Joshua Combes

1111 Engineering Dr
Boulder, CO 80309

+1-303-960-7008
joshua.combes@gmail.com
skype: joshuacombes

Education

Griffith University   Brisbane, Australia
Doctor of Philosophy (Physics)   Feb. 2005 - Feb 2010

- Thesis: "Rapid measurement and purification using quantum feedback control".

Bachelor of Electronic Engineering: majoring in communications   Feb. 1999 - Nov 2003

- Thesis: "Spin Squeezing and Optimal States for Quantum Interferometry"

Bachelor of Science: majoring in physics and applied mathematics   Feb. 1999 - Nov 2001

- Thesis: "An Introduction to Spin Squeezing: are spin squeezed states massively entangled?"

Research Experience

The University of Colorado Boulder   Boulder, USA
Assistant Professor   Mar. 2020 - on going

The University of Queensland   Brisbane, Australia
Australian Research Council DECRA Fellow   Jun. 2019 - Dec. 2019

Rigetti Quantum Computing   Berkeley, USA
Senior Quantum Theorist (applications and device physics groups)   Jan. 2018 - Jun. 2019

The University of Queensland   Brisbane, Australia
Australian Research Council DECRA Fellow   Jul. 2016 - Jan. 2018

The Perimeter Institute for Theoretical Physics   Waterloo, Canada
Postdoctoral Research Fellow   Aug. 2014 - Aug. 2016

The Institute for Quantum Computing (The University of Waterloo)   Waterloo, Canada
Postdoctoral Research Fellow   Aug. 2014 - Aug. 2016

The University of Queensland   Brisbane, Australia
Postdoctoral Research Fellow   May. 2014 - Jul. 2014

The University of New Mexico   Albuquerque, USA
Postdoctoral Researcher   Jan. 2011 - Apr. 2014

The University of Queensland   Brisbane, Australia
Visiting Research Fellow   Mar. 2013 - May. 2013

Kavli Institute for Theoretical Physics   Santa Barbara, USA
Visiting Research Fellow   Jan. 2013 - Mar. 2013

The University of Queensland   Brisbane, Australia
Visiting Research Fellow   Mar. 2012 - Jun. 2012

The Australian National University   Canberra, Australia
Research Fellow   Sep. 2010 - Dec. 2010

Griffith University Brisbane, Australia
Research Fellow Feb. 2010 - Sep. 2010

University of Electro-Communications Chofu, Japan
Engineer - Research Intern (semiconductor device design) Nov. 2002 - Feb. 2003

University of Electro-Communications Chofu, Japan
Engineer - Research Intern (semiconductor device design) Dec. 2001 - Jan. 2002

Research Interests

Quantum information and computation

Realistic noise models for quantum error correction, new gates in super-conducting and optical technologies, Majorana physics for quantum computation

Quantum: metrology, control, and measurement theory

Amplification; modeling of photodetectors; non Markovian measurements; feedback control; adaptive measurements

Foundations of quantum mechanics

Ontological and epistemic toy models for quantum mechanics; philosophical interpretations of probability in quantum theory

Awards

- 2016 Australian Research council Discovery Early Career Researcher Award
- 2014 - Perimeter Institute for theoretical physics Fellow
- 2009 - Asher Peres summer school scholar
- 2003 - Research thesis award. Faculty of Engineering, School of Microelectronic Engineering Griffith University
- 2002 - Griffith University Award for Academic Excellence
- 2001 - Griffith University Award for Academic Excellence
- 2001 - Australian Institute of Nuclear Science and Engineering (AINSE) winter school scholarship
- 1999 - Griffith University Award for Academic Excellence

Teaching Experience

University of Colorado Boulder, USA
Lecturer August 2020- on going

- 3000 level: 44 lectures. "Microelectronics".
- 5000 level: 44 lectures. "Foundations of Quantum Engineering".
- 4000/5000 level: 44 lectures. "How to build a quantum computer".

University of Queensland Brisbane, Australia
Lecturer May 2017

- Thrid year: 14 lectures based on Townsend Quantum Mechanics a Modern Approach chapters 10,11,12, and 13. The subject was "PHYS3040 –Quantum Physics". Very high teaching evaluations.
- Second year: 1 lecture and 1 tutorial on interpretations of classical probability theory (Frequentist, Bayesian, Propensity etc). The subject was "PHIL2011 –Philosophy of Modern Physics".

Griffith University Brisbane, Australia
Lecturer March 2010

- First year: 2 lectures on how to write an essay in the subject "Science, Technology and Society".
- Second year: 6 lectures on quantum physics in the subject "Life, the Universe and Everything".

Griffith University   Brisbane, Australia
Teaching Assistant / Tutor / Occasional lecturer   Feb. 2004 - Jun 2010

- First year:
  physics (mechanics, optics, waves, E&M, thermodynamics, special relativity, quantum theory);
  mathematics (complex numbers, integral and differential calculus, vector algebra, probability, linear algebra);
  statistics (frequentist statistics, hypothesis testing, t-tests, ANOVA, regression analysis, χ^2 tests, SPSS);
  programming for scientists (Pascal and Matlab);
  "Science, Technology and Society" (ethics and sociology for scientists).

- Second year:
  "Life, the Universe and Everything" (history and philosophy of science, quantum theory, time, cosmology, biology);
  "Skepticism, Science and the Paranormal" (critical thinking, philosophical and scientific "skepticism")

Griffith University   Brisbane, Australia
Lecturer A   Feb. 2004 - Feb 2005

- Course convener for second year physics laboratories

- Demonstrator for first, second and third year physics laboratories

- Lecturer of physics and maths bridging (high school to university) course. Lecture time was 2×8 hours.

Professional Service

- Developed a cross college Quantum Engineering minor.

- Undergraduate curriculum committee member 2020, 2021, 2022

- Refereeing (Grants): NSF, ARC DECRA, ARC DP

- Refereeing (Physics): Nature, Science, Nature Physics, PRL, PRX, PRB, PRA, NJP, J. Phys. A, J. Phys. B, QIP

- Refereeing (Engineering): IEEE Transactions on Automatic Control , Systems & Control Letters

- Founder and chief organizer of Byron Bay Quantum physics workshop 2017, co-organizer 2019 and 2020

- Seminar coordinator: Center for Quantum Information and Quantum Control (University of New Mexico) 2011-2013

- Chaired quantum control sessions at SQuINT 2012 and 2013. Chaired a conference session (February) and a discussion session at the Kavli Institute for Theoretical Physics in January 2013. Chair at the APS march meeting 2014

- Organized a quantum metrology session at the APS DAMOP meeting in 2014

- Advisory board member for the Center for Quantum Dynamics at Griffith University 2007-2009

- Seminar coordinator: Center for Quantum Dynamics (Griffith University) 2007-2010

Publications

Publications statistics and summary:
52 total publications,
2086 citations,
H-index 25 see [Google scholar profile](),
10 papers from PhD
42 papers post PhD (of those paper 9 as 1st author and 13 as senior / last author).

1. *in preparation:* J. Combes et al., 'Modular Phase: measurement, metrology, and codes".

2. J. Shao, J. Combes, J. Hauser, M. M. Nicotra, "A Projection Operator-based Newton Method for the Trajectory Optimization of Closed Quantum Systems", arXiv:2111.08795 (2021).

3. J. Gross, B. Q. Baragiola, T.M. Stace, J. Combes, "Master equations and quantum trajectories for squeezed wave packets", arXiv:2109.05435 (2021).

4. A. Asfaw et. al., Building a Quantum Engineering Undergraduate Program, arXiv:2108.01311 (2021).

5. C.R. McRae, G. M. Stiehl, H. Wang, S.-X. Lin, S. A. Caldwell, D. P. Pappas, J. Mutus, J. Combes, "Perspective: Reproducible Coherence Characterization of Superconducting Quantum Devices", Appl. Phys. Lett. **119**, 100501 (2021)

6. J. M. Epstein, K. B. Whaley, J. Combes, "Quantum noise limits for a class of nonlinear amplifiers",Phys. Rev. A **103**, 052415 (2021).

7. J. Combes, "A self-correcting qubit", Nature Physics, 1-2 (2021).

8. A. L. Grimsmo, J. Combes, B. Q. Baragiola, "Quantum computing with rotation-symmetric bosonic codes", Phys. Rev. X **10**, 011058 (2020).

9. N. Didier, E. A. Sete, J. Combes, M. P. da Silva, "AC flux sweet spots in parametrically-modulated superconducting qubits", Phys. Rev. Applied **12**, 054015 (2019).

10. L. A. Howard, T. J. Weinhold, J. Combes, F. Shahandeh, M. R. Vanner, M. Ringbauer, A. G. White, "Hypercube States for Sub-Planck Sensing", Phys. Rev. Lett. **123**, 020402 (2019).

11. J. Combes and D. J. Brod, "Two-photon self-Kerr nonlinearities for quantum computing and quantum optics", Phys. Rev. A **98**, 062313 (2018).

12. A. Rosario Hamann, C. Müller, M. Jerger, M. Zanner, J. Combes, M. Pletyukhov, M. Weides, T. M. Stace, A. Fedorov, "Nonreciprocity realized with quantum nonlinearity", Phys. Rev. Lett. **121**, 123601 (2018)

13. J. A. Gross, C. M. Caves, G. J. Milburn, J. Combes, "Qubit models of continuous measurements", Quantum Science and Technology **3**, 024005 (2018).

14. J. Combes, C. Ferrie, M. S. Leifer, M. F. Pusey, "Why protective measurement does not establish the reality of the quantum state", Quantum Studies: Mathematics and Foundations **5**, 189 (2018).

15. C Müller, J. Combes, A. R. Hamann, A. Fedorov, T. M. Stace, "Nonreciprocal Atomic Scattering: A saturable, quantum Yagi-Uda antenna", Phys. Rev. A **96**, 053817 (2017).

16. B. Q. Baragiola and J. Combes, "Quantum trajectories for propagating Fock states", Phys. Rev. A **96**, 023819 (2017).

17. J. Combes, C. Granade, C. Ferrie, S. T. Flammia, "Logical Randomized Benchmarking", arXiv:1702.03688

18. J. Combes, J. Kerckhoff, M. Sarovar, "The SLH framework for modeling quantum input-output networks", Advances in Physics: X **2**, No. 3, 784 (2017).

19. D. J. Brod and J. Combes, "A passive CPHASE gate via cross-Kerr nonlinearities", Phys. Rev. Lett. **117**, 080502 (2016).

20. D. J. Brod, J. Combes, J. Gea-Banacloche, "Two photons co- and counter-propagating through N cross-Kerr sites", Phys. Rev. A **94**, 023833 (2016).

21. Sahar Basiri-Esfahani, Casey R Myers, Joshua Combes, G. J. Milburn, "Quantum and classical control of single photon states via a mechanical resonator", New J. Phys. **18**, 063023 (2016).

22. J. Combes, N. Walk, A. P. Lund, T. C. Ralph, C. M. Caves, "Models of reduced-noise, probabilistic linear amplifiers", Phys. Rev. A **93**, 052310 (2016).

23. G. C. Knee, J. Combes, C. Ferrie, E. M. Gauger, "Weak-value amplification: state of play", Quantum Measurements and Quantum Metrology **3**, 32 (2016)

24. C. Granade, J. Combes, D. G. Cory, "Practical Bayesian Tomography", New J. Phys. **18**, 033024 (2016).

25. J. Combes, C. Ferrie, "Cost of postselection in decision theory", Phys. Rev. A 92, 022117 (2015).

26. S. Basiri-Esfahani, C. R. Myers, A. Armin, J. Combes, G. J. Milburn, "An integrated quantum photonic sensor based on Hong-Ou-Mandel interference", Opt. Express **23**(12), 16008-16023 (2015).

27. C. Ferrie, J. Combes, "Classical correlation alone supplies the anomaly to weak values", arXiv:1410.8067

28. J. Combes, C. Ferrie, C. Cesare, M. Tiersch, G. J. Milburn, H. J. Briegel, C. M. Caves, "In-situ characterization of quantum devices with error correction", arXiv:1405.5656

29. J. Combes, A. Denney, and H. M. Wiseman, "Rapid readout of a register of qubits using open-loop quantum control", Phys. Rev. A **91**, 022305 (2015).

30. C. Ferrie and J. Combes, "How the result of a single coin toss can turn out to be 100 heads", Phys. Rev. Lett. **113**, 120404 (2014).

31. C. Teo, J. Combes, H. M. Wiseman, "Global versus local optimality in feedback-controlled qubit purification: new insights from minimizing Rényi entropies", New J. Phys. **16**, 105010 (2014).

32. B. Fan, G. Johansson, J. Combes, G. J. Milburn, T. M. Stace, "Non-absorbing high-efficiency counter for itinerant microwave photons", Phys. Rev. B **90**, 035132 (2014).

33. J. Combes, C. Ferrie, Z. Jiang, and C. M. Caves, "Quantum limits on post-selected, probabilistic quantum metrology", Phys. Rev. A **89**, 052117 (2014).

34. S. R. Sathyamoorthy, L. Tornberg, A. F. Kockum, B. Q. Baragiola, J. Combes, C.M. Wilson, T. M. Stace, and G. Johansson, "Quantum non-demolition detection of a propagating microwave photon", Phys. Rev. Lett. **112**, 093601 (2014).

35. C. Ferrie and J. Combes, "Weak Value Amplification is Suboptimal for Estimation and Detection", Phys. Rev. Lett. **112**, 040406 (2014).

36. S. Pandey, Z. Jiang, J. Combes, C. M. Caves, "Noise in phase-preserving linear amplifiers", AIP Conference Proceedings **53**, 1633 (2014).

37. S. Pandey, Z. Jiang, J. Combes, C. M. Caves, "Quantum limits on probabilistic amplifiers", Phys. Rev. A **88**, 033852 (2013).

38. B. Fan, A. F. Kockum, J. Combes, G. Johansson, I.-C. Hoi, C. M. Wilson, P. Delsing, G. J. Milburn, and T. M. Stace, "Breakdown of the Cross-Kerr Scheme for Photon Counting", Phys. Rev. Lett. **110**, 053601 (2013).

39. S. Sridharan, M. Yanagisawa, and J. Combes, "Optimal rotation control for a qubit subject to continuous measurement", arXiv:1211.5617.

40. J. E. Gough, M. R. James, H. I. Nurdin, and J. Combes, "Quantum filtering for systems driven by fields in single-photon states or superposition of coherent states", Phys. Rev. A **86**, 043819 (2012).

41. C. M. Caves, J. Combes, Z. Jiang, and S. Pandey, "Quantum limits on phase-preserving linear amplifiers", Phys. Rev. A **86**, 063802 (2012).

42. B. Q. Baragiola, R. L. Cook, A. M. Brańczyk, and J. Combes, "N-Photon wave packets interacting with an arbitrary quantum system", Phys. Rev. A **86**, 013811 (2012).

43. R. Ruskov, J. Combes, K. Mølmer, and H. M. Wiseman, "Qubit purification speed-up for three complementary continuous measurements", Phil. Trans. R. Soc. A **370**, 5291 (2012).

44. 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).

45. J. Combes, H. M. Wiseman, "Maximum Information Gain in Weak or Continuous Measurements of Qudits: Complementarity Is Not Enough", Phys. Rev. X **1**, 011012 (2011).

46. J. Combes, H. M. Wiseman, "Quantum feedback for rapid state preparation in the presence of control imperfections", J. Phys. B At. Mol. and Opt. Phys. **44**, 154008 (2011).

47. J. F. Ralph, J. Combes, H. M. Wiseman, "An efficient measurement scheme for the characterization of single qubit dynamics", Quantum Inf. Process. **11**, 1523 (2012). (published online, 2011).

48. J. Combes, H. M. Wiseman, K. Jacobs, and A. J. O'Connor, "Rapid purification of quantum systems by measuring in a feedback-controlled unbiased basis", Phys. Rev. A, **82**, 022307 (2010).

49. J. Combes, H. M. Wiseman and A. J. Scott, "Replacing Quantum Feedback with Open-Loop Control and Quantum Filtering", Phys. Rev. A, **81**, 020301 (2010).

50. J. Combes, H. M. Wiseman and K. Jacobs, "Rapid Measurement of Quantum Systems Using Feedback Control", Phys. Rev. Lett., **100**, 160503 (2008).

51. J. Combes and K. Jacobs, "Rapid State-Reduction of Quantum Systems Using Feedback Control", Phys. Rev. Lett., **96**, 010504 (2006).

52. J. Combes and H. M. Wiseman, "States for phase estimation in quantum interferometry", J. Opt. B: Quantum Semiclass. Opt., **7**, 14, (2005).

Presentations

1. Quantum metrology and error correction
   NSF Sense Seminar (December 2021)

2. Tutorial on continuous variable quantum computing
   Boulder quantum optics meeting (October 2021)

3. Rotation symmetric Bosonic codes
   Duke quantum seminar (September 2021)

4. A tutorial on the SLH formalism NIST (February 2021)

5. Rotation symmetric Bosonic codes
   NYU quantum seminar (2020)

6. Rotation symmetric Bosonic codes
   QSI Seminar, UTS (May 2020)

7. Designer Photon-Photon interactions for quantum computing
   Quantum seminar series, University of Queensland (November 2019)

8. Rotation symmetric Bosonic codes
   Centre for quantum dynamics seminar, Griffith University (November 2019)

9. How to model almost any quantum experiment: a tutorial on the SLH formalism
   RMIT seminar, Melbourne (October 2019)

10. Nonlinear quantum optics: theory, engineering, and applications
    Department Seminar, CU Boulder (April 2019)

11. Nonlinear quantum optics: theory, engineering, and applications
    Department Seminar, UCLA (February 2019)

12. Nonlinear quantum optics: theory, engineering, and applications
    Department Seminar, Sydney University (December 2018)

13. Designer Photon-Photon interactions
    Invited talk: Waveguide Quantum ElectroDynamics 2018, Palermo Italy (6th June 2018)

14. Nonlinear quantum optics: theory, engineering, and applications
    Department Seminar, University of New Mexico (January, 2018)

15. How to model almost any quantum experiment: a tutorial on the SLH formalism
    Invited talk: APS March meeting, Los Angeles (March 2018)

16. Input-output theory for chiral Majorana fermions
    APS March meeting, Los Angeles (March 2018)

17. Tales from the long and winding road of a postdoc
    Invited talk: Conference on Optics, Atoms and Laser Applications, International OSA Network of Students,
    University of Queensland, (November 2017)

18. A quest to understand the role of experiments in quantum theory
    Invited talk: Conference on Optics, Atoms and Laser Applications, International OSA Network of Students,
    University of Queensland, (November 2017)

19. An introduction to modern quantum theory for High school teachers
    Annual meeting of the Science Teachers Association of Queensland, University of Queensland, (November 2017)

20. How to model any quantum optics experiment
    Quantum Information seminar, University of Queensland, (October 2017)

21. How to model any quantum optics experiment
    RLE seminar, Massachusetts Institute of Technology, (October 2017)

22. How to model any experiment
    University of California Berkeley, (July 2017)

23. A passive CPHASE gate using cross-Kerr nonlinearities
    Rigetti quantum computing (July 2017)

24. How to model any experiment
    Invited talk: Last Frontiers in Quantum Information Science workshop, Seward, AK, (June 2017)

25. Single photon cross-Kerr nonlinearities help quantum computation
    APS March meeting, New Orleans (March 2017)

26. Single photon cross-Kerr nonlinearities help quantum computation
    APPC-AIP Congress (7th December 2016)

27. A passive CPHASE gate via cross-Kerr nonlinearities
    Quantum Photonic Connections Conference, University of Sydney, (25th November 2016)

28. The sound of silence: Caves' bound and quantum limited amplification
    Invited talk: Caves' Fest.: A celebration of Carlton Caves 66'th Birthday, (14th October 2016)

29. Characterizing time dependent sources and gates
    Center for Quantum Information and Control,University of New Mexico (13th October 2016)

30. Logical Randomized Benchmarking
    Southwest Quantum Information and Technology (SQuInT) annual meeting, (16th March 2016)

31. Reconsidering weak values
    University of California Berkeley, (7 December 2015)

32. Characterizing time dependent sources and gates
    Invited talk: University of California Berkeley, (1 December 2015)

33. Times They Are A-Changin: characterizing time dependent sources and gates
    Physics of Information Lab, University of Waterloo, (7th October 2015)

34. Characterizing time dependent sources and gates
    Invited talk: Principles and Applications of Control in Quantum Systems (PRACQSYS), Sydney, (24 July 2015)

35. Inferring Temporal Correlations
    Invited talk: Last Frontiers in Quantum Information Science workshop, Homer, AK, (23th June 2015)

36. Quantum measurements: new, better, easier,
    Invited talk: New York State Section American Physical Society symposium, Fredonia, (24th April 2015)

37. Pricing postselection: the cost of indecision in decision theory
    APS March meeting, San Antonio (4th March 2015)

38. Photodetection theory for multimode fields
    Invited talk: DARPA Workshop on Fundamental Limits to Photon Counting: Washington, DC, (20th January 2015)

39. How the result of a single coin toss can turn out to be 100 heads
    Condensed Matter Group Meeting, Perimeter Institute for Theoretical Physics, (24th October 2014)

40. Reconsidering weak values
    Invited talk: Quantum Information & Quantum Control, University of Toronto (17th October 2014)

41. Understanding and classifying quantum control through quantum circuits
    Invited talk: Gordon Research Seminar on Quantum Science, Stonehill College (26th July 2014)

42. Fundamental quantum limits of probabilistic metrology
    Centre for Quantum Dynamics seminar, Griffith University (13th June 2014)

43. Fundamental quantum limits of probabilistic metrology
    Quantum Optics Quantum Information Theory Group, University of Queensland (20th May 2014)

44. How the result of a single coin toss can turn out to be 100 heads
    Philosophy of Physics meeting, University of Queensland (14th May 2014)

45. Error correction and machine learning: one man's syndrome measurement is another man's treasure
    APS March meeting, Denver (5th March 2014)

46. Probabilistic protocols in quantum information
    Southwest Quantum Information and Technology (SQuInT) annual meeting, (22nd February 2014)

47. Probabilistic protocols in quantum information
    Perimeter Institute for Theoretical Physics, (13th February 2014)

48. Quantum limited sensing and transduction
    Invited talk: Workshop on Scalable Information Processing with Quantum Nano-Photonics, Raytheon BBN Technologies (24th January 2014)

49. Photodetection theory for propagating interacting multimode fields
    Invited talk: Relativistic Quantum Information 7 Workshop, Customs house Brisbane (10th December 2013)

50. Quantum measurement estimation and control
    Invited talk: College of Engineering and Computer Science, the Australian National University (27th November 2013)

51. Photodetection theory for propagating multimode fields
    Center for Quantum Information and Control,University of New Mexico (24th September 2013)

52. Photodetection theory for multimode fields
    White group meeting, University of Queensland (13th May 2013)

53. Understanding and classifying quantum control through quantum circuits
    Optomechanics seminar, University of Queensland (10th May 2013)

54. Arbitrary quantum systems interacting with N-photon wavepackets
    Quantum Seminars, Macquarie University (24th April 2013)

55. Understanding and classifying quantum control through quantum circuits
    Theory group meeting, Sydney University (23rd April 2013)

56. Itinerant photons old news and new directions
    Invited talk: STINT Quantum Optics with Microwave Photons Workshop, Stradbroke Island (18th April 2013)

57. Understanding and classifying quantum control through quantum circuits
    Centre for Quantum Dynamics seminar, Griffith University (11th April 2013)

58. Quantum circuits and coherent quantum feedback control
    Kavli Institute for Theoretical Physics, University of California Santa Barbara (10th January 2013)

59. An introduction to control + some quantum circuits
    Center for Quantum Information and Control,University of New Mexico (31st October 2012)

60. Recent and ongoing projects + speculation
    Keck institute: Quantum Communication, Sensing and Measurement in Space, Caltech (28th June 2012)

61. Arbitrary quantum systems interacting with N-photon wavepackets
    White group meeting, University of Queensland (20th May 2012)

62. Arbitrary quantum systems interacting with N-photon wavepackets
    Centre for Quantum Dynamics seminar, Griffith University (11th May 2012)

63. Arbitrary quantum systems interacting with N-photon wavepackets
    Optomechanics seminar, University of Queensland (23nd March 2012)

64. Quantum trajectories for systems probed by fields in multimode Fock and Schrodinger cat states
    APS March meeting, Boston (2nd March 2012)

65. Quantum feedback and all that
    Center for Quantum Information and Control,University of New Mexico (25th January 2012)

66. Extracting information from quantum systems using measurement and feedback control
    Invited talk: Gordon Research conference on Quantum Control of Light & Matter, Mt Holyoke College (4th August 2011)

67. Efficient methods for the characterisation of qbit Hamiltonian dynamics
    Southwest Quantum Information and Technology (SQuInT) annual meeting, (19th February 2011)

68. How to perform a rapid position measurement
    Max-Planck-Institut für Quantenoptik in the Rempe Group (14th June 2010)

69. Rapid readout of a register using random permutations
    Center for Quantum Information and Control,University of New Mexico (4th February 2010)

70. Fast readout of a quantum register using feedback control
    Centre for Quantum Computer Technology annual workshop (11th February 2009)

71. Rapid measurement of quantum systems using feedback control
    18th Australian Institute of Physics congress, Adelaide (30th Nov - 5th Dec 2008)

72. Rapid measurement of quantum register using feedback control
    University of California, Berkeley (15th September 2008)

73. Rapid measurement of quantum systems using feedback control
    University of Massachusetts Boston (3rd September 2008)

74. On the quantum ontolotical excess baggage theorem
    Griffith University (14th April 2008)

75. Rapid measurement of quantum register using feedback control
    Australian Institute of Physics QLD branch AGM (9th November 2007)

76. Rapid measurement of quantum register using feedback control
    UQ - GU mini theory workshop, University of Qeensland (November 2007)

77. Non deterministic purification using feedback control
    Australian National University (26th July 2007)

78. Rapid purification using feedback control
    UQ - GU mini theory workshop, Griffith University (November 2005)

79. Towards rapid purification of a quantum register
    PhD confirmation seminar, Griffith University (16th November 2005)

80. Spin Squeezing and Optimal states for Interferometry
    Griffith University (25th May 2003)

81. Are spin squeezed states massivley entangled?
    Griffith University Seminar (November 2002)

Joshua Combes

1111 Engineering Dr
Boulder, CO 80309

+1-303-960-7008
joshua.combes@gmail.com
skype: joshuacombes

References

Carlton M. Caves
Distinguished Professor
University of New Mexico
ccaves@unm.edu

Gerard J. Milburn
Professor
University of Queensland
milburn@physics.uq.edu.au

Howard M. Wiseman
Professor
Griffith University
h.wiseman@griffith.edu.au

Kurt A. Jacobs
Professor
University of Massachusetts (Boston)
kurt.jacobs@umb.edu