Christopher Thomas Chubb

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University of Sydney, NSW 2006, Australia.

Updated March 2018

EDUCATION

University of Sydney, Sydney, NSW, Australia

Doctor of Philosophy   2015 – present
- Supervisors: A/Prof. Steven T. Flammia, Dr. Marco Tomamichel
- Research Training Program Scholarship (2015 – present)
- University of Sydney Merit Award (2015 – present)
- Australian Institute for Nanoscale Science and Technology Postgraduate Scholarship — John Makepeace Bennett Gift (2017 – present)

Bachelor of Science (Advanced Mathematics) (Honours)   2011 – 2014
- Majors: Physics and Mathematics
- First Class Honours with University Medal
- WAM: 86.4, SciWAM: 87.2, Honours: 94
- School of Physics Honours Scholarship (2014)
- Physics Foundation Scholarship No. 3 (2014)
- School of Physics Summer Vacation Scholarship (2013/2014).
- Academic Merit Prize (2013, 2014)
- Dean's List of Academic Excellence (2011, 2012, 2013)
- Talented Student Program (2012, 2013)
- Mathematics Special Student Programs (2011)
- Chemistry Special Student Programs (2011)

Monash University, Melbourne, Victoria, Australia

Australian Science Physics Olympiad Summer School   Jan. 2010

TOPICAL REVIEWS

J.C. Bridgeman and **C.T. Chubb**, "Hand-waving and Interpretive Dance: An Introductory Course on Tensor Networks", invited Topical Review, *Journal of Physics A: Mathematical and Theoretical* **50** 223001, arXiv:1603.03039, (2017). Selected for Highlights of 2017

REFEREED RESEARCH PUBLICATIONS

C.T. Chubb, V.Y.F. Tan, and M. Tomamichel, "Moderate deviation analysis for classical communication over quantum channels", *Communications in Mathematical Physics* **355**, 3, arXiv:1701.03114, (2017).

C.T. Chubb and S.T. Flammia, "Approximate symmetries of Hamiltonians", *Journal of Mathematical Physics* **58**, 082202, arXiv:1608.02600, (2017).

C.T. Chubb and S.T. Flammia, "Computing the Degenerate Ground Space of Gapped Spin Chains in Polynomial Time", *Chicago Journal of Theoretical Computer Science* **2016**, 9, arXiv:1502.06967, (2016).

PREPRINTS

C. Bény, **C.T. Chubb**, T. Farrelly, and T.J. Osborne, "Energy cost of entanglement extraction in complex quantum systems", arXiv:1711.06658, (2017).

C.T. Chubb, M. Tomamichel, and K. Korzekwa, "Beyond the thermodynamic limit: finite-size corrections to state interconversion rates", arXiv:1711.01193, (2017).

CONFERENCE SUBMISSIONS

Beyond the thermodynamic limit: finite-size corrections to state interconversion rates
- Poster presented at the 21th Annual Conference on Quantum Information Processing, QuTech, Delft, The Netherlands, (2018).

Moderate deviation analysis for classical communication over quantum channels
- Talk presented at the 21th Annual Conference on Quantum Information Processing, QuTech, Delft, The Netherlands, (2018).
- Talk presented at Beyond I.I.D. in Information Theory, Singapore, Singapore, (2017).

- Talk presented at IEEE International Symposium on Information Theory, Aachen Germany, (2017).
- Talk accepted to Theory of Quantum Computation, Communication and Cryptography, Université Pierre et Marie Curie, Paris, France, (2017).

Approximate symmetries of Hamiltonians:

- Talk presented at Theory of Quantum Computation, Communication and Cryptography, Université Pierre et Marie Curie, Paris, France, (2017).
- Poster presented at the 20th Annual Conference on Quantum Information Processing, StationQ, Seattle, Washington, (2017).
- Poster presented at the EQuS Workshop, ARC Centre of Excellence for Engineered Quantum Systems, Noosa, Australia, (2016).
- Talk and poster presented at the Joint 13th Asia Pacific Physics Conference and 22nd Australian Institute of Physics Congress, Brisbane, Australia, (2016).
- Poster presented at the Quantum Matter Conference, Centro de Ciencias de Benasque Pedro Pascual, Benasque, Spain, (2016).

Polynomial-time ground state approximation of degenerate gapped spin chains:

- Poster presented at the EQuS Workshop, ARC Centre of Excellence for Engineered Quantum Systems, Gold Cost, Australia, (2015).
- Poster presented at the Workshop on Frontiers of Quantum Information and Computer Science workshop, Joint Center for Quantum Informaton and Computer Science, University of Maryland, College Park, Maryland, (2015).
- Poster presented at the 18th Conference on Quantum Information Processing, University of Technology Sydney, Sydney, Australia, (2015).
- Talk presented at the 21st Australian Institute of Physics Congress, Australian National University, Canberra, Australia, (2014).

CONFERENCE PROCEEDINGS

C.T. Chubb, V.Y.F. Tan, and M. Tomamichel, "Moderate deviation analysis for classical communication over quantum channels", *Proceedings of the 2017 IEEE International Symposium on Information Theory (ISIT)*, 1544–1548, (2017).

REFEREEING

Journals:

- Quantum Information and Computing (QIC)
- Communications in Mathematical Physics (CMP)
- IEEE Transactions on Information Theory (TIT)
- Quantum Journal

Conferences:

- Annual Conference on Quantum Information Processing (QIP)
- IEEE Symposium on Information Theory (ISIT)
- International Conference on Quantum Cryptography (QCrypt)
- International Conference on Information Technology and Science (ICITS)

RESEARCH PROJECTS

Honours Project: "Efficient approximation of degenerate ground states of gapped spin chains: The unfrustrated case", supervised by Dr. Steven T. Flammia.

School of Physics Summer Scholarship Project. Supervised by Dr. Steven T. Flammia.

Chemistry Special Studies Program: "The Sydona laboratory project on coordination chemistry". Supervised by A/Prof. Louis Rendina.

TEACHING

Computational lab tutor for Senior Statistical Mechanics (2017).

"Hand-waving and Interpretive Dance: An Introduction to Tensor Networks". Informal 7 lecture course presented with Jacob C. Bridgeman at the *University of Sydney* (2016, 2017).

STUDENTS   Doriane Drolet. Exchange student from Université de Sherbrooke (2016).

David M. Long. Senior project student (2016).

Eric Huang. Talented Students Programme project student (2016).

REFERENCES   A/Prof. Steven T. Flammia, Centre of Engineered Quantum Systems, School of Physics, University of Sydney, steven.flammia@sydney.edu.au.

Dr. Marco Tomamichel, Centre for Quantum Software and Information, School of Software, University of Technology Sydney, marco.tomamichel@uts.edu.au.