

CONTACT INFORMATION	Email: bentoner@bentoner.com Web: http://bentoner.com	
NATIONALITY	Australian	
CURRENT ACTIVITIES	Founder and CEO, Draftable Pty Ltd	2012 –
	Co-founder and Senior Advisor, Vesparum Capital Pty Ltd	2012 –
	(Honorary) Fellow, School of Physics, The University of Melbourne	2008 –
PREVIOUS EMPLOYMENT	Centrum voor Wiskunde en Informatica , Amsterdam, The Netherlands (Dutch National Centre for Mathematics and Computer Science) Scientific Staff Member (postdoc) in group of Prof. Dr. Harry Buhrman	2006 – 2008
EDUCATION	California Institute of Technology , Pasadena, California, USA Ph. D. in Physics (conferred 8 June, 2007) <ul style="list-style-type: none"> • Thesis: <i>Quantifying quantum nonlocality</i> • Advisor: Prof. John Preskill M. S. in Physics (conferred 11 June, 2004)	2001 – 2006
	The University of Melbourne , Melbourne, Australia B. Sc. (Hons.) in Physics (conferred 7 March, 2001) <ul style="list-style-type: none"> • Honours thesis: <i>Topics in Higgs boson physics</i> • Supervisor: Prof. Ray Volkas 	1998 – 2000
AWARDS	Netherlands Organization for Scientific Research Veni grant, Innovational Research Incentives Scheme (€208,000; declined)	2008
	California Institute of Technology John Stager Stemple Memorial Prize in Physics Freshman Summer Institute Outstanding Research Award (mentor) Graduate Fellowship	2003 2003 2001 – 2002
	The University of Melbourne The Thomas H. Laby medal; Dixson Research Scholarship Rowden White Prize; Wyselaskie Natural Science Scholarship William Sutherland Prize in Physics II; Dean's Prize List Dixson Scholarships in Physics II, Pure Mathematics II, and Physics III Melbourne National Scholarship; Dean's Honours List	2000 1999 1998 1998 – 1999 1998 – 2000
	Victoria Day Award for Community and Public Service by a Younger Victorian (unable to accept due to absence overseas)	1999
	International Physics Olympiad Gold medal, Sudbury, Canada Bronze medal, Oslo, Norway	1997 1996

Melbourne Grammar School

Academic Head (Dux) of the School; Maximum Tertiary Entrance Rank (99.95) **1997**
Premier's VCE Awards in Chemistry, Mathematics, and Physics **1996 – 1997**
Gold Medal, Australian Chemistry Olympiad **1997**

PUBLICATIONS

16. **A Generalized Grothendieck Inequality and Nonlocal Correlations that Require High Entanglement**
J. Briët, H. Buhrman, and B. Toner
Comm. Math. Phys., 305(3), 827–843, 2011
15. **Entangled games are hard to approximate**
J. Kempe, H. Kobayashi, K. Matsumoto, B. Toner, and T. Vidick
SIAM J. Comput., 40(3), 848–877, 2011 (special issue for FOCS 2008)
- 15a. **Entangled games are hard to approximate**
J. Kempe, H. Kobayashi, K. Matsumoto, B. Toner, and T. Vidick
Proc. 49th IEEE Symp. on Foundations of Computer Science, pages 447–456, 2008
14. **Unique games with entangled provers are easy**
J. Kempe, O. Regev, and B. Toner
SIAM J. Comput., 39(7), 3207–3229, 2010
- 14a. **Unique games with entangled provers are easy**
J. Kempe, O. Regev, and B. Toner
Proc. 49th IEEE Symp. on Foundations of Computer Science, pages 457–466, 2008
13. **Finite de Finetti theorem for conditional probability distributions describing physical theories**
M. Christandl and B. Toner
J. Math. Phys. 50, 042104, 2009
12. **Simulating quantum correlations with finite communication**
O. Regev and B. Toner
SIAM J. Comput., 39(4), 1562–1580, 2009
- 12a. **Simulating quantum correlations with finite communication**
O. Regev and B. Toner
Proc. 48th IEEE Symp. on Foundations of Computer Science, pages 384–394, 2007
11. **Experimental demonstration of preparation contextuality and parity-oblivious multiplexing**
R. W. Spekkens, D. H. Buzacott, A. J. Keehn, B. Toner, and G. J. Pryde
Phys. Rev. Lett., 102, 010401, 2009
10. **Coherent state exchange in multi-prover quantum interactive proof systems**
D. Leung, B. Toner, and J. Watrous
Chicago J. of Theor. Comp. Sci., 2013(11), 2013
9. **Nonclassicality without entanglement enables bit commitment**
H. Barnum, O. Dahlsten, M. Leifer, and B. Toner
Proc. 2008 IEEE Information Theory Workshop, pages 386–390, 2008
8. **The quantum moment problem and bounds on entangled multi-prover games**
A. C. Doherty, Y.-C. Liang, B. Toner, and S. Wehner
Proc. 23rd IEEE Conf. on Computational Complexity, pages 199–210, 2008

7. **Monogamy of Bell correlations and Tsirelson's bound**
B. F. Toner and F. Verstraete
arXiv:quant-ph/0611001
6. **Grothendieck's constant and local models for noisy entangled quantum states**
A. Acín, N. Gisin, and B. Toner
Phys. Rev. A 73(6), 062105, 2006
5. **Monogamy of nonlocal quantum correlations**
B. Toner
Proc. R. Soc. A 465, 59–69, 2009
4. **Consequences and limits of nonlocal strategies**
R. Cleve, P. Høyer, B. Toner, and J. Watrous
Proc. 19th IEEE Conf. on Computational Complexity, pages 236–249, 2004
3. **Communication cost of simulating Bell correlations**
B. F. Toner and D. Bacon
Phys. Rev. Lett. 91, 187904, 2003
2. **Bell inequalities with auxiliary communication**
D. Bacon and B. F. Toner
Phys. Rev. Lett. 90, 157904, 2003
1. **Clash of symmetries on the brane**
A. Davidson, B. F. Toner, R. R. Volkas, and K. C. Wali
Phys. Rev. D 65(12), 125013, 2002

Authors in 2, 3, and 11 are ordered by contribution; in other papers the ordering is alphabetical.

INVITED
CONFERENCE
TALKS

6. **Unique games with entangled provers are easy**
Workshop on Quantum Algorithms and Complexity Theory
Centre for Quantum Technologies, National University of Singapore, 20 November, 2008
5. **Coherent state exchange in multi-prover quantum interactive proof systems**
Workshop on Information Primitives and Laws of Nature
ETH Zürich, Switzerland, 13 May, 2008
4. **Simulating quantum correlations with finite communication**
Conference on New Directions in the Foundations of Physics
College Park, MD, USA, 26 April, 2008
3. **The unique games conjecture with entangled provers is false**
CIFAR Workshop
Newport, RI, USA, 27 October, 2007
2. **Simulating quantum correlations with finite communication**
Dagstuhl Seminar on Algebraic Methods in Complexity Theory
Schloss Dagstuhl, Germany, 12 October, 2007
1. **De Finetti theorems for conditional probability distributions**
Workshop: Operational Probabilistic Theories as Foils to Quantum Theory
University of Cambridge, UK, 9 July, 2007

OTHER TALKS

13. **Symmetry and global independence in classical and quantum theories**
Perimeter Institute, 7 November, 2007
12. **Unique games with entangled provers are easy**
49th IEEE Symposium on Foundations of Computer Science, Philadelphia, PA, USA, 27 October, 2008
IQC Colloquium, University of Waterloo, 29 October, 2007
11. **Simulating quantum correlations with finite communication**
48th IEEE Symposium on Foundations of Computer Science, Providence, RI, USA, 22 October, 2007
10. **Monogamy of Bell correlations and Tsirelson's bound**
QIP 2007, Brisbane, Australia, 30 January, 2007
9. **De Finetti theorems for conditional probability distributions**
Theory of Computation Seminar, Computer Science Dept., Tel-Aviv University, 15 May, 2007
QAP workshop, Bristol, 20 April, 2007
Laboratoire de Recherche en Informatique, Université Paris-Sud, 7 December, 2006
University of Queensland, 1 September, 2006
8. **How to simulate quantum correlations with classical communication**
Trimester on quantum information, computation and complexity, Institute Henri Poincaré, Paris, 21 February, 2006
7. **Quantifying quantum nonlocality**
Perimeter Institute, 1 February, 2006
6. **Monogamy of nonlocal quantum correlations**
QIP 2006, Paris, 19 January, 2006
IQI/CPI Workshop on classical and quantum information security, Caltech, 17 December, 2005
5. **Local models for noisy quantum states**
QiSci Seminar, University of Queensland, 6 September, 2005
4. **Generalizing and quantifying the Kochen-Specker theorem**
QiSci Seminar, University of Queensland, 1 October, 2004
DIRO Seminar, Université de Montréal, 15 and 16 April, 2004
3. **Entanglement and cooperative games with incomplete information**
SQuInT, San Diego, CA, 20 February, 2004
2. **Quantifying quantum nonlocality**
Quantum Science & Technologies Group, Jet Propulsion Laboratory, 5 September, 2003
Institute for Quantum Information Science, University of Calgary, 3 July, 2003
1. **The communication cost of quantum correlations**
Department of Physics, University of Melbourne, 17 June, 2003
QIP 2003, MSRI, Berkeley, CA, 18 December, 2002

PROFESSIONAL SERVICE

Referee for journals: Annals of Physics, European Physical Journal D, Foundations of Physics, Journal of Physics A: Mathematical and Theoretical, New Journal of Physics, Quantum Information and Computation, Physical Review A, Physical Review Letters, Theory of Computing

Referee for conferences: IEEE Conference on Computational Complexity (CCC), ERATO conference on Quantum Information Science (EQIS), European Symposium on Algorithms (ESA), IEEE Symposium on Foundations of Computer Science (FOCS), International Colloquium on Automata, Languages and Programming (ICALP), IEEE International Symposium on Information Theory (ISIT), ACM Symposium on Theory of Computing (STOC), Quantum Information Processing (QIP)

	Opposed at Ph.D. defence of Robert Špalek	2006
	Committee member, Victorian Branch of the Australian Institute of Physics	1999 – 2000
OTHER ACADEMIC EXPERIENCE	California Institute of Technology , Pasadena, CA, USA	
	Teaching Assistant for:	
	• Ph/CS 219: Quantum Computation	2003 – 2004
	• Ph12: Waves, quantum physics, and statistical mechanics	2002 – 2003
	Freshman Summer Institute Research Mentor	2003
	The University of Melbourne , Melbourne, Australia	
	Laboratory Demonstrator, Part I Laboratories, School of Physics	2000 – 2001
	The Australian National University , Canberra, Australia	
	Summer Research Scholar at Mount Stromlo Observatory	1999 – 2000
	Australian Science Olympiads , Canberra, Australia	
Senior Tutor, Examiner, and Victorian Convenor (Physics programme)	1997 – 1999	