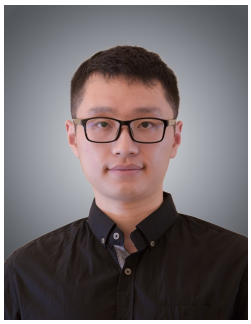

Xin Wang

Centre for Quantum Software and Information
Faculty of Engineering and Information Technologies
University of Technology Sydney
NSW 2007, Australia

Personal details

Time of Birth	June 1993
Place of Birth	Changzhou, Jiangsu, China
Nationality	Chinese
Email address	wangxinfelix@gmail.com
Homepage	xinwang.online

Research interests

Quantum Shannon Theory, Entanglement Theory, Optimization Theory,
Quantum Cryptography, Quantum Gaussian Information, Quantum Computation.

Education

2014 – 2018 **PhD in Quantum Information Theory, University of Technology Sydney.**
Supervisors: Prof. Runyao Duan and Prof. Andreas Winter
Thesis: Semidefinite Optimization of Quantum Information.

2010 – 2014 **Bachelor in Science, Mathematics Department, Sichuan University.**
With a honor degree from the Wu Yuzhang Honors College of Sichuan University.
Thesis: Quantum Zero-Error Communication.

Refereed conference talks

The Conference on Quantum Information Processing (QIP) is the most competitive and important conference in quantum information science (4 talks accepted). AQIS is an international leading conference (2 long talks+5 short talks accepted) and ISIT is the main event in information theory (3 talks accepted). In the following list, (*) indicates delivery by my co-author.

01/2018 **QIP 2018**, *On converse bounds for classical communication over quantum channels*, QuTech, Delft University of Technology, Netherlands.

01/2018* **QIP 2018**, *Efficiently computable upper bounds for quantum communication*, QuTech, Delft University of Technology, Netherlands.

01/2017 **QIP 2017**, *Asymptotic entanglement manipulation under PPT operations: new SDP bounds and irreversibility*, Microsoft Research, Redmond, USA.

01/2017 **QIP 2017**, *Semidefinite programming strong converse bounds for quantum channel capacities*, Microsoft Research, Redmond, USA.

09/2017 **AQIS 2017** (long talk), *Irreversibility of Asymptotic Entanglement Manipulation Under PPT Operations*, NUS, Singapore.

09/2017* **AQIS 2017** (long talk), *Non-asymptotic entanglement distillation*, NUS, Singapore.

09/2017* **AQIS 2017**, *SDP converse for quantum communication*, NUS, Singapore.

09/2017* **AQIS 2017**, *Approximate broadcasting of quantum correlations*, NUS, Singapore.

06/2017 **ISIT 2017**, *Semidefinite programming converse bounds for classical communication over quantum channels*, RWTH Aachen University, Aachen.

08/2016 **AQIS 2016**, *Separation between quantum Lovász number and entanglement-assisted zero-error classical capacity*, Academia Sinica, Taipei.

08/2016* **AQIS 2016**, *Improved Semidefinite Programming Upper Bound on Distillable Entanglement and Non-additivity of Rains' Bound*, Academia Sinica, Taipei.

08/2016* **AQIS 2016**, *Tripartite-to-bipartite entanglement transformation by SLOCC and the classification of matrix spaces*, Academia Sinica, Taipei.

07/2016 **ISIT 2016**, *A semidefinite programming upper bound of quantum capacity*, Universitat Pompeu Fabra, Barcelona.

07/2016 **ISIT 2016**, *On the quantum no-signalling assisted zero-error simulation cost of non-commutative bipartite graphs*, Universitat Pompeu Fabra, Barcelona.

Invited and Workshop Talks

01/2018 *Semidefinite optimization for quantum information processing*, GAMP/QMATH Lecture, University of Copenhagen, Copenhagen.

11/2017 *Evaluating communication capabilities of quantum channels*, International Workshop on Quantum Computing and Quantum Information Processing 2017, AMSS, China.

07/2017 *Semidefinite programming strong converse bounds for quantum channel capacities*, Beyond i.i.d. in Information Theory Workshop, NUS, Singapore.

06/2017 *Semidefinite programming strong converse bounds for classical communication over quantum channels*, Quantum Information Seminar, Southern University of Science and Technology, Shenzhen.

12/2015 *Activated zero-error classical capacity of quantum channels in the presence of quantum no-signalling correlations*, Sydney Quantum Information Theory Workshop, UTS, Sydney.

Publications

I have 8 papers published in refereed journals, 3 papers published in peer-reviewed conference proceedings and 8 preprint papers (available at arXiv).

Peer-reviewed Journal Articles

(J1) **X. Wang**, W. Xie, and R. Duan, *Semidefinite programming strong converse bounds for classical capacity*, IEEE Transactions on Information Theory, **(Contributed talk QIP 2017)**.

(J2) **X. Wang** and R. Duan, *Irreversibility of Asymptotic Entanglement Manipulation Under Quantum Operations Completely Preserving Positivity of Partial Transpose*, Physical Review Letters 119, 180506 **(Contributed talk QIP 2017).**

(J3) **X. Wang** and R. Duan, *Separation between quantum Lovász number and entanglement-assisted zero-error classical capacity*, to appear in IEEE Transactions on Information Theory, available at arXiv:1608.04508.

(J4) **X. Wang** and R. Duan, *Improved semidefinite programming upper bound on distillable entanglement*, Physical Review A 94, 050301(R) (2016).

(J5) **X. Wang** and R. Duan, *Nonadditivity of Rains bound for distillable entanglement*, Physical Review A 95, 062322 (2017).

(J6) Y. Li, Y. Qiao, **X. Wang**, and R. Duan, *Tripartite-to-bipartite Entanglement Transformation by Stochastic Local Operations and Classical Communication and the Classification of Matrix Spaces*, to appear in Communications in Mathematical Physics.

(J7) Y. Li, **X. Wang**, and R. Duan, *Indistinguishability of bipartite states by positive-partial-transpose operations in the many-copy scenario*, Physical Review A 95, 052346 (2017).

(J8) W. Xie, K. Fang, **X. Wang**, and R. Duan, *Approximate broadcasting of quantum correlations*, Physical Review A 96, 022302 (2017).

Peer-reviewed Conference Proceedings

(C1) **X. Wang**, W. Xie, and R. Duan, *Semidefinite programming converse bounds for classical communication over quantum channels*, Proceedings of the IEEE International Symposium on Information Theory (ISIT 2017).

(C2) **X. Wang** and R. Duan, *A semidefinite programming upper bound of quantum capacity*, Proceedings of IEEE International Symposium on Information Theory (ISIT 2016).

(C3) **X. Wang** and Runyao Duan, *On the quantum no-signalling assisted zero-error simulation cost of non-commutative bipartite graphs*, Proceedings of the IEEE International Symposium on Information Theory (ISIT 2016).

Preprints

(P1) **X. Wang**, K. Fang, and M. Tomamichel, *On converse bounds for classical communication over quantum channels*, submitted to IEEE Transactions on Information Theory, available at arXiv:1709.05258, **(Contributed talk QIP 2018)**.

(P2) **X. Wang**, K. Fang, and R. Duan, *Semidefinite programming converse bounds for quantum communication*, submitted to IEEE Transactions on Information Theory, available at arXiv:1709.00200, **(Contributed talk QIP 2018)**.

(P3) K. Fang, **X. Wang**, M. Tomamichel, and R. Duan, *Non-asymptotic entanglement distillation*, submitted to Physical Review Letters, available at arXiv:1706.06221.

(P4) R. Duan and **X. Wang**, *Activated zero-error classical capacity of quantum channels in the presence of quantum no-signalling correlations*, submitted to Quantum journal, available at arXiv:1510.05437.

(P5) B. Regula, K. Fang, **X. Wang**, and G. Adesso, *One-shot coherence distillation*, submitted to Physical Review Letters, available at arXiv:1711.10512.

(P6) L. Lami, B. Regula, **X. Wang**, R. Nichols, A. Winter, and G. Adesso, *Gaussian quantum resource theories*, available at arXiv:1801.05450.

(P7) W. Xie, **X. Wang**, and R. Duan, *Converse bounds for classical communication over quantum networks*, submitted to ISIT'18, available at arXiv:1712.05637.

(P8) S. Liu, **X. Wang**, L. Zhou, J. Guan, Y. Li, Y. He, R. Duan, and M. Ying, *$Q|SI\rangle$: A Quantum Programming Environment*, available at arXiv:1710.09500. (Technique report of the software project "$Q|SI\rangle$: A Quantum Programming Environment" [link].)

Professional Service

- Referee for Communications in Mathematical Physics and IEEE Transactions on Information Theory.
- Referee for Asian Quantum Information Science Conference (AQIS), IEEE Information Theory Workshop (ITW), and Conference on Quantum Information Processing (QIP).

- Coordinator of QIP 2015 (Sydney) and International Workshop on Quantum Computing and Quantum Information Processing (QCQIP) 2017.

Awards and Scholarships

2017	UTS FEIT Higher Degree by Research Publication Award
2014	Australian Research Council Discovery Scholarship (until 2017)
2014	UTS International Research Scholarship (until 2018)
2013	Comprehensive Merit Scholarship, Sichuan University
2011	Excellent Student, Sichuan University

References

Prof. Runyao Duan
ARC Future Fellow and Professor
Director of Center for Quantum Software and Information
University of Technology Sydney
NSW 2007, Australia
☎ +61 2 9514 4619
✉ runyao.duan@uts.edu.au

Prof. Andreas Winter
ICREA Research Professor
ICREA & Universitat Autònoma de Barcelona
ES-08193 Barcelona, Spain
☎ +34 93 581 4736
✉ andreas.winter@uab.cat

Dr. Marco Tomamichel
ARC DECRA fellow and Senior Lecturer
University of Technology Sydney
NSW 2007, Australia
☎ tomamichelm (skype)
✉ marco.tomamichel@uts.edu.au