

# Stephen D. Bartlett

## Professor in Physics

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Citizenships: Canadian and Australian

## Education

**Doctor of Philosophy in Physics**, University of Toronto, 2000

Thesis: *Quantization of a Classical Model with Symmetry*

Supervisor: Prof David J Rowe

**Master of Science in Physics**, University of Toronto, 1996

**Bachelor of Science in Physics and Mathematics**, University of Waterloo, 1995

**Graduate Certificate in Higher Education**, University of Sydney, 2007.

## Employment History

**Professor**, The University of Sydney, Jan 2012 –

**Visiting Researcher**, Perimeter Institute for Theoretical Physics, Aug – Dec 2009

**Associate Professor**, The University of Sydney, Jan 2010 – Dec 2011

**Senior Lecturer**, The University of Sydney, Jan 2008 – Dec 2009

**Lecturer**, The University of Sydney, Jan 2005 – Dec 2007

**Lecturer (fixed-term)**, The University of Queensland, Jan 2004 – Jan 2005

**ARC Postdoctoral Research Fellow**, University of Queensland, Jul 2003 – Dec 2003

**ARC Postdoctoral Research Fellow**, Macquarie University, Jan 2003 – Jul 2003

**Macquarie University Research Fellow**, Macquarie University, Jan 2001 – Jan 2003

Promoted to *Level B: Lecturer* effective 1/1/2003

**Research Associate**, Macquarie University, Jul 2000 – Jan 2001

## Research Grants

### Successful Competitive Research Grants - External

Project Title	Investigators	Scheme	Value	Year
ARC Centre of Excellence for Engineered Quantum Systems	GJ Milburn	ARC Centres of Excellence	\$ 5.6 M	2011-2017
	SD Bartlett + 15 Aust. CIs + 16 internat. PIs		to Sydney \$ 24.5 M total	
NSW state government support - ARC Centre of Excellence for Engineered Quantum Systems	SD Bartlett, MJ Biercuk, AC Doherty, DJ Reilly, J Twamley (MQ)	NSW Science Leveraging Fund	\$ 250 000 to Sydney \$ 500 000 total	2011
Multi-qubit systems based on electron spins in coupled quantum dots	CM Marcus	IARPA Multi-Qubit Coherent Operations	\$ 4.2 M	2010-2014
	SD Bartlett in international team of 14 CIs		to Sydney \$ 27.5 M total	
Quantum limits in measurement and communication <i>ranked A+ (top third of successful grants)</i>	GJ Pryde	ARC Discovery	\$ 150 000	2009
	AC Doherty		\$ 130 000	2010
	SD Bartlett HM Wiseman		\$ 130 000	2011
Quantum-enhanced reference systems <i>ranked A+ (top third of successful grants)</i>	SD Bartlett	ARC Discovery	\$ 100 000	2008
			\$ 108 000	2009
			\$ 109 000	2010
Optical quantum computing	P Kwiat	ARDA QCCM	\$ 1.5M	2005
	A Zeilinger		\$ 1.5M	2006
	AG White		\$ 1.5M	2007
	SD Bartlett ...		\$ 1.5M	2008
Entanglement as resource for quantum technology	AC Doherty SD Bartlett	ARC Discovery	\$ 100 000	2005
			\$ 100 000	2006
			\$ 100 000	2007
Controlling quantum technologies	AG White	ARC Discovery	\$ 260 000	2005
	SD Bartlett		\$ 150 000	2006
	AC Doherty		\$ 250 000	2007
	A Gilchrist			
	JL O'Brien GJ Pryde			
Relative Quantum Information	SD Bartlett	ARC Linkage International – Awards	\$ 30 500	2004
	RW Spekkens		+ matching funds	2005
	DR Terno			2006
Quantum Properties of Distributed Systems (QUPRODIS) – part of European Fifth Framework project	BC Sanders	IAP – International S&T Competitive Grants	\$ 15 000	2003
	SD Bartlett		\$ 15 000	2004
	D Berry		\$ 15 000	2005
Optical realisations of continuous-variable quantum information	SD Bartlett	ARC Discovery (inc. APD Fellowship)	\$ 69 345	2003
			\$ 69 345	2004
			\$ 69 345	2005

## Successful Competitive Research Grants - Internal

Project Title	Investigators	Scheme	Value	Year
USyd-ICL collaboration on quantum computation in spin systems	SD Bartlett	International Program Development Fund	\$ 10 000	2009
USyd International Visiting Research Fellowship for Prof J O'Brien	SD Bartlett JL O'Brien	USyd International Visiting Research Fellow	\$ 11 500	2008
Quantum-enhanced Reference Systems	SD Bartlett	USydney Bridging Support	\$ 70 000	2007
USyd Short-Term Visiting Fellowship for Dr T Rudolph	SD Bartlett T Rudolph	USyd Short-Term Visiting Fellowship	\$ 9 000	2006
Quantum-enhanced Reference Systems	SD Bartlett	USydney R&D Grant-ECR	\$ 23 000	2006
Reference Frames, Superselection Rules, and Quantum Information Theory	SD Bartlett	Selby Research Award	\$ 6 500	2005
Sydney Quantum Info. Theory Workshop	SD Bartlett	Denison Small Grant	\$ 9 000	2005
Creating new resources for optical quantum information processing	SD Bartlett	UQ New Staff Research Start-Up Fund	\$ 11 950	2004
Discriminating photon detectors and applications to quantum computation	SD Bartlett	Macquarie University New Staff Scheme	\$ 5 439	2002
Applications of Group Theory to Quantum Networks	SD Bartlett	Macquarie University Research Fellowship	\$ 57 622 \$ 57 622 \$ 57 622	2001 2002 2003

## Honours, Fellowships, Scholarships and Awards

Selby Research Award	2005
Australian Research Council Postdoctoral Fellowship	2003-2005
Macquarie University Research Fellowship	2001-2004
Ontario Graduate Scholarship in Science & Technology	1999-2000
NSERC Post Graduate Scholarship – Level B	1997-1999
Walter C. Sumner Fellowship	1997-1998
Edward C. Stevens Award	1996-1998
NSERC Post Graduate Scholarship – Level A	1995-1997
Top-Up Entrance Award	1995
Special Top-Up Entrance Award	1995
Alumni Gold Medal (top graduate in faculty)	1995
Canada Scholarship	1991-1995
Sir Isaac Newton Upper Year Scholarship	1992-1995
AECL Corporate Scholarship	1994
NSERC Undergraduate Research Award	1994
Optics Book Prize	1992
Sir Isaac Newton Entrance Scholarship	1991

## **Professional Service**

### **Service to the University**

#### **Service on School's Teaching Programs**

- Honours Coordinator (2007- ongoing)
- Postgraduate research courses working group (2011- ongoing)

#### **Service on School/University Committees**

- Deputy Chair, School of Physics Research Committee (2008)
- Member, School of Physics Research Committee (2006-2009)
- Member, School of Physics Teaching and Learning Committee (2007- ongoing)
- Member, Student Recruitment Taskforce (2008)
- Chair, School committee to review undergraduate quantum syllabus (2006)
- Library representative, School of Physics (2005- ongoing)

### **Service to the Discipline**

#### **Service on Professional Societies**

- Convenor, AIP Topical Group QUICC (2010- ongoing)
- Vice-convenor, AIP Topical Group QUICC (2008,2009)
- Secretary, AIP Topical Group QUICC (2006, 2007)
- Interim Secretary, AIP Topical Group QUICC (2005)

#### **Refereeing for international journals**

- Nature, Nature Physics, Physical Review (A, Letters), New Journal of Physics, Journal of Physics (A, B), Journal of Optics (B), Physics Letters (A), Optics Letters, Optics Express, Foundations of Physics, Quantum Information and Computation

#### **Refereeing for competitive grant applications**

- Referee (INTREADER) for ARC Discovery Projects (2006,2007,2008,2009,2010)
- Referee for ARC Laureate Fellowships (2009,2010)
- Referee for ARC Federation Fellowships (2006,2007)
- Referee for NWO (The Netherlands) competitive grants (2011)
- Referee for US-Israel Binational Science Foundation (2011)
- Referee for FQXi (Foundational Questions Institute) large grant scheme (2008)
- Referee for Research Corporation (USA) competitive grants (2005,2006)
- Referee for NSERC (Canada) competitive grants (2006,2007,2009,2010,2011)
- Referee for Austrian Science Fund (Austria) competitive grants (2006)
- Referee for A\*STAR (Singapore) competitive grants (2006)

#### **Conference and workshop organisation**

- Program committee, Australian Institute of Physics Congress, Sydney, Dec 2012.
- Program committee, Quantum Information Processing – QIP 2011, Singapore, Jan 2011.
- Organizing committee, QCMC'2010, Brisbane, July 2010.
- Organizing committee, Iran International Conference on Quantum Information, Sept 2010.
- Organizing committee, 5th Conference on the Theory of Quantum Computation, Communication and Cryptography, University of Leeds, UK, April 2010
- Advisory Committee, The Clock and the Quantum, Waterloo, Canada, Sept 2008.
- Principal local organizer, Principles and Applications of Control in Quantum Systems 2007, Sydney, July 2007.
- Founder and principal organiser, Sydney Quantum Information Theory, workshop series - Sydney, Feb 2006, Jan 2008, Jan 2009, Jan 2010, Jan 2011.
- Co-organiser, "Reference Frames and Superselection Rules in Quantum Information Theory," Perimeter Institute, Waterloo, Canada, 12-16 July 2004 (with R. W. Spekkens).

### **Professional Affiliations**

- Fellow, Australian Institute of Physics
- Member, American Physical Society

### **Service to the Community**

#### **Outreach Activities**

- International Science School, lecturer (2011)
- Continuing Education lecture, “Einstein, Entanglement, and the Exotic Quantum World,” (2010)
- “Richard Feynman and QED” dinner mini-lecture, Sydney (2008)
- AIP Public Lecture on Nobel Prize in Physics, at Sydney, Wollongong, Newcastle (2006)
- Science EXPOsed volunteer (2005)
- International Youth Physics Tournament judge (2004)

### **University lecturing**

<b>Course</b>	<b>Uni</b>	<b>Year</b>	<b># Hours Lecture</b>	<b>Number of Students</b>
<b>FIRST YEAR</b>				
PHYS1901 –Physics 1A (Advanced), Mechanics module	Sydney	2010s1	15	174
		2011s1	15	144
PHYS1902 –Physics 1B (Advanced), Electromagnetism module	Sydney	2005s2	20	130
		2006s2	20	127
		2007s2	20	120
		2008s2	20	99
		2010s2	20	142
		2011s2	20	106
PHYS1004 –Physics 1B (Env and Life Sciences), Radiation module	Sydney	2006s2	14	140
		2007s2	14	154
		2008s2	28	291
ENGG1050 – Engineering Thermodynamics	UQ	2004s1	9	130
		2004s2	18	250
PHYS1002 – Electromagnetism, Optics, Relativity and Quantum Physics I	UQ	2004s2	15	150
<b>THIRD YEAR</b>				
PHYS 3051, etc. – Thermodynamics	Sydney	2007s1	19	97
		2008s1	19	87
		2009s1	19	80
		2010s1	19	60
		2011s1	19	78
PHYS304 – Quantum Physics	MQ	2001s2	18	8
		2002s2	18	4
<b>FOURTH YEAR / GRADUATE</b>				
Honours Advanced Quantum Mechanics	Sydney	2005s1	20	25
		2006s1	20	23
		2007s1	20	22
		2008s1	20	29
		2009s1	20	43
		2010s2	20	16
		2011s1	20	??
PHYS440 – Quantum Computing	MQ	2002s1	6	4
PHYS1435 – Symmetry in Physics	UofT	1998s2	18	5

## **Research student supervision**

### **Current postgraduate students**

<b>Name</b>	<b>Supervisor</b>	<b>Degree</b>	<b>Uni</b>	<b>Start Date</b>
Alexandr Sergeevich	Principal	Ph.D.	Sydney	2008
Matthew Palmer	Principal	Ph.D.	Sydney	2008
Courtney Brell	Principal	Ph.D.	Sydney	2009
Andrew Darmawan	Principal	Ph.D.	Sydney	2009
Maki Takahashi	Principal	Ph.D.	Sydney	2009
Joel Wallman	Principal	Ph.D.	Sydney	2009
Simon Burton	Principal	Ph.D.	Sydney	2011

### **Completed postgraduate students**

<b>Name</b>	<b>Supervisor</b>	<b>Degree</b>	<b>Uni</b>	<b>Completed</b>
Paulo Mendonca	Associate	Ph.D.	UQ	2008
Mark Dowling	Associate	Ph.D.	UQ	2007
Dominic Else	Coprincipal	Honours (*)	Sydney	2011
Jessica Bloom	Principal	Honours	Sydney	2011
Graham White	Principal	Honours (*)	Sydney	2010
Massoud Aghili	Principal	Honours	Sydney	2009
Thomas Chung	Principal	Honours	Sydney	2008
Andrew Darmawan	Principal	Honours (*)	Sydney	2008
Joel Wallman	Principal	Honours (*)	Sydney	2008
Tom Griffin	Principal	Honours (*)	Sydney	2007
Matthew Palmer	Principal	Honours	Sydney	2007
Lisa Torlina	Principal	Honours (*)	Sydney	2007
Alex Gray	Principal	Honours	Sydney	2007
Daniel Yardley	Principal	Honours	Sydney	2006
Agata Branczyk	Principal	Honours	UQ	2005

(\*) denotes University Medalist

### **External postgraduate examinations**

PhD, David Wang, University of Melbourne (2011)  
 PhD, Sukhbinder Singh, University of Queensland (2011)  
 PhD, Robert Pfeifer, University of Queensland (2011)  
 PhD, Antonio Lagana, University of Adelaide (2010)  
 PhD, Ingo Kamleitner, Macquarie University (2010)  
 PhD, Ben Lanyon, University of Queensland (2009)  
 PhD, Giulio Chiribella, University of Pavia (2006)  
 Honours, Chris Facer, Macquarie University (2006)  
 Honours, Leigh Stephenson, Macquarie University (2002)  
 Honours, Martin Ams, Macquarie University (2001)

### **Undergraduate research supervision**

*Senior research project (Sydney):*

- Jacob Bridgeman, Rafael Alexander (2011)
- Dominic Else (2010)
- Gene Polovy (2009)



- Phillip Lathourakis, Michael Sun, Duncan Sutherland (2007)
- Anthony Krensel, Tristan Randall, Matthew Palmer, Felix Lawrence (2006)
- Tom Griffin (2005)

*Talented Student Program project (Sydney):*

- Laura McKemmish, Graham White (2008)
- Julian Gibbons, John Sun (2005)

*Vacation Scholarship project (Sydney):*

- Harry Wood, Dominic Else, Jacob Bridgeman, Rafael Alexander (2010)
- Graham White, Dominic Else, Jacob Bridgeman, Rafael Alexander (2010)
- Graham White, Joel Wallman (2008)
- Matthew Palmer (2007)
- John Truong (2006)

*Other*

- Raymond Limpus (Masters research project, QUT, 2003 and 2004)
- Agata Branczyk (Vacation scholarship, UQ, 2004)

## Research

### Invited Research Talks and Lectures

1. *Quantum computational matter*,  
Colloquium at the Perimeter Institute for Theoretical Physics, Waterloo, Canada, 12/10/2011.
2. *Quantum computational matter*,  
Colloquium at the School of Physics and Mathematics, University of Queensland, Brisbane, Australia, 23/9/2011.
3. *Quantum computational phases of matter*,  
Invited talk at JQI Workshop – From Quantum Information and Complexity to Post-Quantum Information Security, Joint Quantum Institute, Maryland, USA, 27/10/2010-29/10/2010.
4. *Epistemic vs ontic interpretations of the state of quantum systems in the presence of closed timelike curves*,  
Invited talk at PIAF'09 – New Perspectives on the Quantum State, Perimeter Institute for Theoretical Physics, Waterloo, Canada, 27/9/2009-2/10/2009.
5. *Quantum computers: A new phase of matter?*,  
Invited talk at LPHYS'09, Barcelona, Spain, 13/07/09 - 17/07/09.
6. *Quantum computers: A new phase of matter?*,  
Invited talk at Quantum Frontiers Symposium, Brisbane, Australia, 02/04/09 - 03/04/09.
7. *Quantum reference frames and relationalism in quantum theory*,  
Invited talk at The Clock and The Quantum, Perimeter Institute for Theoretical Physics, Waterloo, Canada, 28/9/2008-2/10/2008.
8. *Identifying Phases of Matter that are Universal for Quantum Computation*,  
**Keynote** talk at Theory Canada 4, Montreal, Canada, 04/06/08 – 07/06/08.
9. *Encoding a Cartesian frame using clouds of spins*,  
Invited talk at Advanced Quantum Measurement workshop, Leiden, the Netherlands 05/11/07 – 09/11/07.
10. *Universal Control of Optical Quantum Information*,  
Invited talk at Frontiers in Optics 2007 (OSA Annual Meeting), San Jose, CA, 16/09/07 - 20/09/07.
11. *Quantum-computational universality and quantum phase transitions in the ground states of spin lattices*,  
Invited talk at Iran International Conference on Quantum Information, Kish Island, Iran, 07/09/07 - 10/09/07.
12. *Optimal eavesdropping strategies in quantum cryptography using photonic quantum control*,  
Invited talk Quantum Communications and Quantum Imaging V, SPIE International Symposium on Optics and Photonics, San Diego, CA, 26/08/07 - 30/08/07.
13. *Quantum operations and measurements on a qubit using feedback control*,  
Invited talk at Principles and Applications of Control in Quantum Systems (PRACQSYS 2007), Sydney, Australia, 09/07/07 - 13/07/07.
14. *Techniques for group parameter estimation which maximize the likelihood*,  
Invited talk at Quantum Algorithms & Applications, Blue Mountains, Australia, 27/05/2007 - 02/06/2007.
15. *Quantum Control of a Single Qubit*,



- Invited talk at Workshop on Quantum - Classical Transition and Quantum Information, Benasque, Spain, 18/06/2006 – 30/06/2006.
16. *Quantum Resources: Entanglement, Secret Bits & Reference Frames*,  
Three invited lectures at the TSL Expository Lecture Series, Theoretical Studies Laboratory, Institute of Advanced Technology, Malaysia, 29/11/2005 – 02/12/2005.
  17. *Quantum Computing*,  
Invited tutorial at the 2005 IEEE International Symposium on Information Theory, Adelaide, Australia, 4-8/9/2005.
  18. *Finding Optimal Measurements for State Estimation*,  
Invited talk at the MAQIS Workshop: Mathematical Aspects of Quantum Information Science, University of Queensland, Australia, 27-28/01/2005.
  19. *Decoherence-full subsystems and the cryptographic power of a private shared reference frame*,  
Invited talk at the 1<sup>st</sup> Asia-Pacific Conference on Quantum Information Science, Tainan, Taiwan, 10-13/12/2004.
  20. *Introduction to Quantum Algorithms*,  
Invited tutorial talk at the Workshop on Quantum Information and Computation, NTU, Taipei, Taiwan, 14-15/12/2004.
  21. *Mixed State Entanglement in the Light of Pure State Entanglement Constrained by Superselection Rules*,  
Invited talk at Reference Frames and Superselection Rules in Quantum Information Theory, Perimeter Institute for Theoretical Physics, Waterloo, Canada, 12-16/7/2004.
  22. *Restrictions in Quantum Information Processing*,  
Invited talk at Quantum Theory: Reconsideration of Foundations-2, Växjö, Sweden, 1-6/6/2003.
  23. *Introduction to Quantum Information and Quantum Computation*,  
Five invited lectures at the NITP Summer School, Centre for the Subatomic Structure of Matter, Adelaide, Australia, 28-31/1/2003.
  24. *Introduction to Quantum Algorithms*,  
Invited lecture for short course at 2002 Conference on Optoelectronic and Microelectronic Materials and Devices (COMMAD), University of NSW, Australia, 10/12/2002.
  25. *From qubits to continuous variables*,  
Invited research Seminar, Quantum Information and Computation Summer School, University of Queensland, Australia, 15/2/2002.



## **Press and media accounts**

Expert comment in ‘**Subatomic particles have free will**’  
[Cosmos Magazine](#), 25 March 2009.

Interview on **Quantum cryptography and quantum communication**  
[IT Radio](#), 7 August 2008.

**No size too tiny to gauge**  
[The Australian](#), 21 November 2007.

Expert comment in ‘**Scientists see the light then make it disappear**’  
[Sydney Morning Herald](#), 8 February 2007.

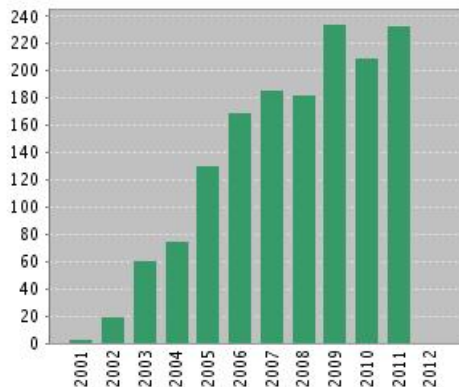
**At the forth photon, the time will be...**  
[New Scientist](#), 5 November 2005.

**Which Way is Up?**  
[New Scientist](#), 2 October 2004, p.32.

**Observing a photon no longer a seek-and-destroy mission**  
[UQ News](#), 13 May 2004.



### Citation report [ISI Web of Science, 29 December 2011]



<b>Publications with citation data:</b>	<b>63</b>
<b>Sum of times cited:</b>	<b>1505</b>
<b>Average citations per item:</b>	<b>23.89</b>
<b>h-index:</b>	<b>23</b> (23 publications with at least 23 citations)

### Most-cited publications

1. Nathan K. Langford, Rohan B. Dalton, Michael D. Harvey, Jeremy L. O'Brien, Geoff J. Pryde, Alexei Gilchrist, Stephen D. Bartlett, Andrew G. White, "Entangled qutrits: production and characterisation," *Physical Review Letters* **93**, 053601 (2004), 4 pages.  
**145 citations**
2. Stephen D. Bartlett, Terry Rudolph and R. W. Spekkens, "Classical and quantum communication without shared reference frames," *Physical Review Letters* **91**, 027901 (2003), 4 pages.  
**84 citations**
3. 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 (2007), 4 pages.  
**82 citations**
4. Stephen D. Bartlett, Barry C. Sanders, Samuel L. Braunstein, and Kae Nemoto, "Efficient Classical Simulation of Continuous Variable Quantum Information," *Physical Review Letters* **88**, 097904 (2002), 4 pages.  
**80 citations**
5. Stephen D. Bartlett, Terry Rudolph, and Robert W. Spekkens, "Reference frames, superselection rules, and quantum information," *Reviews of Modern Physics* **79**, 555 (2007), 54 pages.  
**77 citations**

## Refereed Journal Publications

### Major Reviews

1. Stephen D. Bartlett, Terry Rudolph, and Robert W. Spekkens,  
**Reference frames, superselection rules, and quantum information,**  
[Rev. Mod. Phys. \*\*79\*\*, 555 \(2007\)](#)  
[\[arXiv:quant-ph/0610030\]](#)

### Letters

In physics, Letters have high impact factor ( $>7$ ) and are reserved for key new results

2. Marcus Cramer, Martin B. Plenio, Steven T. Flammia, Rolando Somma, David Gross, Stephen D. Bartlett, Oliver Landon-Cardinal, David Poulin, and Yi-Kai Liu,  
**Efficient quantum state tomography,**  
[Nature Communications \*\*1\*\*:149 doi: 10.1038/ncomms1147 \(2010\)](#)  
[\[arXiv:1101.4366\]](#)
3. Rainer Kaltenbaek, Jonathan Lavoie, Bei Zeng, Stephen D. Bartlett, and Kevin J. Resch,  
**Optical one-way quantum computing with a simulated valence-bond solid,**  
[Nature Physics, \*\*6\*\*, 850-854 \(2010\)](#)  
[\[arXiv:0909.0990\]](#)  
See also: [News and Views by R. Raussendorf](#)
4. Stephen D. Bartlett, Gavin K. Brennen, Akimasa Miyake, and Joseph M. Renes,  
**Quantum computational renormalization in the Haldane phase,**  
[Phys. Rev. Lett., \*\*105\*\*, 010502 \(2010\)](#)  
[\[arXiv:1004.4906\]](#)
5. G. G. Gillett, R. B. Dalton, B. P. Lanyon, M. P. Almeida, M. Barbieri, G. J. Pryde, J. L. O'Brien, K. J. Resch, S. D. Bartlett, and A. G. White,  
**Experimental feedback control of quantum systems using weak measurements,**  
[Phys. Rev. Lett., \*\*104\*\*, 080503 \(2010\)](#)  
[\[arXiv:0911.4797\]](#)
6. Yeong-Cherng Liang, Nicholas Harrigan, Stephen D. Bartlett, and Terry Rudolph,  
**Nonclassical correlations from random measurements,**  
[Phys. Rev. Lett., \*\*104\*\*, 050401 \(2010\)](#)  
[\[arXiv:0909.0990\]](#)
7. B. L. Higgins, B. M. Booth, A. C. Doherty, S. D. Bartlett, H. M. Wiseman, G. J. Pryde,  
**Mixed state discrimination using optimal control,**  
[Phys. Rev. Lett. \*\*103\*\*, 220503 \(2009\)](#)  
[\[arXiv:0909.1572\]](#)
8. Andrew C. Doherty and Stephen D. Bartlett,  
**Identifying phases of matter that are universal for quantum computation,**

- [Phys. Rev. Lett. \*\*103\*\*, 020506 \(2009\)](#)  
[\[arXiv:0802.4314\]](#)
9. 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 \(2007\)](#)  
[\[arXiv:0709.2996\]](#)  
See also: [Editor's summary](#) | [News and Views by J. Dowling](#) | [Perspectives by J. O'Brien](#)
10. G. J. Pryde, J. L. O'Brien, A. G. White and Stephen D. Bartlett,  
**Demonstrating superior discrimination of locally-prepared states using nonlocal measurements,**  
[Phys. Rev. Lett. \*\*94\*\*, 220406 \(2005\)](#)  
[\[arXiv:quant-ph/0410203\]](#)
11. Nathan K. Langford, Rohan B. Dalton, Michael D. Harvey, Jeremy L. O'Brien, Geoff J. Pryde, Alexei Gilchrist, Stephen D. Bartlett, Andrew G. White,  
**Entangled qutrits: production and characterisation,**  
[Phys. Rev. Lett. \*\*93\*\*, 053601 \(2004\)](#)  
[\[arXiv:quant-ph/0312072\]](#)
12. G. J. Pryde, J. L. O'Brien, A. G. White, S. D. Bartlett, T. C. Ralph,  
**Measuring a photonic qubit without destroying it,**  
[Phys. Rev. Lett. \*\*92\*\*, 190402 \(2004\)](#)  
[\[arXiv:quant-ph/0312048\]](#)
13. Edo Waks, Eleni Diamanti, Barry C. Sanders, Stephen D. Bartlett, Yoshihisa Yamamoto,  
**Direct observation of non-classical photon statistics in parametric downconversion,**  
[Phys. Rev. Lett. \*\*92\*\*, 113602 \(2004\)](#)  
[\[arXiv:quant-ph/0307162\]](#)
14. Stephen D. Bartlett and Howard M. Wiseman,  
**Entanglement constrained by superselection rules,**  
[Phys. Rev. Lett. \*\*91\*\*, 097903 \(2003\)](#)  
[\[arXiv:quant-ph/0303140\]](#)
15. Stephen D. Bartlett, Terry Rudolph and R. W. Spekkens,  
**Classical and Quantum Communication without a Shared Reference Frame,**  
[Phys. Rev. Lett. \*\*91\*\*, 027901 \(2003\)](#)  
[\[arXiv:quant-ph/0302111\]](#)
16. Stephen D. Bartlett and William J. Munro,  
**Quantum Teleportation of Optical Quantum Gates,**  
[Phys. Rev. Lett. \*\*90\*\*, 117901 \(2003\)](#)  
[\[arXiv:quant-ph/0208022\]](#)
17. Stephen D. Bartlett and Barry C. Sanders,  
**Efficient Classical Simulation of Optical Quantum Circuits,**  
[Phys. Rev. Lett. \*\*89\*\*, 207903 \(2002\)](#)

[\[arXiv:quant-ph/0204065\]](#)

18. Stephen D. Bartlett, Barry C. Sanders, Samuel L. Braunstein, and Kae Nemoto,  
**Efficient Classical Simulation of Continuous Variable Quantum Information,**  
[Phys. Rev. Lett. \*\*88\*\*, 097904 \(2002\)](#)  
[\[arXiv:quant-ph/0109047\]](#)  
reprinted in *Quantum Information with Continuous Variables*, ed. S. L. Braunstein and A. K. Pati (Kluwer, Dordrecht, The Netherlands, 2003).
19. Barry C. Sanders, Hubert de Guise, Stephen D. Bartlett, and Weiping Zhang,  
**Geometric Phase of Three-level Systems in Interferometry,**  
[Phys. Rev. Lett. \*\*86\*\*, 369 \(2001\)](#)  
[\[arXiv:quant-ph/0010068\]](#)

### Articles:

20. A. Sergeevich, A. Chandran, J. Combes, S. D. Bartlett, and H. M. Wiseman,  
**Characterization of a qubit Hamiltonian using adaptive measurements in a fixed basis,**  
[Phys. Rev. A \*\*84\*\*, 052315 \(2011\)](#)  
[\[arXiv:1102.3700\]](#)
21. Courtney G. Brell, Steven T. Flammia, Stephen D. Bartlett, and Andrew C. Doherty,  
**Toric Codes and Quantum Doubles from Two-Body Hamiltonians,**  
[New J. Phys. \*\*13\*\*, 053039 \(2011\)](#)  
[\[arXiv:1011.1942\]](#)
22. B. L. Higgins, A. C. Doherty, S. D. Bartlett, G. J. Pryde, and H. M. Wiseman,  
**Multi-copy state discrimination: Thinking globally, acting locally,**  
[Phys. Rev. A \*\*83\*\*, 052314 \(2011\)](#)  
[\[arXiv:1012.3525\]](#)
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