

# 17th Asian Quantum Information Science Conference

4 – 8 September 2017  
National University of Singapore

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**Sponsor:**



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- **Kwek Leong Chuan**
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- **Miklos Santha**

# PREFACE

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This document contains the abstracts for the talks and posters of the seventeenth Asian Quantum Information Science Conference (AQIS 2017), which is being held at the National University of Singapore, in Singapore, September 4-8, 2017.

AQIS 2017 is the 17th conference in a series that includes EQIS 2001-05 and ASQIS 2006-16. The scope of the meeting includes quantum computation, algorithms, and complexity; quantum information theory; techniques for suppressing decoherence; quantum cryptography; the theory of entanglement and non-locality; quantum communication experiments and theory; implementations of quantum information processing; and quantum processor and computer design.

This is the first year that the conference has come to Singapore. Last year it was held at Academia Sinica in Taipei, Taiwan. Although it has always been held in Asia, AQIS has developed a strong reputation among the international quantum information community and draws participants from around the world. This year, submissions were received from researchers in Australia, Belgium, Brazil, Canada, Chile, China, Denmark, France, Germany, Hong Kong, Hungary, India, Indonesia, Israel, Italy, Japan, Korea, New Zealand, Poland, Russia, Singapore, Slovakia, Spain, Sri Lanka, Switzerland, Taiwan, the United Kingdom, and the United States.

This year's program includes 8 invited talks, 4 invited tutorial talks (by two speakers), 46 contributed talks (12 of which are long talks), and 88 posters. The conference received 146 submissions, including 28 poster-only submissions. The program committee undertook a rigorous evaluation process, writing 359 reviews and carrying out an extensive discussion of the submissions. While any review process is necessarily subjective, our opinion is that the conference program includes many outstanding recent results and reflects well on the current state of quantum information as a field.

We would like to thank everyone who submitted work to the conference and the invited speakers. We would also like to thank the members of the Program Committee for their hard work in reviewing the submissions, the Steering Committee Chair, Hiroshi Imai, for his valuable guidance, and all members of the Organizing Committee. Finally, we would like to thank Tan Hui Min Evon for providing excellent administrative support and Shigeru Yamashita for much help with setting up and managing the online EasyChair conference system (they also helped prepare this booklet).

**Richard Cleve (Chair, Program Committee)**  
**Christian Kurtsiefer (co-Chair)**  
**François Le Gall (co-Chair)**  
**Valerio Scarani (co-Chair)**

# General Information

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## Secretariat Contact

Evon Tan, +65 9009 5369

## Overview

### **Conference Venue & Parallel Session (A)s**

Shaw Foundation Alumni House, Auditorium, Level 2  
National University of Singapore  
11 Kent Ridge Drive  
Singapore 119244  
Monday, 4 Sept – Friday, 8 Sept 2017

### **Parallel Session (B)s**

NUSS Guild House, Guild Hall, Level 1  
National University of Singapore  
9 Kent Ridge Drive  
Singapore 119241  
Monday, 4 Sept – Friday, 8 Sept 2017

### **Poster Sessions**

Shaw Foundation Alumni House, Level 2  
Basil, Clove and Lemongrass  
Monday, 4 Sept – Tuesday, 5 Sept 2017, 5pm

### **Tea break, lunches & Welcome Reception**

Shaw Foundation Alumni House, Level 2, Foyer

### **Conference Dinner**

Peach Garden OCBC Centre  
Level 33, 65 Chulia Street, OCBC Centre, Singapore 049513  
Wednesday, 6 September 2017, 7pm

## Instructions for speakers

A laptop will be provided, which all speakers are requested to upload their presentations before the relevant session.

## Instructions for poster presenters

Please check your poster number in the program. Your poster number will tell you where to attach it. You can put up your poster in the morning of the respective poster session. The tape to stick on the poster panel can be collected from the secretariat table. Please remove the posters at the end of your session.

# Conference Venue Information

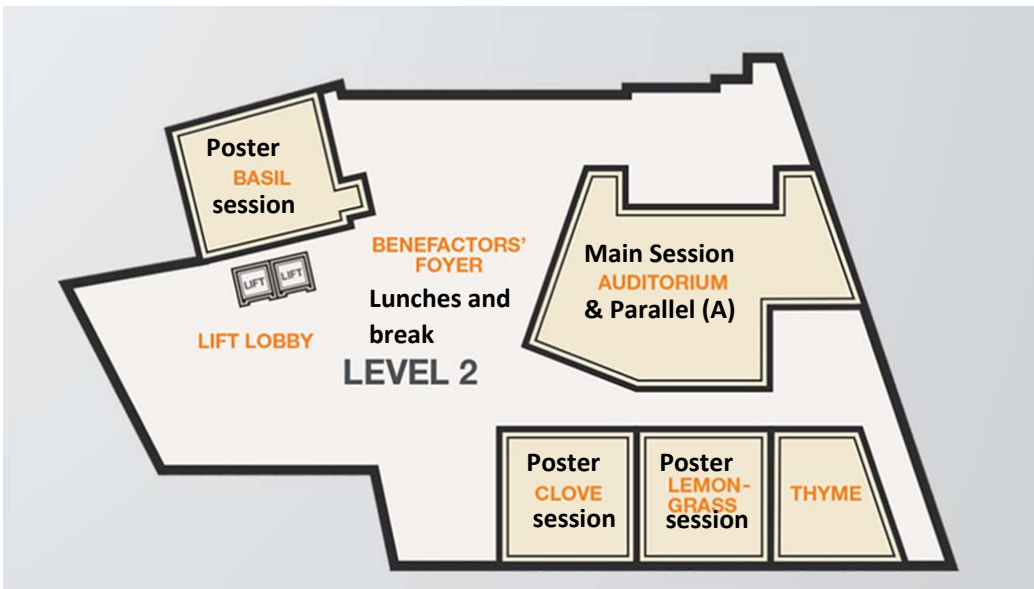
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**Shaw Foundation Alumni House Level 2**  
11 Kent Ridge Drive, NUS  
Singapore 119244

**NUSS Guild House (next building)**  
Guild Hall, Level 1  
9 Kent Ridge Drive  
Singapore 119241

Shaw Foundation Alumni House Level 2, Floorplan



# About Singapore

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## Transportation

Traveling around Singapore is a cinch! An efficient public transportation network of taxis, buses and the modern Mass Rapid Transit (MRT) rail system ensures that getting from point A to point B is hassle-free and extremely affordable. There are also taxis which can be hired from taxi stands, hailed by the roadside, or booked by phoning the numbers listed below. A booking fee is usually charged when hired by telephone.

Comfort CabLink/ Citycab	+65 6552 1111
SMRT Taxis	+65 6555 8888
Smart Cab	+65 6485 7777
TransCab	+65 6555 3333
Premier Taxis	+65 6363 6888
Prime Taxi	+65 6778 0808

uber or grab apps services are also available in Singapore.

## Medical Facilities

In the case of emergency, dial 995 for an ambulance. Pharmaceuticals are available at many outlets including supermarkets, department stores, hotels and shopping centres.

## AQIS 2017 Programme Schedule [4 September – 8 September 2017]

### Day 1 (Monday, 4 September 2017)

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**9:00am - 10:00am [Invited talk] Shalev Ben-David**  
*The structure necessary for quantum speedups*

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**10:30am - 11:00am [Long talk]**  
*Experimental certification of millions of genuinely entangled atoms in a solid*  
**Florian Fröwis, Peter Strassmann, Alexey Tiranov, Corentin Gut, Jonathan Lavoie, Nicolas Brunner, Félix Bussi res, Mikael Afzelius and Nicolas Gisin**

**11:00am - 11:30am [Long talk]**  
*Quantum non-malleability and authentication*  
**Gorjan Alagic and Christian Majenz**

**11:30am - 12:00pm [Long talk]**  
*Dining Philosophers, Leader Election and Ring Size problems, in the quantum setting*  
**Maor Ganz, Dorit Aharonov and Loick Magnin**

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**1:30pm - 2:45pm**

#### [Parallel session] 1A

**(1) Characterizations of symmetrical and partial Boolean functions with exact quantum query complexity**

**Daowen Qiu and Shenggen Zheng**

**(2) Quantum algorithm for linear differential equations with exponentially improved dependence on precision**

**Dominic Berry, Andrew Childs, Aaron Ostrander and Guoming Wang**

**(3) Quantum centrality ranking via quantum walks and its experimental realisation**

**Joshua Izaac, Xiang Zhan, Jian Li, Peng Xue, Paul Abbott, Xiaosong Ma and Jingbo Wang**

#### [Parallel session] 1B

**(1) Resource Destroying Maps with new applications**

**Zi-Wen Liu, Xueyuan Hu, Ryuji Takagi and Seth Lloyd**

**(2) Logical paradoxes in deterministic quantum state injection**

**Nadish de Silva**

**(3) Convex geometry of quantum resource quantification: A general framework for measures of quantum resources**

**Bartosz Regula**

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**2:45pm - 3:35pm [Tutorial 1a] Peter H yer**

**4:00pm - 4:50pm [Tutorial 1b] Peter H yer**

*Title: Quantum walks*

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**5:00pm - 6:30pm [Poster session 1] : Poster #1 - #46**

*[Poster #01] Degenerate cavity supporting more than 31 Laguerre- Gaussian modes*  
**Cheng Zedi, Jinshi Xu, Chuanfeng Li**

*[Poster #02] Experimental observation of the optimal form of Quantum state independent contextuality under no-signaling conditions*  
**Ya Xiao, Zhen-Peng Xu, Qiang Li, Kai Sun, Jin-Ming Cui, Zong-Quan Zhou, Hong-Yi Su, Adán Cabello, Jin-Shi Xu, Jing-Ling Chen, Chuan-Feng Li and Guang-Can Guo**

*[Poster #03] Demonstration of Multisetting One-Way Einstein-Podolsky-Rosen Steering*  
**Ya Xiao, Xiang-Jun Ye, Kai Sun, Jin-Shi Xu and Chuan-Feng Li**

*[Poster #04] 1-out-of-2 Oblivious transfer using flawed Bit- string quantum protocol*  
**Martin Plesch, Marcin Pawłowski and Matej Pivoluska**

*[Poster #05] Evaluation of entanglement measures by a single observable*  
**Chengjie Zhang, Sixia Yu, Qing Chen, Haidong Yuan and C.H. Oh**

*[Poster # 06] Entropy production described by the GKSL master equation in two-qubits system and its application*  
**Satoshi Iriyama**

*[Poster #07] Entropy and Information Functions: A Geometric Perspective*  
**Aalok Pandya**

*[Poster #08] Cryptographic quantum bound on nonlocality*  
**Satoshi Ishizaka**

*[Poster #09] Quantitative Coherence Witness for Finite Dimensional States*  
**Xueyuan Hu**

*[Poster #10] Emergent phases in a compass chain with multisite interactions*  
**Wen-Long You**

*[Poster #11] Experimental implementation of a quantum walk on a circle with single photons.*  
**Zhihao Bian, Jian Li, Xiang Zhan, Jason Twamley and Peng Xue**

*[Poster #12] Experimental Test of Uncertainty Relations for General Unitary Operators*  
**Lei Xiao, Kunkun Wang, Xiang Zhan, Zhihao Bian, Jian Li, Yongsheng Zhang, Peng Xue and Arun Kumar Pati**

*[Poster #13] Bell-type inequalities and higher-dimensional Entanglement*  
**Chandan Datta, Pankaj Agrawal and Sujit Choudhary**

*[Poster #14] Optimal experimental demonstration of error-tolerant quantum witnesses*  
**Kunkun Wang, George C. Knee, Xiang Zhan, Zhihao Bian, Jian Li and Peng Xue**

*[Poster #15] Beyond the temporal Tsirelson bound: an experimental test of a Leggett-Garg inequality in a three-level system*  
**Kunkun Wang, Clive Emary, Xiang Zhan, Zhihao Bian, Jian Li, Peng Xue**

*[Poster #16] Faithful transmission of qubit in a quantum communication network with heterogeneous channels*  
**Na Chen, Changhua Zhu and Changxing Pei**



*[Poster #17] Superadditivity of logarithm of violation of geometric Bell inequalities for qudits*  
**Marcin Wiesniak**

*[Poster #18] Quantum metrology with quantum error detection*  
**Yuichiro Matsuzaki and Simon Benjamin**

*[Poster #19] Optimizing Quantum Walk Search on a Reduced Uniform Complete Multi- Partite Graph*  
**Chen-Fu Chiang and Chang-Yu Hsieh**

*[Poster #20] Experimental entropic test of quantum contextuality in photonic system*  
**Xiang Zhan, Kunkun Wang, Zhihao Bian, Jian Li, Yongsheng Zhang and Peng Xue**

*[Poster #21] Self-guaranteed measurement-based quantum computation*  
**Masahito Hayashi and Michal Hajdusek**

*[Poster #22] Quantum Teleportation of Six-qubit State via An Eight-qubit Cluster State*  
**Nan Zhao, Min Li and Nan Chen**

*[Poster #23] Matrix product state methods for predictive modelling*  
**Chengran Yang, Felix Binder, Varun Narasimhachar and Mile Gu**

*[Poster #24] Sine-wave gating InGaAs/InP single photon detector with ultralow afterpulse*  
**Yong-Jun Qian, Juan Wu, De-Yong He, Shuang Wang, Wei Chen and Zhen-Qiang Yin**

*[Poster #25] Quantum Learning Speed-up with Classical Training Data*  
**Joong-Sung Lee, Jeongho Bang, Sunghyuk Hong, Changhyoup Lee, Kang Hee Seol, Jinhyoung Lee and Kwang-Geol Lee**

*[Poster #26] Duality in entanglement of macroscopic states of light*  
**Su-Yong Lee, Chang-Woo Lee, Pawel Kurzynski, Dagomir Kaszlikowski and Jaewan Kim**

*[Poster #27] Discrete superposition of coherent states on a circle for quantum key distribution*  
**Seung-Woo Lee and Jaewan Kim**

*[Poster #28] Experimental Test of Irreducibility in Coherent States of Light*  
**Kang Hee Seol, Jeongwoo Jae, Joong-Sung Lee, Kwang-Geol Lee and Jinhyoung Lee**

*[Poster #29] Attaining fundamental bounds of Bell measurement with linear optics for long distance quantum communication*  
**Seung-Woo Lee, Timothy C. Ralph and Hyunseok Jeong**

*[Poster #30] Improving the success probability for Shor's factoring algorithm with more available results*  
**Guoliang Xu, Daowen Qiu, Xiangfu Zou and Jozef Gruska**

*[Poster #31] Quantum algorithms on Walsh transform and Hamming distance for Boolean functions*  
**Zhengwei Xie, Daowen Qiu and Guangya Cai**

*[Poster #32] Evaluation of Counterfactuality in Counterfactual Communication Protocols*  
**David Arvidsson-Shukur, Axel Gottfries and Crispin Barnes**

*[Poster # 33] Construction of sequential state discrimination for three linearly independent pure qutrits*  
**Min Namkung, Donghoon Ha and Younghun Kwon**

*[Poster #34] Optimal Separation in Exact Query Complexities for Simon's Problem*

**Guangya Cai and Daowen Qiu**

*[Poster #35] Evaluating Qubit Control Performance by Indices of Quantum Entanglement*

**Kuo Chung-Hsuan and Yang Ciann-Dong**

*[Poster #36] Multipartite nonlocality and random measurements*

**Anna de Rosier, Jacek Gruca, Tamas Vertesi, Fernando Parisio and Wieslaw Laskowski**

*[Poster #37] State transfer by quantum walks with two coins*

**Yun Shang and Yu Wang**

*[Poster #38] A High-dimensional Quantum Key Distribution Scheme based on single photons in Temporal-Polarization mode*

**Haiwei Wei, Changhua Zhu and Changxing Pei**

*[Poster #39] Multi-party Measurement-Device-Independent Quantum Key Distribution based on cluster states*

**Chuanqi Liu, Changhua Zhu and Changxing Pei**

*[Poster #40] Single-state semi-quantum key distribution protocol and its security proof*

**Wei Zhang and Daowen Qiu**

*[Poster #41] Revealing non-classicality of inaccessible objects*

**Tanjung Krisnanda, Margherita Zuppardo, Mauro Paternostro, Chiara Marletto, Vlatko Vedral and Tomasz Paterek**

*[Poster #42] On annealing schedule for classical optimal decoding by adiabatic quantum computation*

**Yuta Nishino, Souichi Takahira and Tsuyoshi Usuda**

*[Poster #43] A measurement driven analog of adiabatic quantum computation for frustration-free Hamiltonians*

**Liming Zhao, Carlos A Perez Delgado, Simon Benjamin and Joseph Fitzsimons**

*[Poster #44] Single atoms coupled to a near-concentric cavity*

**Chi Huan Nguyen, Adrian Nugraha Utama, Nick Lewty, Kadir Durak, Gleb Maslennikov, Stanislav Straupe, Matthias Steiner and Christian Kurtsiefer**

*[Poster #45] Unbounded memory advantage in stochastic simulation using quantum mechanics*

**Andrew Garner, Liu Qing, Jayne Thompson, Vlatko Vedral and Mile Gu**

*[Poster #46] Channel capacity of quantum channel with beam wandering*

**Tiancheng Wang, Kenshiro Kita and Tsuyoshi Usuda**

## Day 2 (Tuesday, 5 September 2017)

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**9:00am - 10:00am [Invited talk] Mio Murao**

*Higher order quantum operations of unitaries and their implications*

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**10:30am - 11:00am [Long talk]**

*Bell correlations in many-body systems*

**Nicolas Sangouard, Sebastian Wagner, Roman Schmied, Batiste Allard, Matteo Fadel  
Valerio Scarani, Philipp Treutlein and Jean-Daniel Bancal**

**11:00am - 11:30am [Long talk]**

*The information cost of quantum memoryless protocol*

**André Chailloux, Iordanis Kerenidis and Mathieu Lauriere**

**11:30am - 12:00pm [Long talk]**

*Compression for Quantum Population Coding*

**Yuxiang Yang, Ge Bai, Giulio Chiribella and Masahito Hayashi**

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**1:30pm - 2:45pm**

**[Parallel session] 2A**

**(1) Detecting metrologically useful asymmetry entanglement by few local measurements**

**Chao Zhang, Benjamin Yadin, Zhi-Bo Hou, Huan Cao, Bi-Heng Liu, Yun-Feng Huang, Reevu Maity, Vlatko Vedral, Chuan-Feng Li, Guang-Can Guo and Davide Girolami**

**(2) Past of a quantum particle: Common sense prevails**

**Berge Englert, Kelvin Horia, Jibo Dai, Yink Loong Len and Hui Khoon Ng**

**(3) Occam's Vorpall Quantum Razor: Memory reduction when simulating continuous-time stochastic processes with quantum devices**

**Thomas Elliott and Mile Gu**

**[Parallel session] 2B**

**(1) Semidefinite programming converse bounds for quantum communication**

**Xin Wang, Kun Fang and Runyao Duan**

**(2) Locality Preserving Logical Operators in Topological Stabiliser Codes**

**Paul Webster and Stephen D. Bartlett**

**(3) Self-testing of binary observables based on commutation**

**Jedrzej Kaniewski**

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**2:45pm - 3:35pm [Tutorial 2a] Charles Bennett**

**4:00pm - 4:50pm [Tutorial 2b] Charles Bennett**

*Title : Forging the culture of quantum information science*

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**5:00pm - 6:30pm [Poster session 2] : Poster #47 - #86**

*[Poster #47] Effects of the UNOT gate on classical and quantum correlations*

**Kuan Zhang, Jiajun Ma, Xiang Zhang, Jayne Thompson, Vlatko Vedral, Kihwan Kim and Mile Gu**

*[Poster #48] One-shot measurement compression with quantum side information using shared randomness*

**Anurag Anshu, Rahul Jain and Naqueeb Ahmad Warsi**

*[Poster #49] On the logical system mapping based on modular and non-modular quantum assembly codes*

**Yongsoo Hwang and Byung-Soo Choi**

*[Poster #50] A quantum computing software platform @ ETRI*

**Yongsoo Hwang, Taewan Kim, Chungheon Baek and Byung-Soo Choi**

*[Poster #51] A scheme to reduce the number of entangled qubits in quantum wireless sensor networks (Withdrawn)*

**Mohapatra Amit Kumar and Subramanian Balakrishnan**

*[Poster #52] Origin of the gap between minimum error probability and its simple approximation*

**Naoya Matsumoto, Akihito Kadoya, Souichi Takahira, Yuta Nishino and Tsuyoshi Usuda**

*[Poster #53] Geometry of the quantum set and its connection with self-testing*

**Koon Tong Goh, Jędrzej Kaniewski, Elie Wolfe, Tamas Vertesi, Yu Cai, Yeong-Cherng Liang and Valerio Scarani**

*[Poster #54] Fidelity Based Measurement Induced Nonlocality*

**Muthuganesan Rajendran and Sankaranarayanan R.**

*[Poster #55] Coherent chemical kinetics: quantum info meets chemistry*

**Tomek Paterek**

*[Poster #56] Verifiable blind quantum computation with fault-tolerance*

**Yuki Takeuchi, Keisuke Fujii, Tomoyuki Morimae and Nobuyuki Imoto**

*[Poster #57] Adiabatic quantum computation and Grover search applied to higher-order quantum operations*

**Shojun Nakayama, Akihito Soeda and Mio Murao**

*[Poster #58] Amplitude Estimation based Algorithm for Circulant Linear Systems*

**Souichi Takahira, Asuka Ohashi, Tomohiro Sogabe and Tsuyoshi Usuda**

*[Poster #59] Spectral Measurement of Breakdown Flashes in InGaAs Avalanche Photodiodes*

**Yicheng Shi, Lim Zheng Jie Janet, Poh Hou Shun, Tan Peng Kian, Tan Pei Yu Amelia, Ling Euk Jin Alexander and Christian Kurtz**

*[Poster #60] Device Independent Quantum Private Query with Finite Number of Entangled Qubits*

**Jyotirmoy Basak, Bappaditya Ghosh, Arpita Maitra and Goutam Paul (Withdrawn)**

*[Poster #61] An Ancilla Reduction Technique for Quantum Circuits Converted from NAND-based Circuits*

**Soma Esaki, Masato Onoda and Shigeru Yamashita**

*[Poster # 62] Computing on quantum shared secrets*  
**Yingkai Ouyang, Si-Hui Tan, Liming Zhao and Joseph Fitzsimons**

*[Poster #63] Work extraction and fully entangled fraction*  
**Chung-Yun Hsieh and Ray-Kuang Lee**

*[Poster #64] Nonlocal Correlation and Entanglement in Two-spin System*  
**Mr Rajendran and Sankara Narayanan**

*[Poster #65] Synthesis of Physical-Limitation-Aware Optimal Quantum Circuits in 2-D Architecture*  
**Jingwen Ding and Shigeru Yamashita**

*[Poster #66] Fate of time-evolved quantum correlations under quenching across various phases in an XY spin chain*  
**Utkarsh Mishra, Debraj Rakshit and Prabhu Ramappa**

*[Poster #67] Efficient key distillation for industrial quantum key distribution systems*  
**Aleksey Fedorov**

*[Poster #68] Measurement-Device-Independent Quantum Group Key Agreement*  
**Shuquan Ma and Changhua Zhu**

*[Poster #69] Conditional Quantum Discord*  
**Mathieu Lauriere, Tim Byrnes and Chandrashekar Radhakrishnan**

*[Poster #70] Many-box locality*  
**Yu Cai, Yuqian Zhou, Jean-Daniel Bancal, Fei Gao and Valerio Scarani**

*[Poster #71] InGaAs/InP avalanche photodiodes based single photon detectors for quantum key distribution over more than 100 km optical fiber*  
**Vladimir Zavodilenko, Anton Losev, Alexandr Miller, Vladimir Kurochkin and Yury Kurochkin**

*[Poster #72] Quantum-secure blockchain application for urban QKD network*  
**Yury Kurochkin, Evgeny Kiktenko, Nikolay Pozhar, Maxim Anufriev, Anton Trushechkin, A.V Duplinskiy, V.E. Ustimchik, Alan Kanapin, Vladimir Kurochkin, Alexander Lvovsky and Aleksey Fedorov**

*[Poster #73] Continuous variable qumodes as non-destructive probes of quantum systems*  
**Thomas J. Elliot, Mile Gu, Jayne Thompson and Nana Liu**

*[Poster #74] On Layered Quantum Key Distribution*  
**Mehul Malik, Matej Pivoluska and Marcus Huber**

*[Poster #75] Uniquely determination of an arbitrary input pure state on any dimension with rank-1 POVM*  
**Yu Wang and Yun Shang**

*[Poster #76] Analytic self-testing bound of the singlet for binary measurements*  
**Xinhui Li, Fei Gao, Yukun Wang, Dandan Li, Qianyan Wen**

*[Poster #77] Resonant transition-based quantum computation*  
**Chang Yu Hsieh and Chen-Fu Chiang**

*[Poster #78] Quantum Non-Markovianity from Information Perspective*  
**Hongting Song and Yuanyuan Mao**

*[Poster #79] Taming finite statistics for device-independent quantum information*  
**Pei-Sheng Lin, Denis Rosset, Yanbao Zhang, Jean-Daniel Bancal and Yeong-Cherng Liang**

*[Poster #80] Comparing Simulated Annealing with Simulated Quantum Annealing on Max-cut and Other NP-Hard Problems*  
**Hyungseok Chang, Hidefumi Hiraishi and Hiroshi Imai**

*[Poster #81] Device-Independent Tests of Quantum States, Channels, and Measurements*  
**Michele Dall'Arno, Sarah Brandsen, Francesco Buscemi and Vlatko Vedral**

*[Poster #82] Optimal Port-based Teleportation in Arbitrary Dimension*  
**Michal Studzinski, Sergii Strelchuk, Marek Mozrzyk and Michal Horodecki**

*[Poster #83] Quantum Circuit Design by Using ESOP Minimization*  
**Masato Onoda and Shigeru Yamashita**

*[Poster #84] Locating Loops for TCSC Considering Bridge Transformation*  
**Kentaro Haneda and Shigeru Yamashita**

*[Poster #85] Quantum Toeplitz implementation and its applications*  
**Anuradha Mahasinghe and Jingbo Wang**

*[Poster #86] Decoy State BBM92 Quantum Key Distribution Protocol with Multi-photon-event Rejection*  
**Liang Min, Akihisa Tomita and Atsushi Okamoto**

## Day 3 (Wednesday, 6 September 2017)

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**9:00am - 10:00am [Invited talk] Masahito Hayashi**

*Role of Hypothesis Testing in Quantum Information*

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**10:30am - 12:35pm**

**[Parallel session] 3A**

- (1) *Practical round-robin-differential-phase-shift quantum key distribution***  
**Zhen-Qiang Yin, Shuang Wang, Wei Chen, Yunguang Han, Zheng-Fu Han and Guangcan Guo**
- (2) *Flow ambiguity: A path towards classically driven blind quantum computation***  
**Atul Mantri, Tommaso Demarie, Nicolas Menicucci and Joseph Fitzsimons**
- (3) *A Cost-Effective Approach for Satellite Based Quantum Key Distribution***  
**Alexander Lohrmann, Aitor Villar, Debashis Demunshi, Zhongkan Tang, Rakhitha Chandrasekara and Alexander Ling**
- (4) *Lorentz invariant entanglement distribution for the space-based quantum network***  
**Tim Byrnes, Batyr Ilyas, Louis Tessler, Masahiro Takeoka, Segar Jambulingam, Jonathan P. Dowling**
- (5) *Efficient classical verification of quantum computations***  
**Richard Jozsa and Sergii Strelchuk**

**[Parallel session] 3B**

- (1) *Quantum Sphere-Packing Bounds with Polynomial Prefactors***  
**Hao-Chung Cheng, Min-Hsiu Hsieh and Marco Tomamichel**
- (2) *Verifiable fault-tolerance in measurement-based quantum computation***  
**Keisuke Fujii and Masahito Hayashi**
- (3) *Bayesian Quantum Noise Spectroscopy***  
**Christopher Ferrie, Chris Grande, Gerardo Paz-Silva and Howard Wiseman**
- (4) *Moderate Deviations for Classical-Quantum Channels***  
**Hao-Chung Cheng and Min-Hsiu Hsieh**
- (5) *Analog quantum error correction with encoding a qubit into an oscillator***  
**Kosuke Fukui, Akihisa Tomita and Atsushi Okamoto**

## Day 4 (Thursday, 7 September 2017)

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**9:00am - 10:00am [Invited talk] Zhengfeng Ji**  
*Entanglement in interactive proof systems*

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**10:30am - 11:00am [Long talk]**  
*Irreversibility of Asymptotic Entanglement Manipulation Under PPT-preserving Operations*  
**Xin Wang and Runyao Duan**

**11:00am - 11:30am [Long talk]**  
*Non-asymptotic entanglement distillation*  
**Kun Fang, Xin Wang, Marco Tomamichel and Runyao Duan**

**11:30am - 12:00pm [Long talk]**  
*Superadditivity of the classical capacity with limited entanglement assistance*  
**Elton Yechao Zhu, Quntao Zhuang and Peter Shor**

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**1:30pm - 2:45pm**

**[Parallel session] 4A**

- (1) *The quantum monad on relational structures***  
**Samson Abramsky, Rui Soares Barbosa, Nadish de Silva and Octavio Zapata**
- (2) *Converting multilevel nonclassicality into genuine multipartite entanglement***  
**Bartosz Regula, Marco Piani, Marco Cianciaruso, Thomas Bromley, Alexander Streltsov and Gerardo Adesso**
- (3) *Simultaneous hollowisation separability criterion in general multipartite systems***  
**Antoine Neven and Thierry Bastin**

**[Parallel session] 4B**

- (1) *Towards high-dimensional entanglement-based quantum communication in space***  
**Fabian Steinlechner, Sebastian Ecker, Matthias Fink, Bo Liu, Oliver Devries, Jessica Bavaresco, Marcus Huber, Erik Beckett, Thomas Scheidl and Rupert Ursin**
  - (2) *Physical-depth architectural requirements for generating universal photonic cluster states***  
**Sam Morley-Short, Sara Bartolucci, Mercedes Gimeno-Segovia, Pete Shadbolt, Hugo Cable and Terry Rudolph**
  - (3) *Quantum simulation of the quantum Rabi model in a single trapped ion***  
**Dingshun Lv, Shuoming An, Zhenyu Liu, Jingning Zhang, Julen Simon Pedernales, Lucas Lamata, Enrique Solano and Kihwan Kim**
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**2:45pm - 3:45pm [Invited talk] Jian-Qiang You**  
*Holonomic surface codes for fault-tolerant quantum computation*

**4:15pm - 5:15pm [Invited talk] William Slofstra**  
*Group theory and non-local games*



## Day 5 (Friday, 8 September 2017)

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**9:00am - 10:00am [Invited talk] Henry Yuen**

*Classically testing the exponential nature of Hilbert space*

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**10:30am- 11:00am [Long talk]**

*Fidelity of quantum strategies with applications to cryptography*

**Ansis Rosmanis, Jamie Sikora and Gus Gutoski**

**11:00am - 11:30am [Long talk]**

*Generalized entanglement entropies of quantum designs*

**Zi-Wen Liu, Seth Lloyd, Elton Yechao Zhu and Huangjun Zhu.**

**11:30am - 12:00pm [Long talk]**

*No-Hypersignaling Principle*

**Michele Dall'Arno, Sarah Brandsen, Alessandro Tosini, Francesco Buscemi and Vlatko Vedral**

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**1:30pm - 2:45pm**

**[Parallel session] 5A**

**(1) *A generalized quantum Slepian-Wolf***

**Anurag Anshu, Rahul Jain and Naqeeb Ahmad Warsi**

**(2) *Fundamental rate-loss trade-off for the quantum internet***

**Koji Azuma, Akihiro Mizutani and Hoi-Kwong Lo**

**(3) *Approximate broadcasting of quantum correlations***

**Wei Xie, Kun Fang, Xin Wang and Runyao Duan**

**[Parallel session] 5B**

**(1) *Universal extensions of restricted classes of quantum operations***

**Michal Oszmaniec and Zoltan Zimboras**

**(2) *Optimal quantum error correcting codes from absolutely maximally entangled states***

**Zahra Raissi, Christian Gogolin, Arnau Riera and Antonio Acín**

**(3) *Efficient unitary designs with nearly time-independent Hamiltonian dynamics***

**Yoshifumi Nakata, Christoph Hirche, Masato Koashi and Andreas Winter**

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**2:45pm - 3:45pm [Invited talk] Stefano Pironio**

*A semi-device-independent framework based on natural physical assumptions and its application to random number generation*