Jian Wei CHEONG

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Curriculum Vitae

Professional Qualifications

2019 - 2023 **PhD, Physics (4.89/5)**, *Nanyang Technological University*, Singapore

2015 - 2019 **BSc, Physics, Honours (4.73/5)**, *Nanyang Technological University*, Singapore

2010 - 2013 **Diploma, Electrical Engineering (3.7/4)**, *Ngee Ann Polytechnic*, Singapore

Professional Experience

2024 - current **Research Fellow**, *Nanyang Technological University*, Singapore

2023 **Project Officer**, *Nanyang Technological University*, Singapore

2012 **Intern**, *ST Electronics*, Singapore

Teaching Assistant, *Nanyang Technological University*, Singapore

Year	Course
2025	Physics Discovery Camp - Computational Nonlinear Lab
2025	PH3101 Quantum Mechanics 2 (Restricted Repeat)
2024	Physics Discovery Camp - Computational Nonlinear Lab
2021	PH3101 Quantum Mechanics 2
2020	PH1199 Physics Lab 1B
2019	PH1198 Physics Lab 1A

Awards & Achievements

2019 **Short-speech Contest Best Presentation** (PAP701 Graduate seminar module), Nanyang Technological University, Singapore

2017/2018 **Dean's List** (top 5% of cohort), Nanyang Technological University, Singapore

2016/2017 **NTU President Research Scholar** (completing URECA), Nanyang Technological University, Singapore

2011 **Director's List** (top 5% of cohort), Ngee Ann Polytechnic, Singapore

2011 **Best Performance, Programmable Logic Device** (top student of cohort), Ngee Ann Polytechnic, Singapore

2010 **Best Performance, Digital Electronics & Practice** (top student of cohort), Ngee Ann Polytechnic, Singapore

Publications

1. J. W. Cheong, A. Pradana, and L. Y. Chew, **Non-Markovian refrigeration and heat flow in the quantum switch**, *Physical Review A, 110(2), 022220 (2024)*.
2. L. Y. Chew, A. Pradana, L. He, and J. W. Cheong, **Stochastic thermodynamics of finite-tape information ratchet**, *European Physical Journal Special Topics (2023)*.
3. J. W. Cheong, A. Pradana, and L. Y. Chew, **Effects of non-Markovianity on daemonic ergotropy in the quantum switch**, *Physical Review A, 108(1), 012201 (2023)*.
4. L. He, J. W. Cheong, A. Pradana, and L. Y. Chew, **Effects of correlation in an information ratchet with finite tape**, *Physical Review E, 107(2), 024130 (2023)*.
5. J. W. Cheong, A. Pradana, and L. Y. Chew, **Communication advantage of quantum compositions of channels from non-Markovianity**, *Physical Review A, 106(5), 052410 (2022)*.
6. L. He, A. Pradana, J. W. Cheong, and L. Y. Chew, **Information processing second law for an information ratchet with finite tape**, *Physical Review E, 105(5), 054131 (2022)*.

Conferences

Proceedings

1. L. Y. Chew, J. W. Cheong, and A. Pradana, **Thermodynamic Functionality of Non-detailed Balance Finite-Tape Information Ratchet**, *International Conference on Geometric Science of Information, Springer Nature Switzerland, pp. 173–181 (2025)*.

Posters

1. J. W. Cheong, A. Pradana, and L. Y. Chew[†], **Enhancement of quantum processes from indefinite causal order through non-Markovianity**, *29th International Conference on Statistical Physics (STATPHYS29), Florence, Italy, July 2025*.
2. J. W. Cheong[†], A. Pradana, and L. Y. Chew, **Non-Markovian refrigeration and heat flow in the quantum switch**, *Quantum Thermodynamics Conference 2025 (QTD2025), Singapore, July 2025*.
3. L. Y. Chew[†], J. W. Cheong, and A. Pradana, **Enhancement of quantum processes from indefinite causal order through non-Markovianity**, *XLV Dynamics Days Europe 2025 (DDE2025), Thessaloniki, Greece, June 2025*.
4. L. Y. Chew[†], L. He, A. Pradana, and J. W. Cheong, **Stochastic thermodynamics and correlation effects of finite-tape information ratchets**, *28th International Conference on Statistical Physics (STATPHYS28), Tokyo, Japan, August 2023*.

[†]Presenting author.

Technical Experience

	Skill	Level	Comment
Programming	Python	●●●●	9+ years experience, used in main work
	Julia	●●●●	4+ years experience, used in main work
	R	●●○○	graduate course, computional biology projects
	C / C++	●●○○	bachelor course, undergrad projects
	MATLAB	●●○○	bachelor course, undergrad projects
	Haskell	●○○○	personal quantum computing projects
	Racket	●○○○	personal quantum computing projects
	Common Lisp	●○○○	personal software projects
	Bash / sh	●●●○	personal Linux projects
	Quarto	●●●○	website, presentations, and reports
	LaTeX / Typst	●●●○	presentations, reports, and published papers
	HTML / CSS	●●○○	personal website

●○○○ basic knowledge ●●●○ extensive knowledge

●●○○ intermediate knowledge ●●●● expert knowledge

Miscellaneous Projects

- **Strain estimation for hazard forecastings before and after 2011 Japan Tohoku earthquake** by analysis of seismic GPS displacement data and computation of seismic strains from velocity fields.
  ES7008 Geophysical Data Analysis, NTU
- **Variations in statistical complexity of genome sequences across species** by analysis of genome sequences from GenBank assembly with Baum-Welch algorithm.
  CE7412 Computational and Systems Biology, NTU
- **Detecting adversarial attack of deep neural networks for image recognition from image complexity** by Fast Gradient Sign Method (FGSM), DeepFool, One Pixel Attack, and Jacobian-Based Saliency Map Attack (JSMA).
  PH3502 Chaotic Dynamical Systems, NTU
- **Monte Carlo photon transport in multi-layered biological tissues** with Henyey-Greenstein scattering for diagnostic imaging and photon therapy.
  PH4505 Computational Physics, NTU
- **Monte Carlo simulation of periodic-driven Brownian particles** with Arrhenius equation, demonstrating dissipation-driven adaptation.
  PAP723 Numerical Methods for Physicists, NTU
- **Designing, programming, 3D printing, and building a hovering quadcopter drone** with Arduino, Autodesk EAGLE, Fusion360, and COMSOL Multiphysics.
  Making and Tinkering Lite 1, NTU