Ya-Dong Wu, Ph.D.

Office Address	Chow Yei Ching Building, The University of Hong Kong, Pokfulam, Hong Kong
Email	yadongwu@hku.hk
ORCiD	https://orcid.org/0000-0002-9940-6128
Personal page	https://qici.weebly.com/yadong-wu.html
Google scholar	Yadong's Google scholar profile

EMPLOYMENT

Jan. 2020 – Now	Postdoctoral fellow University of Hong Kong, Hong Kong Supervisor: Prof. Giulio Chiribella

EDUCATION

Sep. 2015 – Nov. 2019	Ph.D., Physics University of Calgary, Canada Supervisor: Prof. Barry C. Sanders
Sep. 2012 – Mar. 2015	M.S.E., Electronics Science and Technology Shanghai Jiao Tong University, China
Mar. 2010 – Aug. 2012	Second B.S., Mathematics and Applied Math Shanghai Jiao Tong University, China
Sep. 2008 – Aug. 2012	B.S.E., Electrical and Computer Engineering Shanghai Jiao Tong University, China

RESEARCH HIGHLIGHTS

(1) Propose reliable protocols for verifying multimode continuous-variable entangled states and devices in non-i.i.d scenarios (PRL 2021);

(2) Develop a neural network that learns its own data-driven representation of a quantum state and uses the learned state representation to predict outcome statistics for measurements not performed yet. (Nat. Commun. 2022);

PUBLICATIONS (hyperlinks are contained)

Preprint

(1) Ya-Dong Wu, Giulio Chiribella, "Detecting Quantum Capacities of Continuous-Variable Quantum Channels", arXiv:2108.13348 (accepted by Physical Review Research).

Journal Publications

(2) Yan Zhu, Ya-Dong Wu (corresponding + co-first author), Ge Bai, Dong-Sheng Wang, Yuexuan Wang, Giulio Chiribella, "Flexible Learning of Quantum States with Generative Query Neural Networks". Nature Communications **13**, 6222, 2022

(3) Ge Bai, Ya-Dong Wu, Yan Zhu, Masahito Hayashi, Giulio Chiribella, "Quantum Causal Unravelling", NPJ quantum information **8**, 69, 2022.

(4) Ya-Dong Wu, Ge Bai, Giulio Chiribella, and Nana Liu, "Efficient verification of continuous-variable quantum states and devices without assuming identical and independent operations", Physical Review Letters **126**, 240503, 2021.

(5) Chen Qian, Ya-Dong Wu, Yunlong Xiao, Barry C. Sanders,"Multiple uncertainty relation for accelerated quantum information", Physical Review D, **102**, 096009, 2020.

(6) Mahnaz Jafarzadeh, Ya-Dong Wu (co-first author), Yuval R. Sanders, Barry C. Sanders, "Randomized benchmarking for qudit Clifford gates", New Journal of Physics **22**, 063014 (14 pp.), 2020.

(7) Ya-Dong Wu, Barry C. Sanders, "Efficient verification of bosonic quantum channels via benchmarking", New Journal of Physics **21**, 073026 (21 pp.), 2019.

(8) Ya-Dong Wu, Abdullah Khalid, Barry C. Sanders, "Efficient Code for Relativistic Quantum Summoning", New Journal of Physics **20**, 063052 (18 pp.), 2018.

(9) Mehdi Ahmadi, Ya-Dong Wu, Barry C. Sanders,"Relativistic (2,3)-threshold quantum secret sharing", Physical Review D **96**, 065018 (10 pp.), 2017.

(10) Yadong Wu, Jian Zhou, Xinbao Gong, Ying Guo, Zhi-Ming Zhang, Guangqiang He, "Continuous-variable measurement-device-independent multipartite communication", Physical Review A **93**, 022325 (9 pp.), 2016.

(11) Ya-Dong Wu, Runze Cai, Guangqiang He, Jun Zhang, "Quantum secret sharing with continuous variable graph state", Quantum Information Processing **13**, 1085, 2014.

In Preparation

(12) Ya-Dong Wu, Yan Zhu, Ge Bai, Yuexuan Wang, Giulio Chiribella "StateNet: a data-driven approach to learn quantum similarity"

ORAL PRESENTATIONS

Invited talks(including both conference talks and seminar talks)

(1) "Verification, Validation and Learning of Quantum States & Channels", Workshop on general-purpose quantum computing and information theory, Institute of Theoretical Physics, Chinese Academy of Sciences, online, Jun. 7-8 2022, link on KouShare (in Mandarin)
(2) "Verification, Validation and Learning of Quantum States & Channels", Dahlem Center for Complex Quantum Systems, Free University of Berlin, May 4, 2022, link on Youtube
(3) "Efficient code for quantum summoning" The quantum information structure of spacetime HKU workshop, Hong Kong, Jan. 13-17, 2020.
(4) "Efficient verification of bosonic quantum channels", Quantum computation research center, Peng Cheng Lab, Shenzhen, July 2019.
(5) "Efficient verification of bosonic quantum channels", Fujian key lab of quantum information and quantum optics, Fuzhou University, Fuzhou, May 2019.

Conference contributed talks

(1) "Flexible Learning of Quantum States with Generative Query Neural Networks", Quantum Technologies in Machine Learning, Naples, Italy, Nov. 8-11, 2022 (extended talk)
(2) "Detecting quantum capacities of continuous-variable quantum channels", Beyond IID in Information Theory, Sustech, Online, Sep. 26-30, 2022.
(3) "Detecting quantum capacities of continuous-variable quantum channels", Asian Quantum Information and Science Conference, Tokyo, Online, Sep. 1-4, 2021.
(4) "Efficient verification of continuous-variable quantum states and quantum devices beyond independent and identical assumption", Asian Quantum Information and Science Conference, Sydney, online, Dec. 7-9, 2020.
(5) "Efficient verification of continuous-variable quantum states and

quantum devices beyond independent and identical assumption", Beyond IID in Information Theory, online, Nov. 9-13, 2020. (lightning talk)

(6) "Efficient verification of bosonic quantum channels via benchmarking", Asian Quantum Information and Science Conference, Seoul, Aug. 19-23, 2019.

(7) "Efficient verification of bosonic quantum channels via benchmarking", Mini-Workshop on Quantum Verification, Fudan University, Shanghai, Aug. 16-17, 2019.

(8) "Quantum information summoning using quantum secret sharing and teleportation", Conference on Quantum Information and Quantum Control VII, Toronto, Aug. 2017. (Presented by coauthor)

(9) "Spacetime replication of quantum information with (2,3) quantum secret sharing and teleportation", APS March Meeting, New Orleans, Mar. 2017.

AWARDS

- 2017-2019, Awarded Departmental Graduate Student Excellence Award, by University of Calgary.
- 2010, Awarded the first-class prize in Contemporary Undergraduate Mathematical Contest in Modeling, Shanghai.

MENTORING

- Mentor a visiting PhD student at University of Calgary on her project, 2019
- Mentor a PhD student at University of Science and Technology of China when I visit there, 2019
- Mentor a PhD student at Hong Kong University on his project, 2021-2022

TEACHING

- 2015-2018, Teaching assistant, University of Calgary: Optics & Electromagnetism; Introductory Electromagnetism and Thermal

Physics; Mechanics.

- 2010-2012, Teaching assistant, Shanghai Jiao Tong University: Differential Equations and Complex Analysis; Introduction to Circuits; Discrete Mathematics.

ACADEMIC SERVICES

- Referee for New Journal of Physics, Quantum Science and Technology, Journal of Physics A.