney.
- 2022 Boas Medal Lecture, *Australian Institute of Physics Congress*, 11–16 December, Adelaide.
- 2021 *Australian Institute of Physics Meeting*, 6–9 December, Brisbane.
- 2021 *Engineered quantum agents* conference, 9–12 February, Noosa.
- 2015 **Keynote** talk at *Australian Control Conference*, Gold Coast.
- 2014 *21st Australian Institute of Physics Congress*, Canberra.
- 2010 *19th Australian Institute of Physics Congress*, Melbourne.
- 2009 *Quantum Frontiers Symposium*, University of Queensland.
- 2009 *Sydney Quantum Information Theory Workshop*, Sydney.
- 2008 New Fellows Seminar, Australian Academy of Science.
- 2008 *Sydney Quantum Information Theory Workshop*, Sydney.
- 2006 *Australian Optical Society* Conference, Melbourne.

- 2004 Symposium: *A Celebration of Australian Science*, Australian Academy of Science.
- 2003 **Keynote** talk at *Australasian Conference on Optics, Lasers, and Spectroscopy*, Melbourne.
- 2003 Symposium on *Frontiers of Science*, Australian Academy of Science.
- 2002 *Quantum Information and Computing* Summer School, Queensland.
- 2001 **Keynote talk** at *Australasian Conference on Optics, Lasers, and Spectroscopy*, Brisbane.
- 1996 *12th Australian Institute of Physics Congress*, Hobart.

Other Notable Talks at International or National Meetings

- 2019 Long (plenary) talk at *Asian Quantum Information Science* conference, Seoul.
- 2018 *Quantum Gates, Jumps, and Machines*, Brisbane (all talks by invitation, but I'm not counting this as an invited talk since I was the Conference Chair.)
- 2018 Foundations2018, Utrecht, Netherlands.
- 2017 25th Congress of the International Arthurian Society, Würzburg, Germany.
- 2016 **Keynote** talk at *21st Australian Institute of Physics Congress*, Brisbane.
- 2016 13th International Conference on *Quantum Communication, Measurement, and Computing*, Singapore (contributed but very competitive)
- 2014 3rd *Australia–China Quantum Control Workshop*, Brisbane (all talks by invitation, but I'm not counting this as an invited talk since I was the Conference Chair.)
- 2015 Invited-length (upgraded) talk at *Causality in a Quantum World*, Sunshine Coast, Australia
- 2012 “Hot Topic” talk (contributed but very competitive), 11th International Conference on *Quantum Communication, Measurement, and Computing*, Vienna
- 2002 6th International Conference on *Quantum Communication, Measurement, and Computing*, Cambridge, Massachusetts. (contributed, but quite competitive)

Notable Invited Public Talks

- 2022 “Are we living in the Matrix? What quantum experiments reveal, and what the future may hold.”
Australian Institute of Physics (Victorian branch) Walter Boas Lecture, October 3.
- 2017 “Are We Living in the Matrix?”
Interdisciplinary Frontiers, Singapore Science Centre, Singapore.
- 2016 “The Big Bell Test”
Griffith University Impact Event, Southbank, Brisbane.
- 2016 “Are We Living in the Matrix?”
New Scientist Instant Expert symposium *Quantum World*, UNSW, Sydney.
- 2011 “Are We Living in the Matrix?”
BrisScience, Customs House, Brisbane.
- 2009 “The God Particle Delusion”
Griffith University Maths and Physics associaTION, Nathan, Brisbane.
- 2008 “Quantum Computing and Quantum Measurement: a two-way street”
Public Forum, Australian Academy of Science, Townsville.
- 2005 “Einstein and the Prehistory of Quantum Computing”
Australian Institute of Physics Colloquium, UQ, Brisbane.
- 2002 “Quantum Computing: What’s the Buzz?”
IEEE Queensland Chapter, Brisbane.

Executive Service on Professional Committees

- 2022 Co-organiser, *Wigner's Friends: Theory Workshop*, San Francisco, 2022.
- 2018-19 Program Committee Chair, *Asian conference on Quantum Information Science*, Korea, 2019.
- 2017-18 Chair, *Quantum Gates, Jumps & Machines (in honour of G. J. Milburn)*, Brisbane 2018.
- 2013-14 Chair, *Australia–China workshop on Quantum Control*, Brisbane 2014.
- 2009-10 Principal Organizer, *Quantum Measurement and Control* workshop, Sydney 2010.
- 2006–07 Chair for the 3rd International Workshop on *Principles and Applications for Control of Quantum Systems (PRACQSYS)*, Sydney 2007.
- 2005–08 Inaugural Chair for *Quantum Information, Concepts, and Coherence*, a Topical Group of the Australian Institute of Physics
- 2004–07 Treasurer and Program Committee member, 2006 Australian Institute of Physics Congress
- 2003–04 Treasurer of Queensland Branch of the Australian Institute of Physics.
- 2000–01 Secretary for the *Australasian Conference on Optics, Lasers, and Spectroscopy 2001*

Other Service on Professional Committees

- 2020- Program Committee for *15th International Conference on Quantum Communication, Measurement and Computing*, Lisbon, ~~May 2020~~.
- 2018-9 International Advisory Committee, 1st Quantum Science, Engineering and Technology (qSET) Conference, Canberra, April 2019.
- 2017-8 Program Committee for *19th U.K. and European Meeting on the Foundations of Physics*, Utrecht, July 2018
- 2016-7 Coorganiser for Focus Session “Challenging conventional quantum limits in measurements and metrology” at *APS March Meeting*, New Orleans, March 2017
- 2016 Program Committee for *Australia–China workshop on Quantum Control*, Hefei 2016
- 2014 Fellowship Selection Committee for the *Group on Quantum Information of the APS*.
- 2013-14 Program Committee for *Quantum Communication, Measurement and Computing*, Hefei, China, November, 2014.
- 2013-14 Program Committee for *Quantum Information and Measurement*, Berlin, March, 2014.
- 2013 Pawsey Medal Award Committee, *Australian Academy of Science*
- 2012-13 Program Committee for Conference on *Quantum Information Processing and Computing (QIPC)*, Florence 2013.
- 2012-14 College of Experts on *Physics, Chemistry and Earth Sciences*, Australian Research Council.
- 2012 Program Committee for 5th International Workshop on *Principles and Applications for Control of Quantum Systems (PrACQSys)*, Tokyo 2012.
- 2011-13 Sectional Committee 11, on *Information, Communication, and Quantum Information Sciences*, Australian Academy of Science.

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- 2009-11 Sectional Committee 2, on *Physics and Astronomy*, Australian Academy of Science.
 - 2009 Program Committee for *Australian Conference on Optics, Lasers, and Spectroscopy*, Adelaide 2009
 - 2007–08 Program Committee for *Quantum Communication, Measurement and Computing*, Calgary, 2008.
 - 2003 Session Organizer for the inaugural *Frontiers of Science* symposium of the Australian Academy of Science.
 - 2001–04 Associate editor (Queensland) for *The Physicist*.
 - 1998–04 Committee of Queensland Branch of the Australian Institute of Physics.

Advisory Service on Professional Committees

- 2020– Advisory Board for the Center for Quantum Frontiers of Research & Technology (QFoRT), National Cheng Kung University, Tainan, Taiwan.
- 2019 Advisory Board for the 11th *Italian Quantum Information Science conference*, Milan, September 2019.
- 2015 International Advisory Committee for the *Asia-Pacific Conference and Workshop on Quantum Information Science*, Auckland, December, 2015
- 2013 International Committee for *Asia-Pacific Conference & Workshop on Quantum Information Science*, Korea, December 2013.
- 2012–15 Advisory Board, *Science China – Information Sciences* (Springer & Science China Press)
- 2012-13 Organizing Committee for *Quantum Information and Measurement*, Rochester, June, 2013.
- 2011-12 Advisory Board, 1st NASA *Quantum Future Technologies Conference*
- 2008 International Advisory Board for *XII International Conference on Quantum Optics and Quantum Information*, Vilnius 2008
- 2003–04 Committee of *Noise and Fluctuations in Photonics and Quantum Optics*, part of the *SPIE 2004 International Symposium on Fluctuations and Noise*
- 2002–03 Committee of *Noise and Fluctuations in Photonics and Quantum Optics*, part of the *SPIE 2003 International Symposium on Fluctuations and Noise*

External Higher Degree Examinations

2021	Ph.D., Ecole Normale Supérieure de Lyon
2019	Ph.D., Monash University
2018	Ph.D., University of Calgary
2017	Ph.D., Macquarie University
2016	Dr. habil., Technical University of Berlin
2013	Ph.D., Australian National University
2012	Ph.D., University of Waterloo
2010	Ph.D., University of Aarhus
2009	Ph.D., University of Auckland
2002	Ph.D., University of Auckland
2002	M.Sc., University of Queensland
2000	Ph.D., University of Queensland
2000	D. Phil., University of Auckland
1999	Ph.D., Australian National University

Assessing for Selected International Granting Agencies

Austrian Science Fund (FWF)

Fields Institute [Canada]

The Foundational Questions Institute (FQXi)

Hong Kong Research Council (HKRC)

The Leverhulme Trust [UK]

The Marsden Fund [NZ]

National Natural Science Foundation of China (NSFC)

National Research Foundation of South Africa (NRF)

National Science Foundation [USA] (NSF)

Natural Sciences and Engineering Research Council of Canada (NSERC)

Netherlands Organisation for Scientific Research (NWO)

The Royal Society [UK]

Singapore National Research Foundation (NRF)

The Templeton Foundation

Citations etc.

Data from *Scopus*, (www.scopus.com/authid/detail.uri?authorId=7102618592). not Google scholar.

1 Book with 500+ citations

927 cites H. M. Wiseman and G. J. Milburn,
Quantum Measurement and Control,
(Cambridge University Press, Cambridge, 2010): 476 pages

3 Papers with 500+ citations

999 cites H. M. Wiseman, S. J. Jones, and A. C. Doherty,
“Steering, Entanglement, Nonlocality, and the Einstein-Podolsky-Rosen Paradox”,
Phys. Rev. Lett. **98**, 140402 (4 pages) (2007).

526 cites H. M. Wiseman and G. J. Milburn,
“Quantum theory of optical feedback via homodyne detection”,
Phys. Rev. Lett. **70**, 548-551 (1993).

505 cites C. Branciard, E. G. Cavalcanti, S. P. Walborn, V. Scarani, and H. M. Wiseman,
“One-sided Device-Independent Quantum Key Distribution: Security, Feasibility and the
Connection with Steering”
Phys. Rev. A **85**, 010301(R) (5 pages) (2012).

plus 9 more papers with 250+ citations

474 cites H. M. Wiseman,
“Quantum theory of continuous feedback”,
Phys. Rev. A **49**, 2133-2150 (1994).

441 cites B. L. Higgins, D. W. Berry, S. D. Bartlett, H. M. Wiseman, and G. J. Pryde,
“Entanglement-free Heisenberg-limited phase estimation”,
Nature **450**, 393-396 (2007).

423 cites H. M. Wiseman and G. J. Milburn,
“Quantum theory of field-quadrature measurements”,
Phys. Rev. A **47**, 642-662 (1993).

408 cites E. G. Cavalcanti, S. J. Jones, H. M. Wiseman, and M. D. Reid,
“Experimental criteria for steering and the Einstein-Podolsky-Rosen paradox”
Phys. Rev. A. **80**, 032112 (16 pages) (2009).

362 cites S. J. Jones, H. M. Wiseman, and A. C. Doherty,
“Entanglement, Einstein-Podolsky-Rosen correlations, Bell-nonlocality, and Steering”
Phys. Rev. A **76**, 052116 (18 pages) (2007).

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- 307 cites D. J. Saunders, S. J. Jones, H. M. Wiseman, and G. J. Pryde, “Experimental EPR-Steering of Bell-local States” *Nature Physics* **6**, 845-849 (2010).
- 298 cites H. M. Wiseman and G. J. Milburn, “Interpretation of quantum jump and diffusion processes, illustrated on the Bloch sphere”, *Phys. Rev. A* **47**, 1652-1666 (1993).
- 273 cites H. M. Wiseman and J. A. Vaccaro, “Entanglement of indistinguishable particles shared between two parties.” *Phys. Rev. Lett.* **91**, 097902 (4 pages) (2003).
- 265 cites G. J. Pryde, J. L. O'Brien, A. G. White, T. C. Ralph, and H. M. Wiseman, “Measurement of quantum weak values of photon polarization”, *Phys. Rev. Lett.* **94**, 220405 (4 pages) (2005).

h-index¹ = 68, and > 16,400 Citations in total

That is, I have 68 papers each with at least 68 citations, published since 1993.

57 Refereed Papers² in High-Impact Journals³

of which: 1 in *Science*, 2 in *Nature*, 4 in *Nature Physics*, 1 in *Nature Photonics*, 3 in *Nature Commun.*, 3 in *Science Advances*, 6 in *Physical Review X*, 31 in *Physical Review Letters*, 2 in *Optica*, 1 in *NPJ Quantum Information*, and 3 in *Physics Reports*.

of which: 2 as sole author, 9 as first author, 9 as official corresponding author.

4 Invited Commentaries in *Nature*

all as sole author (2011, 2012, 2014, 2015)

¹ J. Hirsch, *Proc. Nat. Acad. Sci.* **46**, 16569 (2005). Again, from *Scopus*. (My Google-Scholar h-index is 79.)

² Including *Scientific Correspondence* (*Nature*, 1995) but **not** *Comments* or *Replies* or *News & Views*.

³ Here taken to mean with Impact Factor > 7 around the year of publication.

Coverage in Books (selected)

2019 Adam Becker, *What is Real?*
(John Murray, London, 2019)

Mentions (Chap. 12) many-interacting worlds i.e.

Michael J. W. Hall, Dirk-André Deckert, and Howard M. Wiseman,
“Quantum phenomena modelled by interactions between many classical worlds”
[Phys. Rev. X 4 041013](#) [17 pages] (2014).

2018 Anil Ananthaswamy, *Through Two Doors at Once*
(Dutton, New York, 2018)

One paragraph explanation (p. 170) of

H. M. Wiseman,
Grounding Bohmian Mechanics in Weak Values and Bayesianism
New J. Phys. **9**, 165 (12 pages) (2007).

Detailed explanation (pp. 257–261), with quotes from me, of

Michael J. W. Hall, Dirk-André Deckert, and Howard M. Wiseman,
“Quantum phenomena modelled by interactions between many classical worlds”
[Phys. Rev. X 4 041013](#) [17 pages] (2014).

Additionally, pp. 240 and 242 quotes my misgivings about the claim that the problem of probability in the Many Worlds Interpretation has been solved.

2016 Jaclyn Moriarty,

A Tangle of Gold: book 3 of *The Colours of Madeleine* trilogy. [Young adult fantasy]
(Pan McMillan, Australia, 2016)

Part 14, chapter 3, relates that a note (authored by a still-living Sir Isaac Newton, it will later be revealed) “was pinned to another stack of pages: *Here’s the latest on the death of wave/particle duality & of Schrödinger’s cat (ha!) etc, & on new idea that multiple, jostling, invisible universes (each operating according to Newtonian law (!)) is true explanation for quantum weirdness.* Madeleine flicked through more loose papers, catching names: John Dalton, Henri Becquerel, Max Planck, Marie Curie, Ada Lovelace, Hugh Everett, Howard Wiseman.” The note (in italics) refers to

Michael J. W. Hall, Dirk-André Deckert, and Howard M. Wiseman,
“Quantum phenomena modelled by interactions between many classical worlds”
[Phys. Rev. X 4 041013](#) [17 pages] (2014).

2013 Detlef Dürr, Sheldon Goldstein, and Nino Zanghi,

Quantum Physics Without Quantum Philosophy
(Springer, Heidelberg, 2013)

Chap. 7, entitled “On the Weak Measurement of Velocity in Bohmian Mechanics”, is a presentation of, and elaboration upon,

H. M. Wiseman,
Grounding Bohmian Mechanics in Weak Values and Bayesianism
New J. Phys. **9**, 165 (12 pages) (2007).

2009 A. Barchielli and M. Gregoratti,

Quantum Trajectories and Measurements in Continuous Time – The Diffusive Case
(Springer, Heidelberg, 2009)

Sec. 10.2 is entitled “The Feedback Scheme of Wiseman and Milburn”, and this theory forms the basis for the rest of the chapter (*Feedback*). For the “original derivation” it cites

H. M. Wiseman,

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Phys. Rev. A **49**, 2133-2150 (1994).

2007 Guy Halsall, *Barbarian Migrations and the Roman West, 376-568*
(Cambridge University Press, Cambridge, 2007)

one-paragraph discussion (p. 522) of

H. Wiseman,

The derivation of the date of the Badon entry in the Annales Cambriae from Bede and Gildas,
Parergon **17**, 1-10 (2000).

2007 S.M. Barnett and J.A. Vaccaro, *The Quantum Phase Operator: A Review*
(Taylor and Francis, London, 2007),

reproduces and briefly discusses

H. M. Wiseman,

Adaptive phase measurements of optical modes: Going beyond the marginal Q distribution,
Phys. Rev. Lett. **75**, 4587-4590 (1995).

2004 C.W. Gardiner and P. Zoller, *Quantum Noise* (3rd edition)
(Springer, New York, 2004)

Sec. 13.5 (*Quantum Feedback*) begins “This subject has been largely developed by Wiseman and Milburn [J4,J7]. The main issues are very well covered in the paper by Wiseman, Mancini and Wang [J61].” The remainder of the section is based largely on material in this third paper,

H. M. Wiseman, S. Mancini, and J. Wang,

Bayesian feedback versus Markovian feedback in a two-level atom,
Phys. Rev. A **66**, 013807 (9 pages) (2002).

2002 N. Higham, *King Arthur: Myth-Making and History*
(Routledge, London, 2002)

one-paragraph discussion (pp. 209–10) of

H. Wiseman,

The derivation of the date of the Badon entry in the Annales Cambriae from Bede and Gildas,
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Coverage in non-specialist Reviews (selected)

Reviews covering the following:

Travis J. Baker, Seyed N. Saadatmand, Dominic W. Berry, and Howard M. Wiseman,
“The Heisenberg limit for laser coherence”

Nature Physics (online in 2020). DOI: 10.1038/s41567-020-01049-3

2021 Sophia Chen, “Physicists Are Reinventing the Laser”

Gizmodo, 30 January, 2021

<https://gizmodo.com/physicists-are-reinventing-the-laser-1846085004>

2020 Brad Bergen, “Quantum Researchers Broke 60-Year-Old Laser Limit, Says Study”

Interesting Engineering, 29 October, 2020

<https://interestingengineering.com/quantum-researchers-broke-60-year-old-laser-limit-says-study>

2020 Lauren Fuge, “Pushing the laser limit: Researchers offer a taste of what’s possible”

Cosmos Magazine, 27 October, 2020

<https://cosmosmagazine.com/science/physics/pushing-the-laser-limit/>

2020 David Bradley, “60-year laser theory overturned”

Science Base, 26 October, 2020

<https://www.sciencebase.com/science-blog/60-year-laser-theory-overturned.html>

Reviews covering the following:

Kok-Wei Bong, Aníbal Utreras-Alarcón, Farzad Ghafari, Yeong-Cherng Liang, Nora Tischler, Eric G. Cavalcanti, Geoff J. Pryde and Howard M. Wiseman

“A strong no-go theorem on the Wigner’s friend paradox”

Nature Physics (2020). DOI: 10.1038/s41567-020-0990-x

2022 Elizabeth Fernandez, “Does consciousness change the rules of quantum mechanics?”

Hard Science, November 4, 2022

<https://bigthink.com/hard-science/quantum-entanglement-consciousness>

2020 Zeeya Merali and Ian Durham, #5 biggest story of the year in physics.

The FQXi Podcast (31 December, 2020) “Year in Physics Review”

<http://www.fqxi.org/community/podcast/2020.12.31>

2020 Anil Ananthaswamy, “A New Theorem Maps Out the Limits of Quantum Physics”

Quanta magazine, December 3, 2020

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2020 Elizabeth Fernandez, “Quantum Physics May Upend Our Macroscopic Reality In The Universe”

Forbes Magazine, September 1, 2020

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- Futura Sciences, August 30, 2020
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- 2020 Griffith Media release, “New quantum paradox reveals contradiction between widely held beliefs”
reproduced in multiple places including Phys.Org, August 18, 2020
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- 2020 Zeeya Merali,
“This Twist on Schrödinger’s Cat Paradox Has Major Implications for Quantum Theory”
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Wojciech Górecki, Rafał Demkowicz-Dobrzański, Howard M. Wiseman, and Dominic W. Berry,
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 “Experimental nonlocal and surreal Bohmian trajectories”

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Thomas Lin (ed.), “Alice and Bob Meet the Wall of Fire” (MIT Press, Boston, 2018), pp. 61-66.

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- 2016 Anil Ananthaswamy, "Quantum weirdness may hide an orderly reality after all"
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- 2015 Adrian Cho, "More evidence to support quantum theory's 'spooky action at a distance'",
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- 2015 Karen Hardison, "Einstein's contradiction of 'spooky action at a distance' refuted"
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Michael J. W. Hall, Dirk-André Deckert, and Howard M. Wiseman,
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Howard M. Wiseman and Jay M. Gambetta,
Are dynamical quantum jumps detector-dependent?
 Phys. Rev. Lett. **108**, 220402 (5 pages) (2012).

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Adaptive Optical Phase Estimation Using Time-Symmetric Quantum Smoothing

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Science **318**, 1393-4 (2007)

2007 Jonathan P. Dowling, “Kittens catch phase”,
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2007 Phillip Ball, “The most accurate measurement ever made”,
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<http://www.sciencebase.com/science-blog/two-slits-are-better-than-one.html>

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R. Mir, J.S. Lundeen, M.W. Mitchell, A.M. Steinberg, H. M. Wiseman, and J. L. Garretson,
A double-slit ‘which-way’ experiment on the complementarity—uncertainty debate,
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K. Jacobs and H. M. Wiseman,
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2004 E. S. Reich, “Which way is up?” (2nd Cover Story) New Scientist **184**, No. 2467 (2 October 2004),
pp. 32–35.

prominently features and gives as sole “further reading” resource

H. M. Wiseman, S. M. Bartlett, and J. A. Vaccaro,
Ferretting out the fluffy bunnies: Entanglement constrained by generalized super-selection rules.
Laser Spectroscopy. Proceedings of the XVI International Conference, Eds P. Hannaford, A.
Sidorov, H. Bachor, and K. Baldwin (World Scientific, New Jersey, 2004), pp. 307-31.

2003 M. Brooks, “Curiouser and curiouser” (Cover Story), New Scientist **178**, No. 2394 (10 May 2003),
pp. 28–31.

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H. M. Wiseman,
Directly Observing Momentum Transfer in Twin-Slit ‘Which-Way’ Experiments,
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2002 B. D. Guenther (guest editor of special issue) “Optics in 2002”, Optics and Photonics News
13, No. 12 (December, 2002), pp. 13–61.

one-page review (p. 53) of

W. P. Smith, J. E. Reiner, L. A. Orozco, S. Kuhr, and H. M. Wiseman,
Capture and Release of a Conditional State of a Cavity QED System by Quantum Feedback,
Phys. Rev. Lett. **89**, 133601 (2002).

Teaching

Formal University Teaching

Title / Topic	University
FOURTH YEAR CLASSES	
Advanced Quantum Mechanics	Griffith
Advanced Analytical Mechanics	Griffith
General Relativity	Griffith
Honours Statistical Mechanics	Griffith
Topics and Research Methods in Physics	Griffith
Stochastic Methods for the Physical Sciences	Griffith and Queensland
Introductory Quantum Electrodynamics	Griffith
Quantum Optics B (open quantum systems)	Queensland
Advanced Quantum Mechanics	Queensland
Advanced Statistical Mechanics	Queensland
Advanced Quantum Mechanics	Auckland
THIRD YEAR CLASSES	
Advanced Quantum Theory	Griffith
Statistical Mechanics	Queensland
SECOND YEAR CLASSES	
Life, the Universe, and Everything	Griffith
Optics	Griffith
FIRST YEAR CLASSES	
Basic Concepts of Physics	Auckland

Undergraduate Supervision

- 2022 Co-Supervisor for Jake Nielsen, 3rd-year Capstone Project, GU
- 2014 Mentor for Aiden Zelandonii, 2nd-year Advanced Studies Task and Project, GU
- 2010 Mentor for Mathew Curtis, 1st-year Advanced Studies Task, GU
- 2006 Supervisor for Anushya Chandran, Final Vacation Research Project, B.Tech. Indian Institute of Technology, Madras (undertaken at GU)
- 2005 Supervisor for Graham White, 3rd-year Advanced Studies Project, GU
- 2004 Mentor for Graham White, 2nd-year Advanced Studies Task, GU
- 2003 Industry Partner for Joshua Combes, Industrial Affiliates Program, GU
- 2002 Mentor for Joshua Garretson, 3rd-year Advanced Studies Project, GU
- 2002 Mentor for Joshua Combes, 3rd-year Advanced Studies Task and Project, GU
- 2001 Mentor for Joshua Garretson, 2nd-year Advanced Studies Task, GU
- 2001 Mentor for Joshua Combes, 2nd-year Advanced Studies Task, GU
- 1999-00 Supervisor for Zoe Brady, 3rd/4th-year Summer Project, GU
- 1999 Supervisor for Zoe Brady, 3rd-year Advanced Studies Project, GU
- 1999 Mentor for Daniel Salmond, 2nd-year Advanced Studies Task, GU
- 1998-99 Supervisor for Dian Wahyu, 3rd-year Special Research Project, UQ
- 1994-95 Supervisor for Jacob Dunningham, 3rd/4th-year Summer Project, AU

Honours/Diploma Research Supervision

- 2017 Supervisor for Kiarn Laverick, GU
“Time-varying phase estimation using coherent states”
- 2016 Supervisor for Travis Baker, GU
“New conditions for establishing one-way steerability”
- 2006 Supervisor for Byron Booth, GU
“Does a photon reflecting off a mirror give a momentum kick of $2\hbar k$?”
- 2006 Associate supervisor for Graham White, GU
“Entanglement of Particles and Reference Frames”
- 2004 Supervisor for Steve Jones, GU
“Entanglement under Mixing and Operational Constraints”
- 2003 Supervisor for visiting Masters diploma student Tomas Askerud, U. Stockholm
“Jumplike unravelings for non-Markovian open quantum systems”
- 2003 Supervisor for Joshua Garretson, GU
“Charaterizing Momentum Transfer in Which-Way Experiments”

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- 2002 Co-supervisor for Neil Oxtoby, UQ
“Detection of qubit states by a non-ideal quantum point contact.”
 - 2002 Co-supervisor for Greg Carroll, GU
“Minds and Quantum Mechanics.”
 - 2001 Supervisor for Daniel Atkins, GU
“Approximate Master Equations for Atom Optics”
 - 2000 Supervisor for Zoe Brady, GU
“Robustness of Measurements of the Fluorescence of a two-level atom.”
 - 2000 Co-supervisor for Damian Sypher, UQ
“Nuclear Magnetic Resonance: Emulating Quantum Computation.”
 - 1999-00 Co-supervisor for Dian Wahyu Utami, UQ
“Measuring the state of a qubit using a single-electron transistor.”
 - 1999 Supervisor for Prahlad Warszawski, UQ
“Adiabatic Elimination in Quantum Feedback Systems”
 - 1999 Supervisor for Ben Hollis, UQ.
“Quantum Computation for Today’s Quantum Computers.”
 - 1997 Supervisor for Gilman Toombes, UQ.
“Measurement and Feedback of a Driven Two-Level Atom.”

Postgraduate Research Supervision⁴

- 2022– Principal Supervisor for PhD student, Ori Somech.
- 2021– Co-Supervisor for PhD student, Nattaphong Wonglakhon.
- 2021–22 Principal Supervisor (external) for MS student, Amal V S, IISER Kolkata,
“Calculation of the cavity dwell times of eventually reflected and transmitted photons using quantum weak values, to model an atomic cloud”
- 2021– Principal Supervisor for PhD student, Lucas Ostrowski.
- 2021– Co-Supervisor (external) for PhD student, Soroush Khademi, University of Queensland.
- 2019– Principal Supervisor for PhD student, Qiucheng Song.
- 2018–22 Principal Supervisor for PhD student, Aníbal Utreras-Alarcón
“On Extended Wigner’s Friend Scenarios”
GU Award of Excellence in a Research Thesis
- 2018–22 Principal Supervisor for PhD student, Kiarn Laverick
“Quantum State Smoothing: General Properties and Applications to Linear Gaussian Systems”
- 2017–20 Co-Supervisor (external) for PhD student, Prahlad Warszawski, University of Sydney
“Quantum Trajectories for, and as, understanding”
- 2017–21 Principal Supervisor for PhD student, Travis Baker.

⁴ Associate or ‘official’ supervision listed only when I participated to the extent of leading to joint papers.

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- “Quantum correlations: Schrödinger’s steering in lossy conditions; Heisenberg’s limit to laser coherence.”
- 2014–18 Co-Supervisor for PhD student, Shuming Cheng.
“Tradeoffs in Coherence and Multiparty Quantum Correlations”
- 2013–17 Associate Supervisor for Sabine Wollmann.
“Resources for optical quantum information science and technology”
- 2013–17 Principal Supervisor for PhD student, Li (Kenny) Li.
“On non-Markovianity in Open Quantum Systems”
- 2012–16 Co-Supervisor for PhD student, Shakib Daryanoosh, Ph.D., GU.
“Quantum Measurement and Control: Theory and Experiments in Solid-state and Quantum Optics”
- 2012–16 Principal Supervisor for PhD student, Ivonne Guevara, Ph.D., GU.
“Quantum State Smoothing”
- 2010–13 Associate Supervisor for Dylan Saunders, Ph.D., GU.
“Quantum Correlations: Experimental EPR-Steering, Bilocality, and Weak Tomography in Photonic Quantum Information Science”.
- 2009–14 Principal Supervisor for David Evans, Ph.D., GU.
“Coping With Loss: Detection-Loophole-Free, and Optimally Loss-Tolerant Tests of Einstein-Podolsky-Rosen-Steering
- 2007–10 Associate Supervisor for Brendon Higgins, Ph.D., GU.
“Quantum Measurement: Concepts and algorithms in photonic quantum information science”
[Received the 2010 Chancellor’s Medal \(one of four at GU\).](#)
[Queensland Branch nominee for 2012 Bragg Medal of Australian Institute of Physics](#)
- 2006–11 Principal Supervisor for Andy Chia, Ph.D., GU.
“Explorations in Quantum Measurement and Control”
[Received an Academic Excellence listing by GU](#)
[Queensland Branch nominee for 2013 Bragg Medal of Australian Institute of Physics](#)
- 2005–07 Associate Supervisor for Mark Dowling, Ph.D., UQ.
“Entanglement, Geometry, and Quantum Computation”
- 2005–08 Principal Supervisor for Steve Jones, Ph.D., GU.
“Verifying Entanglement of Constrained Bipartite Quantum Systems”
- 2004–10 Principal Supervisor for Joshua Combes, Ph.D., GU.
“Rapid Measurement and Purification using Quantum Feedback Control”
- 2003–06 Principal Supervisor for Neil Oxtoby, Ph.D., GU.
“Keeping it Real: A quantum trajectory approach to realistic measurement of solid-state quantum systems.”
- 2000–04 Principal Supervisor for Laura Thomsen, Ph.D., GU
“Using Quantum Feedback to Control Nonclassical Correlations in Light and Atoms”
- 2000–04 Principal Supervisor for Jay Gambetta, Ph.D., GU
“Non-Markovian Stochastic Schrödinger Equations and Interpretations of Quantum Mechanics”
- 2000–02 Principal Supervisor for Prahlad Warszawski, M.Phil., GU
“Quantum Trajectories for Realistic Detection.”
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- 1998–01 Principal Supervisor for Jin Wang, Ph.D., UQ
“Decoherence Control by Quantum Interference and Homodyne-Mediated Feedback.”
 - 1998–01 Principal Supervisor for Dominic Berry, Ph.D., UQ
“Adaptive Phase Measurements.”
 - 1995–96 Co-supervisor for Stephen Choi, M.Sc., AU
“Quantum aspects of the biochromatic beam splitter for two-level atoms.”
 - 1995–96 Co-supervisor for Rowan Killip, M.Sc., (in Mathematics), AU
“An appraisal of phase measurements”

Visiting Postgraduate Student Supervision

- 2022–23 Co-Supervisor for visiting PhD student, Yile Ying, Perimeter Institute
- 2017 Supervisor for visiting PhD student, Marek Wajs, National University of Singapore
- 2016 Supervisor for visiting PhD student, Yu Xiang, Peking University
- 2014 Supervisor for visiting PhD student, Areeya Chantasri, University of Rochester
- 2013 Supervisor for visiting PhD student, Colin Teo, National University of Singapore
- 2012 Supervisor for visiting PhD student, Nicola Dalla Pozza, University of Padua
- 2011–12 Supervisor for visiting PhD student, Li Li, University of Science and Technology of China.

Notable University Service

- 2021– Griffith Sciences Senior Leadership Committee (chaired by PVC), Member
- 2019– Griffith Sciences Research Committee (chaired by Dean), Member
- 2017–18 ERA “Academic Adviser” for Physical Sciences.
- 2014–15 ERA “Academic Adviser” for Physical Sciences.
- 2014–15 Griffith Sciences Research Committee (chaired by Dean), Member
- 2011–12 SEET Group Project Team for ERA, Member
- 2010–11 Research Committee (chaired by DVCR), Member
- 2010 Acting Head of Physics
- 2009–10 SEET Group Project Team for ERA, Member (responsible for Physics and Maths)
- 2007–8 Head of “Theoretical and Quantum Physics Group” for RQF
- 2007–14 SEET Group Research Committee (chaired by Dean), Member
- 2004–5 School Committee (chaired by Head of School), Member

External Grants⁵

- 2022 Australian Research Council Discovery Grant (3 years, \$513k; \$410k to GU).
“Heisenberg-limited lasers: building the revolution”, DP220101602
Chief Investigators: Wiseman, Berry.
- 2021 Commonwealth Government, Australia–United States Multi-University Research Initiative (AUSMURI) (renewal, 2 years, \$2.0M, of which \$0.75M to GU).
“Quantum control based on real-time environment analysis by spectator qubits”
Paz Silva, Wiseman, Ferrie, Morello.
- 2020 Foundational Questions Institute (2 years, US\$63k).
“Quantum and consciousness: paths to experiment, and implications for interpretations”,
FQXi-RFP-CPW-2019
Wiseman, Cavalcanti, Tilloy, and Evans.
- 2018 Commonwealth Government, Australia–United States Multi-University Research Initiative (AUSMURI) (3 years, \$3.0M, of which \$0.75M to GU).
“Quantum control based on real-time environment analysis by spectator qubits”
Paz Silva, Wiseman, Ferrie, Morello.
- 2018 Australian Research Council Centre of Excellence (7 years, \$33.7M).
“Centre for Quantum Computation and Communication Technology”, CE170100012
Simmons, Hollenberg, Ralph, Pryde, Lam, Dzurak, Wiseman *et al.*
(as Node Manager, responsible for GU’s ARC budget of \$4.6 million)
- 2017 Australian Research Council Discovery Grant (3 years, \$314 000 to GU).
“Ultimate quantum limits to coherence”, DP170101734
Chief Investigator: Wiseman
- 2015 Foundational Questions Institute (2 years, US\$104 000).
“How do measurement events emerge from Many Interacting Worlds?”
Principal Investigators: Wiseman and Hall
- 2015 Foundational Questions Institute (2 years, US\$94 000).
“Events, agents, and causation in ontological models of quantum theory”
Principal Investigator: Cavalcanti. Co-Investigator: Wiseman
- 2014 Australian Research Council Discovery Grant (3 years, \$450 000).
“Unconditional photonic entanglement verification and quantum metrology using fast, ultra-high-efficiency photon detectors”, DP140100648
Chief Investigators: Pryde, Hall, and Wiseman
- 2011 US Department of Defense, MURI project (5 years)
“Control of Quantum Systems: Theory and Experiments” (Lidar, PI)
One of 13 Members (travel-funding only, as at a non-US university).
- 2011 Templeton Foundation (2 years, US\$20 500, to GU).
“Non-Linearity and Quantum Mechanics: Quest for a Rogue Wave Mechanics”
Samuel Colin, Thomas Durt, Ralph Willox and Howard Wiseman.
- 2011 Australian Research Council Centre of Excellence (7 years, \$24.5 million).
“Centre for Quantum Computation and Communication Technology”, CE110001027

⁵ by year of commencement.

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- Executive Committee: Simmons, Hollenberg, Ralph, Wiseman, Lam, and Dzurak.
(as Node Manager, responsible for GU's ARC budget of \$2.4 million).
- 2009 Perimeter Institute (Canada) External Funding (3 years, \$33 000 to GU)
plus \$33,000 transferred to GU from ARC DP held by Price at U.Syd.
Part of the "Perimeter Institute – Australia Foundations (PIAF) partnership"
Australian Management Committee members: Price, Milburn, and Wiseman.
- 2009 Australian Research Council Discovery Grant (3 years, \$410 000 to GU).
"Quantum limits in measurement and communication", DP0986503
Chief Investigators: Pryde, Bartlett, Doherty, and Wiseman
- 2008 Australian Research Council Centre of Excellence renewal (3 years, \$10.1 million).
"Centre for Quantum Computer Technology" (Clark, Director), CE0348250
(one of 21 Chief Investigators, responsible for an ARC budget of \$420 000).
- 2007 Australian Research Council Discovery Grant (3 years, \$570 000, to GU).
"Quantum computing with trapped ions", DP0773354
Chief Investigators: Kielpinski and Wiseman.
- 2004 Australian Research Council Federation Fellowship (5 years, \$1.5 million).
"Quantum Information, Measurement, and Control", FF0458313
- 2003 Queensland Government "Smart State" Centre Funding (5 years, \$225 000, to GU).
"Centre for Quantum Computer Technology"
- 2003 Australian Research Council Centre of Excellence (5 years, \$14 million).
"Centre for Quantum Computer Technology" (Clark, Director), CE0348250
(one of 18 Chief Investigators, responsible for an ARC budget of \$770 000).
- 2002 Australian Research Council Discovery Grant (3 years, \$211 000, to GU).
"Novel aspects and applications of quantum measurement theory", DP0208939
Chief Investigators: Wiseman and Pegg.
- 1999 Australian Research Council QEII Research Fellowship (5 years, \$570 000).
"Non-Markovian Dynamics of Open Quantum Systems", F69937030
- 1999 Australian Research Council Small Grant (1 year, \$25 000, to UQ).
"First experimental realisation of a quantum-limited arbitrary phase measurement"
Chief Investigators: Heckenberg, Wiseman, and Truscott.
- 1996 Australian Research Council Postdoctoral Research Fellowship (3 years, \$173 000).
"Physical Realizations for Quantum-Limited Measurements on Light and Atoms", F69600016

PUBLICATIONS

Books

1. H. M. Wiseman and G. J. Milburn,
Quantum Measurement and Control
(Cambridge University Press, Cambridge, 2010): 476 pages
Sales to mid-2021: >1700

Editing

2. Eric G. Cavalcanti, Curtis J. Broadbent, Stephen P. Walborn, and Howard M. Wiseman (editors),
Feature Issue: *80 years of Steering and the Einstein-Podolsky-Rosen Paradox* [Introduction]
J. Opt. Soc. Am. B **32**, 4, EPR1-2 (2015). DOI: 10.1364/JOSAB.32.00EPR1
1. S. Mancini, V. I. Man'ko, and H. M. Wiseman (editors),
Special Issue on *Quantum Control* [editorial]
J. Opt. B Quantum and Semiclassical Optics **7**, S177 (2005)

Invited Book Chapters

- B6 H. M. Wiseman,
“Transmarine campaigns by the ‘historical’ Arthur: trends in modern fiction”
Arthur, la mer et la guerre
Civilisation médiéval 26 (Classiques Garnier, Paris, 2017).
edited by Alban Gautier, Marc Rolland and Michelle Szkilnik, pp. 173–193
- B5 Howard M. Wiseman and Eric G. Cavalcanti,
“*Causarum Investigatio* and the Two Bell's Theorems of John Bell”
Quantum [Un]speakables II: Half a Century of Bell's Theorem,
The Frontiers Collection (Springer, Switzerland, 2017)
edited by Reinhold Bertlmann and Anton Zeilinger, pp. 119–142.
- B4 H. M. Wiseman and J. Eisert,
“Nontrivial quantum effects in biology: A skeptical physicists’ view”
Quantum Aspects of Life,
(Imperial College Press, London, 2008)
edited by D. Abbot, P. C. W. Davies, and A. K. Pati, pp. 381–401
- B3 R. Van Handel, J. K. Stockton, H. Mabuchi and H. M. Wiseman,
“Quantum State Preparation of Spin Ensembles by Continuous Measurement and Feedback”
Quantum Information with Continuous Variables of Atoms and Light
(Imperial College Press, London, 2007)
edited by N. J. Cerf, G. Leuchs, and E. S. Polzik, pp. 463–486
- B2 H. M. Wiseman,
“Squeezing and Feedback”
Quantum Squeezing (Springer, Berlin, 2004)
edited by P.D. Drummond and Z. Ficek. pp. 171-223
- B1 H. M. Wiseman,
“Complementarity in Spontaneous Emission: Quantum Jumps, Staggers and Slides”
Directions in Quantum Optics (Springer, Berlin, 2001)
Lecture Notes in Physics **561**
edited by Howard J. Carmichael, Roy J. Glauber, and Marlan O. Scully, pp. 347-357

Refereed Journal or Book Papers

Refereed Papers as Sole Author

- S25 “Arthur, Authors, and Authorities: The Influence of Modern Historians on Arthurian Historical Fiction” (Article)
Arthuriana **31**, 3, pp. 40–81 (2021). <https://doi.org/10.1353/art.2021.0025>
- S24 “How many principles does it take to change a light bulb ... into a laser?” (Invited commentary)
Physica Scripta **91**, 033001 [10 pages] (2016).
- S23 “The Two Bell’s Theorems of John Bell” (Invited review)
J. Phys. A **47**, 424001 [31 pages] (2014) (Special Issue, *50 years of Bell’s theorem*).
- S22 “Quantum discord is Bohr’s notion of non-mechanical disturbance introduced to counter the Einstein-Podolsky-Rosen argument”
Ann. Phys. (N.Y.) **338**, 361–374 (2013).
- S21 “A British legion stationed near Orléans c. 530? Evidence for Brittonic military activity in late antique Gaul in *Vita Sancti Dalmatii* and other sources”
Journal of the Australian Early Medieval Association **7**, 9–31 (2011).
- S20 “Grounding Bohmian Mechanics in Weak Values and Bayesianism”
New J. Phys. **9**, 165 (12 pages) (2007).
- S19 “From Einstein’s Theorem to Bell’s Theorem: A History of Quantum Nonlocality”
Contemp. Phys. **47**, 79-88 (2006).
- S18 “Defending Continuous Variable Teleportation: Why a laser is a clock, not a quantum channel”
J. Opt. B: Quant. Semiclass. Opt. **6**, S849-S859 (2004).
- S17 “Comment: There is no unmet requirement of optical coherence for continuous-variable quantum teleportation”
Journal of Modern Optics **50**, 1797-1800 (2003).
- S16 “Directly Observing Momentum Transfer in Twin-Slit ‘Which-Way’ Experiments”
Physics Letters A **311**, 285-291 (2003).
- S15 “Weak values, quantum trajectories, and the cavity-QED experiment on wave-particle correlation”
Phys. Rev. A **65**, 032111 (6 Pages) (2002).
- S14 “The derivation of the date of the Badon entry in the *Annales Cambriae* from Bede and Gildas”
Parergon **17**, 1-10 (2000).
- S13 “Light amplification without stimulated emission: Beyond the standard quantum limit to the laser linewidth”
Phys. Rev. A **60**, 4083-4093 (1999).
- S12 “Squashed States of Light: Theory and Applications to Quantum Spectroscopy”

- J. Opt. B: Quant. Semiclass. Opt. **1**, 459-463 (1999).
- S11 “Extending Heisenberg's measurement-disturbance relation to the twin-slit case”
Found. Phys. **28**, 1619-1631 (1998).
- S10 “In-loop squeezing is like real squeezing to an in-loop atom”
[Phys. Rev. Lett.](#) **81**, 3840-3843 (1998).
- S9 “Bohmian analysis of momentum transfer in *welcher Weg* measurements”
Phys. Rev. A **58**, 1740-1756 (1998).
- S8 “Defining the (atom) laser”
Phys. Rev. A **56**, 2068-2084 (1997).
- S7 “Quantum trajectories and quantum measurement theory”
Quantum Semiclass. Opt. (JEOS B) **8**, 205-222 (1996).
- S6 “Adaptive phase measurements of optical modes: Going beyond the marginal Q distribution”
[Phys. Rev. Lett.](#) **75**, 4587-4590 (1995).
- S5 “SU(2) distribution functions and measurement of the fluorescence of a two-level atom”
Quantum Semiclass. Optics (JEOS B) **7**, 569-584 (1995).
- S4 “Feedback in Open Quantum Systems” (Invited Brief Review Article)
Modern Physics Lett. B **9**, 629-654 (1995).
- S3 “Using feedback to eliminate back-action in quantum measurements”
Phys. Rev. A **51**, 2459-2468 (1995).
- S2 “Quantum theory of continuous feedback”
Phys. Rev. A **49**, 2133-2150 (1994); Errata *ibid.*, **49** 5159 (1994) and *ibid.* **50**, 4428 (1994).
- S1 “Stochastic quantum dynamics of a continuously monitored laser”
Phys. Rev. A **47**, 5180-5192 (1993).

Refereed Papers as Joint Author⁶

- J220 Behnam Tonekaboni, Areeya Chantasri, Hongting Song, Yanan Liu, and Howard M. Wiseman, “Greedy versus map-based optimized adaptive algorithms for random-telegraph-noise mitigation by spectator qubits”
Phys. Rev. A **107**, 032401 (2023). <https://doi.org/10.1103/PhysRevA.107.032401>
- J219 Hongting Song, Areeya Chantasri, Behnam Tonekaboni, and Howard M. Wiseman, “Optimized mitigation of random-telegraph-noise dephasing by spectator-qubit sensing and control”
Phys. Rev. A (Letter) **107**, L030601 (2023). <https://doi.org/10.1103/PhysRevA.107.L030601>
- J218 Antoine Tilloy and Howard M. Wiseman, “Non-Markovian wave-function collapse models are Bohmian-like theories in disguise”
Quantum **5**, 594 (2021). <https://doi.org/10.22331/q-2021-11-29-594>
- J217 Kiarn T. Laverick, Ivonne Guevara, and Howard M. Wiseman, “Quantum state smoothing as an optimal Bayesian estimation problem with three different cost functions”
Phys. Rev. A, **104**, 032213 (2021). <https://doi.org/10.1103/PhysRevA.104.032213>
- J216 Areeya Chantasria, Ivonne Guevara, Kiarn T. Laverick, and **Howard M. Wiseman**, “Unifying theory of quantum state estimation using past and future information”
Physics Reports **930**, 1–40 (2021). <https://doi.org/10.1016/j.physrep.2021.07.003>
- J215 Eric G. Cavalcanti and Howard M. Wiseman, “Implications of Local Friendliness Violation for Quantum Causality”
Entropy **23**, 925 (2021). <https://doi.org/10.3390/e23080925>
- J214 Kiarn T. Laverick, Areeya Chantasri, and Howard M. Wiseman, “Linear Gaussian quantum state smoothing: Understanding the optimal unravelings for Alice to estimate Bob's state”
Phys. Rev. A **103**, 012213 (2021). <https://doi.org/10.1103/PhysRevA.103.012213>
- J213 Travis J. Baker, Seyed N. Saadatmand, Dominic W. Berry, and **Howard M. Wiseman**, “The Heisenberg limit for laser coherence”
Nature Physics **17**, 179–183 (2021). <https://doi.org/10.1038/s41567-020-01049-3>
- J212 Ivonne Guevara and Howard M. Wiseman, “Completely positive quantum trajectories with applications to quantum state smoothing”
Phys. Rev. A **102**, 052217 (2020). DOI: 10.1103/PhysRevA.102.052217
- J211 Prahlad Warszawski, Howard M. Wiseman, Andrew C. Doherty, “Solving quantum trajectories for systems with linear Heisenberg-picture dynamics and Gaussian measurement noise”
Phys. Rev. A **102**, 042210 (2020). DOI: 10.1103/PhysRevA.102.042210

⁶ For journals with official “corresponding authors”, these are shown in bold when I am one.

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- J210 Kok-Wei Bong, Aníbal Utreras-Alarcón, Farzad Ghafari, Yeong-Cherng Liang, Nora Tischler, Eric G. Cavalcanti, Geoff J. Pryde, and Howard M. Wiseman,
“A strong no-go theorem on the Wigner’s friend paradox”
Nature Physics **16**, 1199–1205 (2020). DOI: 10.1038/s41567-020-0990-x
- J209 Leigh S. Martin, William P. Livingston, Shay Hacoen-Gourgy, Howard M. Wiseman, and Irfan Siddiqi,
“Implementation of a canonical phase measurement with quantum feedback”
Nature Physics **16**, 1046–1049 (2020). DOI: 10.1038/s41567-020-0939-0
- J208 Kiarn T. Laverick, Areeya Chantasri, and Howard M. Wiseman,
“General criteria for quantum state smoothing with necessary and sufficient criteria for linear Gaussian quantum systems”
Quantum Stud.: Math. Found. (2020). DOI: 10.1007/s40509-020-00225-7
- J207 Travis J. Baker and Howard M. Wiseman,
“Necessary conditions for steerability of two qubits from consideration of local operations”
Phys. Rev. A, **101**, 022326 (2020). DOI: 10.1103/PhysRevA.101.022326
- J206 Wojciech Górecki, Rafał Demkowicz-Dobrzański, Howard M. Wiseman, and Dominic W. Berry,
“ π -Corrected Heisenberg Limit”
Phys. Rev. Lett. **124**, 030501 (2020). DOI: 10.1103/PhysRevLett.124.030501
- J205 Gerardo A. Paz-Silva, Michael J. W. Hall, and Howard M. Wiseman,
“Dynamics of initially correlated open quantum systems: Theory and applications”
Phys. Rev. A **100**, 042120 (2019). DOI: 10.1103/PhysRevA.100.042120
- J204 Farzad Ghafari, Nora Tischler, Jayne Thompson, Mile Gu, Lynden K. Shalm, Varun B. Verma, Sae Woo Nam, Raj B. Patel, Howard M. Wiseman, and Geoff J. Pryde
“Dimensional quantum memory advantage in the simulation of stochastic processes”
Phys. Rev. X **9**, 041013 (2019). DOI: 10.1103/PhysRevX.9.041013
- Chosen by American Physical Society, “[highlights of physics research](http://physics.aps.org/synopsis-for/10.1103/PhysRevX.9.041013)”
<http://physics.aps.org/synopsis-for/10.1103/PhysRevX.9.041013>
- J203 Prahlad Warszawski and Howard M. Wiseman,
“Open quantum systems are harder to track than open classical systems”
Quantum **3**, 192 (2019). DOI: 10.22331/q-2019-10-07-192
- J202 Areeya Chantasri, Ivonne Guevara, and Howard M. Wiseman,
“Quantum state smoothing: Why the types of observed and unobserved measurements matter”
New J. Phys. **21**, 083039 [15 pages] (2019). DOI: 10.1088/1367-2630/ab396e
- J201 Ya Xiao, Howard M. Wiseman, Jin-Shi Xu, Yaron Kedem, Chuan-Feng Li, and Guang-Can Guo
“Observing momentum disturbance in double-slit ‘which-way’ measurements”
Science Adv. **5**, eaav9547 [5 pages] (2019). DOI: 10.1126/sciadv.aav9547
- J201 Kiarn T. Laverick, Areeya Chantasri, and Howard M. Wiseman,
“Quantum state smoothing for linear Gaussian systems”
Phys. Rev. Lett. **122**, 190402 [6 pages] (2019). DOI: 10.1103/PhysRevLett.122.190402
- J200 Prahlad Warszawski and Howard M. Wiseman,
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- “Symmetries and physically realizable ensembles for open quantum systems”
[New J. Phys.](#) **21**, 053006 [22 pages] (2019). DOI: 10.1088/1367-2630/ab14b2
- J199 Chao Zhang, Shuming Cheng, Li Li, Qiu-Yue Liang, Bi-Heng Liu, Yun-Feng Huang, Chuan-Feng Li, Guang-Can Guo, Michael J. W. Hall, Howard M. Wiseman, and Geoff J. Pryde
 “Experimental validation of quantum steering ellipsoids and tests of volume monogamy relations”
[Phys. Rev. Lett.](#) **122**, 070402 [6 pages] (2019). DOI: 10.1103/PhysRevLett.122.070402
- J198 Chris Ferrie, Chris Granade, Gerardo Paz-Silva, and Howard M. Wiseman,
 “Bayesian quantum noise spectroscopy”,
[New J. Phys.](#) **20**, 123005 [16 pages] (2018). DOI: 10.1088/1367-2630/aaf207
- J197 Shakib Daryanoosh, Sergei Slussarenko, Dominic W. Berry, Howard M. Wiseman, and Geoff J. Pryde,
 “Experimental optical phase measurement approaching the exact Heisenberg limit”,
[Nature Communications](#) **9**, 4606 [6 pages] (2018). DOI: 10.1038/s41467-018-06601-7
- J196 Nora Tischler, Farzad Ghafari, Travis J. Baker, Sergei Slussarenko, Raj B. Patel, Morgan M. Weston, Sabine Wollmann, Lynden K. Shalm, Varun B. Verma, Sae Woo Nam, H. Chau Nguyen, Howard M. Wiseman, and Geoff J. Pryde
 “Conclusive experimental demonstration of one-way Einstein-Podolsky-Rosen steering”
[Phys. Rev. Lett.](#) **121**, 100401 [6 pages] (2018). DOI: 10.1103/PhysRevLett.121.100401
 • **Editors’ Suggestion**, for Letters that have “particular importance, innovation, and broad appeal”
- J195 Sabine Wollmann, Michael J. W. Hall, Raj B. Patel, Howard M. Wiseman, and Geoff J. Pryde,
 “Reference-frame-independent Einstein-Podolsky-Rosen steering”
[Phys. Rev. A](#) **98**, 022333 [8 pages] (2018). DOI: 10.1103/PhysRevA.98.022333
- J194 Li Li, Michael J.W. Hall, and **Howard M. Wiseman**,
 “Concepts of quantum non-Markovianity: A hierarchy”
[Physics Reports](#) **759**, 1-51 (2018). DOI: 10.1016/j.physrep.2018.07.001
- J193 Mojtaba Ghadimi, Michael J.W. Hall, and **Howard M. Wiseman**,
 “Nonlocality in Bell’s Theorem, in Bohm’s Theory, and in Many Interacting Worlds Theorising”
[Entropy](#) **2018**, 20, 567 [18 pages] (2018). DOI: 10.3390/e20080567
 (Special Issue on Emergent Quantum Mechanics – David Bohm Centennial Perspectives)
- J192 Kiarn T. Laverick, Howard M. Wiseman, Hossein T. Dinani, and Dominic W. Berry,
 “Adaptive estimation of a time-varying phase with coherent states: Smoothing can give an unbounded improvement over filtering”
[Phys. Rev. A](#) **97**, 042334 (2018). DOI: 10.1103/PhysRevA.97.042334
- J191 Travis J. Baker, Sabine Wollmann, Geoff J. Pryde, and Howard M. Wiseman,
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