

Kun Fang

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

PERSONAL DETAILS

Date of Birth	December 1992
Place of Birth	Jingmen, Hubei, China
Nationality	Chinese
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RESEARCH INTERESTS

Quantum information theory, Quantum Shannon theory, Entanglement theory,
Resource theory, Optimization theory, Semidefinite programming, Nonlocal game

EDUCATION

present	PhD in Quantum Information Theory, University of Technology Sydney, Australia.
	Supervisors: Prof. Runyao Duan and Prof. Mingsheng Ying
09/2015	Thesis: Distillation and Simulation in Quantum Information
06/2015	
	Bachelor in Mathematics, Wuhan University, China.
09/2011	

REFEREED CONFERENCE TALKS

The Conference on Quantum Information Processing (QIP) is the premier and most competitive conference in quantum information science (2 talks). The Conference on the Theory of Quantum Computation, Communication and Cryptography (TQC) is the second largest conference in the field (1 talk). The Asian Quantum Information Science Conference (AQIS) is an international leading conference (1 long talk + 3 short talks). The IEEE International Symposium on Information Theory (ISIT) is the main event in information theory (2 talks). In the following list, (*) indicates delivery by my co-author.

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| 09/2018* | 18th Asian Quantum Information Science Conference (AQIS 2018)
<i>Distillation of quantum coherence in non-asymptotic settings</i>
Nagoya University, Nagoya, Japan |
| 07/2018 | 13th Conference on the Theory of Quantum Computation, Communication and Cryptography (TQC 2018)
<i>Quantum channel simulation and the channel's smooth max-information</i>
Centre for Quantum Software and Information, University of Technology Sydney, Australia. |

- 06/2018* **IEEE International Symposium on Information Theory (ISIT 2018)**
On finite blocklength converse bounds for classical communication over quantum channels
 Vail, Colorado, USA
- 06/2018 **IEEE International Symposium on Information Theory (ISIT 2018)**
Quantum channel simulation and the channel's smooth max-information
 Vail, Colorado, USA
- 01/2018 **21th Conference on Quantum Information Processing (QIP 2018)**
Efficiently computable upper bounds for quantum communication
 QuTech, Delft University of Technology, Netherlands
- 01/2018* **21th Conference on Quantum Information Processing (QIP 2018)**
On converse bounds for classical communication over quantum channels
 QuTech, Delft University of Technology, Netherlands
- 09/2017 **17th Asian Quantum Information Science Conference (AQIS 2017)**
Non-asymptotic entanglement distillation (long talk, top 10%)
 Centre for Quantum Technologies, National University of Singapore, Singapore
- 09/2017 **17th Asian Quantum Information Science Conference (AQIS 2017)**
Semidefinite programming converse bounds for quantum communication
 Centre for Quantum Technologies, National University of Singapore, Singapore
- 09/2017* **17th Asian Quantum Information Science Conference (AQIS 2017)**
Approximate broadcasting of quantum correlations
 Centre for Quantum Technologies, National University of Singapore, Singapore

INVITED AND WORKSHOP TALKS

- 07/2018 **Workshop: Beyond i.i.d. in Information Theory**
Quantum channel simulation and the channel's smooth max-information
 University of Cambridge, UK
- 06/2018 **Workshop: Rocky Mountain Summit on Quantum Information**
Distillation of quantum coherence
 JILA, University of Colorado Boulder, USA
- 01/2018 **Quantum Correlations Group in the University of Nottingham**
Non-asymptotic entanglement distillation
 Quantum Correlations Group in the University of Nottingham, UK
- 11/2017* **International Workshop on Quantum Computing and Quantum Information Processing**
Evaluating communication capabilities of quantum channels
 Academy of Mathematics and Systems Science, Chinese Academy of Sciences, China

PUBLICATIONS

- (1) *Non-asymptotic entanglement distillation*
K. Fang, X. Wang, M. Tomamichel, and R. Duan
 presented as a **long talk** at the 17th Asian Quantum Information Science Conference (AQIS 2017)
 arXiv:1706.06221.
- (2) *Probabilistic distillation of quantum coherence*

- K. Fang**, X. Wang, L. Lami, B. Regula, and G. Adesso
arXiv:1804.09500.
- (3) *Quantum channel simulation and the channel's smooth max-information*
K. Fang, X. Wang, M. Tomamichel, and M. Berta
Proceedings of the IEEE International Symposium on Information Theory (ISIT 2018).
- (4) *One-shot coherence distillation*
B. Regula, **K. Fang**, X. Wang, and G. Adesso
Physical Review Letters 121, 010401 (2018); arXiv:1711.10512.
- (5) *On converse bounds for classical communication over quantum channels*
X. Wang, **K. Fang**, and M. Tomamichel
contributed talk at the 21th Conference on Quantum Information Processing (QIP 2018)
arXiv:1709.05258.
- (6) *Semidefinite programming converse bounds for quantum communication*
X. Wang, **K. Fang**, and R. Duan
contributed talk at the 21th Conference on Quantum Information Processing (QIP 2018)
arXiv:1709.00200.
- (7) *Approximate broadcasting of quantum correlations*
W. Xie, **K. Fang**, X. Wang, and R. Duan
contributed talk at the 17th Asian Quantum Information Science Conference (AQIS'17)
Physical Review A 96, 022302 (2017); arXiv:1705.06071.
- (8) *On finite blocklength converse bounds for classical communication over quantum channels*
X. Wang, **K. Fang**, and M. Tomamichel
Proceedings of the IEEE International Symposium on Information Theory (ISIT 2018).
- (9) *Using and reusing coherence to realize quantum processes*
M. Díaz, **K. Fang**, X. Wang, M. Rosati, M. Skotiniotis, J. Calsamiglia, and A. Winter
arXiv:1805.04045.
- (10) *Quantum advantages in Hypercube game*
X. He, **K. Fang**, X. Sun, and R. Duan
arXiv:1806.02642.

PROFESSIONAL SERVICE

- Reviewer for Conference on Quantum Information Processing (QIP) 2018, Asian Quantum Information Science Conference (AQIS) 2018.
- Coordinator of International Workshop on Quantum Computing and Quantum Information Processing (QCQIP) 2017.

ACADEMIC VISIT

- 2018 **Quantum Correlations Group in School of Mathematical Sciences**
Hosted by: Prof. Gerardo Adesso.
University of Nottingham, January 26 - January 31.
- 2018 **Department of Computing, Imperial College London**
Hosted by: Dr. Mario Berta.
Imperial College London, January 22 - January 25.

- 2018 **Centre for the Mathematics of Quantum Theory (QMATH)**
Hosted by: Prof. Matthias Christandl.
University of Copenhagen, January 8 - January 12.
- 2017 **Academy of Mathematics and Systems Science (AMSS)**
Hosted by: Prof. Xiaoming Sun.
Chinese Academy of Sciences, November 1 - November 21.

REFERENCES

Prof. Runyao Duan

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Baidu, Inc., Beijing, 100085, China
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Dr. Marco Tomamichel

ARC DECRA fellow and Senior Lecturer
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More references upon request.