

Cunlu Zhou

CONTACT INFORMATION	+1 (819) 821-8000 x62406 cunlu.zhou@usherbrooke.ca Homepage: cunluzhou.com Google Scholar Profile: link	Département d'informatique (D4) Université de Sherbrooke 2500 Boul. de l'Université Sherbrooke (Québec), Canada, J1K 2R1
RESEARCH INTERESTS	Quantum computing, quantum algorithms, quantum learning, optimization, computational complexity, and connections to physics	
APPOINTMENTS	Current: 01/2026– IBM Quantum Research Chair, Université de Sherbrooke, QC 09/2025– Associate Academic Member, Mila – Quebec AI Institute, QC 11/2024– Member, Institut quantique, Université de Sherbrooke, QC 08/2024– Assistant Professor of Computer Science, Université de Sherbrooke, QC Past: 08/2021– FRHTP Postdoctoral Fellow, Center for Quantum Information and Control, 08/2024 University of New Mexico, Albuquerque, NM 2020–2021 Postgraduate Affiliate, Vector Institute, Toronto, ON 07/2019– Postdoctoral Fellow in Computer Science, University of Toronto, ON 07/2021 Supervisor: Henry Yuen	
EDUCATION	University of Notre Dame Notre Dame, IN, USA Ph.D. in Mathematics May 2019 • Dissertation: <i>Entropy, Optimization, and Coding Theory</i> • Advisors: Roxana Smarandache and Leonid Faybusovich Capital Normal University Beijing, China M.S. in Mathematics June 2012 • Thesis: <i>A Remark on Calc. Var. Partial Differential Equations, 329–344 (2002)</i> • Advisor: Zhaoli Liu Chongqing Normal University Chongqing, China B.A. in Mathematics June 2009	
HONORS AND AWARDS	2026–2030 2021–2024 2020–2021 2009–2012	IBM Quantum Research Chair NSF FRHTP Postdoctoral Fellowship Center for Quantum Information and Control, University of New Mexico, Albuquerque, NM, USA Postgraduate Affiliate Award Vector Institute, Toronto, ON, Canada University Scholarships Capital Normal University, Beijing, China
GRANTS	2026–2029 2026–2031 2026–2029	NSERC Alliance Advantage, Co-PI (total award: \$760,402) NSERC Discovery Grant, PI (\$192,500) Mitacs Accelerate Grant, PI (\$315,000)

PUBLICATIONS

Dai, J., Nahman-Lévesque, O., Rabusseau, G., Hu, H., and **Zhou, C.**, *Generative Learning of Optimal Quantum Measurements*, manuscript in preparation, 2026.

Yi, C., Takahashi, J., and **Zhou, C.**, *Discrete Sum-of-Squares Parent Hamiltonians from Modular Transformations*, manuscript in preparation, 2026.

Yi, C. and **Zhou, C.**, *A Symmetry-Enabled Direct Quantum Protocol for Many-Body Green's Functions*, arXiv:2509.03288. Submitted.

Yi, C., **Zhou, C.**, and Takahashi, J., *Quantum Phase Estimation by Compressed Sensing*, Quantum **8**, 1579, Dec. 2024. doi:10.22331/q-2024-12-27-1579

Takahashi, J., Rayudu, C., **Zhou, C.**, King, R., Thompson, K., and Parekh, O., *An $SU(2)$ -Symmetric Semidefinite Programming Hierarchy for Quantum Max Cut*, arXiv:2307.15688, Jul. 2023. Accepted to TQC 2024; journal manuscript submitted.

Wiersema, R., **Zhou, C.**, Carrasquilla, J. F., and Kim, Y. B., *Measurement-induced entanglement phase transitions in variational quantum circuits*, SciPost Phys. **14**, 147, Jun. 2023. doi:10.21468/SciPostPhys.14.6.147

Faybusovich, L. and **Zhou, C.**, *Long-Step Path-Following Algorithm in Quantum Information Theory: Some Numerical Aspects and Applications*, Numerical Algebra, Control & Optimization, 12(2):445-467, Jun. 2022. doi:10.3934/naco.2021017

Wiersema, R., **Zhou, C.**, de Sereville, Y., Carrasquilla, J. F., Kim, Y. B., and Yuen, H., *Exploring entanglement and optimization within the Hamiltonian Variational Ansatz*, PRX Quantum **1**, 020319, Dec. 2020. doi:10.1103/PRXQuantum.1.020319

Faybusovich, L. and **Zhou, C.**, *Self-Concordance and Matrix Monotonicity with Applications to Quantum Entanglement Problems*, Applied Mathematics and Computation, 375:125071, Jun. 2020. doi:10.1016/j.amc.2020.125071

Faybusovich, L. and **Zhou, C.**, *Long-Step Path-Following Algorithm for Solving Symmetric Programming Problems with Nonlinear Objective Functions*, Comput Optim Appl, 72(3):769-795, Apr. 2019. doi:10.1007/s10589-018-0054-7

Zhou, C., Mitchell, D. G. M., and Smarandache, R., *Free Pseudodistance Growth Rates for Spatially Coupled LDPC Codes over the BEC*, 2018 IEEE Information Theory Workshop (ITW), pp. 1-5, Guangzhou, 2018. doi:10.1109/ITW.2018.8613507

PRESENTATIONS

Generative Learning of Optimal Quantum Measurements, 2026 CAP Congress, Ottawa, ON, Jun. 2026 (invited talk)

Unlocking Quantum Computing's Power through Optimization and Learning, INTRIQ Spring Meeting, Bromont, QC, May 2026 (invited talk)

Unlocking Quantum Computing's Power through Optimization and Learning, Institut quantique (IQ) Annual Colloquium, Sherbrooke, QC, Apr. 2026 (invited talk)

Generative Learning of Optimal Quantum Measurements, Quantum Computing for Quantum Chemistry, Molecular Dynamics, and Beyond workshop, Telluride, CO, Mar. 2026 (invited talk)

AI-Driven Quantum Algorithm Design: Towards Optimal Measurement Protocols via

GFlowNets, Mila-DistriQ AI x Quantum Annual Event, Sherbrooke, QC, Feb. 2026 (invited talk)

AI-Driven Quantum Algorithm Design: Towards Optimal Measurement Protocols via GFlowNets, Quantum Days 2026, Victoria, BC, Feb. 2026 (invited talk)

Ancilla-Free Quantum Protocol for Thermal Green's Functions, INTRIQ Fall Meeting, Bromont, QC, Nov. 2025 (invited talk)

Quantum Phase Estimation by Compressed Sensing, Algorithms for Quantum Advantage Workshop, Montréal, QC, Jul. 2025 (invited talk)

Advancing Quantum Algorithm Development in Québec, Quantum Forum 2025, Troy, NY, Apr. 2025 (keynote)

Quantum Phase Estimation by Compressed Sensing, 10th International Conference on Quantum Information and Quantum Control, The Fields Institute, Toronto, ON, Aug. 2024 (talk)

Algorithms, Complexity, and Quantum Many-body Physics, University of Calgary, Calgary, AB, Apr. 2024 (talk)

Algorithms, Complexity, and Quantum Many-body Physics, University of Pittsburgh, Pittsburgh, PA, Mar. 2024 (talk)

Algorithms, Complexity, and Quantum Many-body Physics, Université de Montréal, Montréal, QC, Feb. 28, 2024 (talk)

Some Recent Results on Quantum Phase Estimation and Quantum MaxCut, University of Miami, Coral Gables, FL, Feb. 2024 (talk)

Some Recent Results on Quantum Phase Estimation and Quantum MaxCut, Université de Sherbrooke, Sherbrooke, QC, Jan. 22, 2024 (talk)

An $SU(2)$ -Symmetric Semidefinite Programming Hierarchy for Quantum MaxCut, Université de Sherbrooke, Sherbrooke, QC, Oct. 2023 (invited talk)

An $SU(2)$ -Symmetric Semidefinite Programming Hierarchy for Quantum MaxCut, 2023 Modeling and Optimization: Theory and Applications (MOPTA), Lehigh University, Bethlehem, PA, Aug. 2023 (talk)

A Singlet Projector Based NPA Hierarchy for the Quantum MaxCut problem, Vector Institute, Toronto, ON, Jun. 2023 (invited talk)

A Singlet Projector Based NPA Hierarchy for the Quantum MaxCut problem, 2023 CMS Summer Meeting, Ottawa, ON, Jun. 2023 (invited talk)

Entanglement and Optimization within the Hamiltonian Variational Ansatz, Fermilab, Batavia, IL, Jan. 2021 (invited talk)

Entanglement and Optimization within the Hamiltonian Variational Ansatz, Dahlem Center for Complex Quantum Systems, Freie Universität Berlin, Berlin, Dec. 2020 (invited talk)

Entanglement and Optimization within the Hamiltonian Variational Ansatz, 2020 Quantum Techniques in Machine Learning (QTML), Cambridge, MA, Nov. 2020 (invited talk)

A Long-Step Path-Following Algorithm for Quantum Entropy Optimization, IQC, Waterloo, ON, Jan. 2019 (invited talk)

Long-Step Path-Following Algorithm for Nonlinear Symmetric Problems with Applications to Quantum Entropy Optimization, 2019 Joint Mathematics Meetings (JMM), Baltimore, MD, Jan. 2019 (talk)

Free Pseudodistance Growth Rates for Spatially Coupled LDPC Codes over the BEC, 2018 IEEE Information Theory Workshop (ITW), Guangzhou, Nov. 2018 (talk)

Long-Step Path-Following Algorithm for Nonlinear Symmetric Programming Problems, 23rd International Symposium on Mathematical Programming (ISMP), University of Bordeaux, Bordeaux, Jul. 2018 (talk)

EXTENDED
PROFESSIONAL
TRAVEL

November	2023	Institute for Pure and Applied Mathematics, Los Angeles, USA
October	2023	Vector Institute, Toronto, Canada
February	2022	Kavli Institute for Theoretical Physics, Santa Barbara, USA
February	2020	Simons Institute for the Theory of Computing, Berkeley, USA
December	2019	Israel Institute for Advanced Studies, Jerusalem, Israel
Summer	2018	IBM Research Lab, Dublin, Ireland
October	2015	Mathematical Coding Theory in Multimedia Streaming, Banff International Research Station (BIRS), Banff, Canada
Summer	2015	École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

TRAINEES

UG	Louis-Félix Vigneux (industry internship, co-supervised with Quandela, 2026)
UG	Ludovic Chabot Provencher (co-supervised with Dave Touchette, 2026)
MSc	Elisabeth Mailhot (co-supervised with Dave Touchette, Winter 2026–)
MSc	Julien-Pierre Houle (co-supervised with Alexandre Blais, Fall 2025–)
UG	Elisabeth Mailhot (co-supervised with Dave Touchette, Summer 2025)
UG	Ludovic Chabot Provencher (co-supervised with Dave Touchette, Summer 2025)
UG	Mathis Beaudoin (co-supervised with Dave Touchette, Summer 2025)
UG	Louis-Félix Vigneux (co-supervised with AlgoLab, Summer 2025)

TEACHING
EXPERIENCE

Université de Sherbrooke:

Winter	2026	Instructor, Advanced Topics in Quantum Algorithms
Summer	2025	Instructor, Quantum Algorithms

University of New Mexico:

Summer	2024	Instructor, Optimization and Quantum Foundations
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University of Notre Dame:

Spring	2018	Teaching Assistant, Calculus III
Spring	2017	Instructor, Calculus B
Fall	2016	Teaching Assistant, Linear Algebra and Differential Equations
Spring	2015	Teaching Assistant, Linear Algebra and Differential Equations
Fall	2014	Teaching Assistant, Linear Algebra and Differential Equations
Spring	2014	Teaching Assistant, Calculus B
Fall	2013	Teaching Assistant, Calculus B

SERVICE

Université de Sherbrooke

05/2026–	Program Committee Member, 2026 IEEE International Conference on
09/2026	Quantum Computing and Engineering
10/2025–	Planning & Scientific Committee, 2026 Canadian Workshop on Quantum
04/2026	Algorithms
08/2025–	Local Organizing Committee, Theory of Quantum Computation, Com-
09/2026	munication and Cryptography (TQC 2026)
05/2025–	Management Committee, AlgoLab
01/2025–	Organizer, Quantum Algorithms Research Seminar (QARS)
12/2024–	Scientific Committee, 2026 AlgoLab Summer School
06/2026	

University of New Mexico

2023	Organizer, CQuIC Seminar
2022	Organizer, SDP & Approximation Algorithms Seminar
2022	Program Committee, Southwest Quantum Information and Tech-
	nology (SQuInT 2022)

REFERENCES

Roxana Smarandache (Ph.D. advisor), Professor

Department of Mathematics and Electrical Engineering,
University of Notre Dame, Notre Dame, IN, USA
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Henry Yuen (Postdoc supervisor), Professor

Department of Computer Science, Columbia University, New York City, NY, USA
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Juan Felipe Carrasquilla, Professor

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Ojas Parekh, Principal Member of Technical Staff

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