

14th Conference on the Theory of Quantum Computation, Communication and Cryptography

TQC 2019, June 3–5, 2019, Maryland, USA

Edited by

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■ Contents

Charter, Previous Editions, Steering Committee	0:vii
Organization TQC 2019	0:ix
Outstanding Paper Award	0:xi
Accepted Workshop Talks	0:xiii

Regular Papers

On Quantum Chosen-Ciphertext Attacks and Learning with Errors <i>Gorjan Alagic, Stacey Jeffery, Maris Ozols, and Alexander Poremba</i>	1:1–1:23
Quantum Distinguishing Complexity, Zero-Error Algorithms, and Statistical Zero Knowledge <i>Shalev Ben-David and Robin Kothari</i>	2:1–2:23
Circuit Transformations for Quantum Architectures <i>Andrew M. Childs, Eddie Schoute, and Cem M. Unsal</i>	3:1–3:24
The RGB No-Signalling Game <i>Xavier Coiteux-Roy and Claude Crépeau</i>	4:1–4:17
On the Qubit Routing Problem <i>Alexander Cowtan, Silas Dilkes, Ross Duncan, Alexandre Krajenbrink, Will Simmons, and Seyon Sivarajah</i>	5:1–5:32
Applications of the Quantum Algorithm for st-Connectivity <i>Kai DeLorenzo, Shelby Kimmel, and R. Teal Witter</i>	6:1–6:14
Bayesian ACRONYM Tuning <i>John Gamble, Christopher Granade, and Nathan Wiebe</i>	7:1–7:19
A Compressed Classical Description of Quantum States <i>David Gosset and John Smolin</i>	8:1–8:9
Approximate Unitary $n^{2/3}$ -Designs Give Rise to Quantum Channels with Super Additive Classical Holevo Capacity <i>Aditya Nema and Pranab Sen</i>	9:1–9:22
Parameterization of Tensor Network Contraction <i>Bryan O’Gorman</i>	10:1–10:19



■ Charter, Previous Editions, Steering Committee

TQC Charter Statement

The Conference on the Theory of Quantum Computation, Communication and Cryptography (TQC) is a conference for students and researchers working on theoretical aspects of quantum computation and quantum information. This includes, but is not limited to, quantum algorithms, models of quantum computation, quantum complexity theory, simulation of quantum systems, quantum cryptography, quantum communication, quantum information theory, quantum estimation and measurement, the intersection of quantum information and condensed-matter theory, quantum coding theory, fault-tolerant quantum computing, and entanglement theory. It is the goal of the conference to present recent major results on the theory of quantum computing and to support the building of a research community.

Previous Editions of TQC

- 2018, July 16–18, University of Technology Sydney, Australia
- 2017, June 14–16, Université Pierre et Marie Curie, Paris, France
- 2016, September 27–29, Berlin, Germany
- 2015, May 20–22, Université libre de Bruxelles, Brussels, Belgium
- 2014, May 21–23, Centre for Quantum Technologies, National University of Singapore
- 2013, May 21–23, University of Guelph, Canada
- 2012, May 17–19, University of Tokyo, Japan
- 2011, May 24–26, Madrid, Spain
- 2010, April 13–15, University of Leeds, UK
- 2009, May 11–13, Institute for Quantum Computing, University of Waterloo, Canada
- 2008, January 30–February 1, University of Tokyo, Tokyo, Japan
- 2007, January 24–25, Nara Institute of Science and Technology, Nara, Japan
- 2006, February 22–23, NTT R&D Center, Atsugi, Kanagawa, Japan

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- Anne Broadbent
- Wim van Dam
- Aram Harrow (chair)
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- Jacob Taylor



■ Outstanding Paper Award

From the conference track submissions, the Program Committee selected as the TQC 2019 Outstanding Paper:

D. Gosset and J. Smolin, “A compressed classical description of quantum states”



■ Accepted Workshop Talks

- Gorjan Alagic, Tommaso Gagliardoni, and Christian Majenz, “Unforgeable authentication and signing of quantum states”
- Alessandro Bisio and Paolo Perinotti, “Axiomatic theory of higher-order quantum computation”
- Paul Boes, Jens Eisert, Rodrigo Gallego, Markus Mueller, and Henrik Wilming, “Von Neumann entropy from unitarity”, merged with Paul Boes, Henrik Wilming, Rodrigo Gallego, and Jens Eisert, “Catalytic quantum randomness”
- Johannes Borregaard, Hannes Pichler, Tim Schröder, Mikhail D. Lukin, Peter Lodahl, and Anders S. Sørensen, “One-way quantum repeater with minimal-resources”
- Andrew M. Childs, Aaron Ostrander, and Yuan Su, “Faster quantum simulation by randomization”, merged with Andrew M. Childs and Yuan Su, “Nearly optimal lattice simulation by product formulas”
- Matthias Christandl, Angelo Lucia, Péter Vrana, and Albert H. Werner, “Tensor network representations from the geometry of entangled states”
- Patricia Contreras-Tejada, Carlos Palazuelos, and Julio I. de Vicente, “A resource theory of entanglement with a unique multipartite maximally entangled state”
- Nilanjana Datta, Christoph Hirche, and Andreas Winter, “Convexity and operational interpretation of the quantum information bottleneck function”
- Philippe Faist, Sepehr Nezami, Victor V. Albert, Grant Salton, Fernando Pastawski, Patrick Hayden, and John Preskill, “Continuous symmetries and approximate quantum error correction”, merged with Mischa P. Woods and Álvaro M. Alhambra, “Continuous groups of transversal gates for quantum error correcting codes from finite clock reference frames”
- Steven T. Flammia and Joel J. Wallman, “Efficient learning of Pauli channels”
- Carlos E. González-Guillén and Toby S. Cubitt, “History-state Hamiltonians are critical”
- Alex B. Grilo, “A simple protocol for verifiable delegation of quantum computation in one round”
- Arne L. Grimsmo, Joshua Combes, and Ben Q. Baragiola, “Quantum computing with rotation-symmetric bosonic codes”
- Tamara Kohler and Toby Cubitt, “Toy models of holographic duality between local Hamiltonians”
- François Le Gall, Harumichi Nishimura, and Ansis Rosmanis, “Quantum advantage for the LOCAL model in distributed computing”
- Guang Hao Low, Vadym Kliuchnikov, and Luke Schaeffer, “Trading T-gates for dirty qubits in state preparation and unitary synthesis”
- Iman Marvian and Seth Lloyd, “Universal quantum emulator”
- Thomas Vidick and Tina Zhang, “Classical zero-knowledge arguments for quantum computations”
- Guanyu Zhu, Ali Lavasani, and Maissam Barkeshli, “Universal logical gate sets with constant-depth circuits for topological and hyperbolic quantum codes”



