

Takla Nateeboon

CONTACT INFORMATION

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EDUCATION

University of Calgary

M.Sc., Mathematics and Statistics (September 2023 - Present)

- Overall GPA: 3.43/4

Mahidol University

B.Sc., Physics (August 2019 - May 2023)

- Overall GPA: 3.92/4

RESEARCH EXPERIENCE

Entropy for quantum channels (November 2023 - Present)

- Supervised by Prof. Gilad Gour
- Studying majorization relation and the generalization of entropy functions on the domain of quantum channels.

Quantum memories (June 2022 - June 2023)

- Mentored by Asst. Prof. Sujin Suwanna
- Studying decoherence effect on quantum memory performance
- Applying the theoretical model to evaluate hexagonal boron nitride defects

Quantum dynamics (May 2019 - May 2021)

- Mentored by Asst. Prof. Sujin Suwanna
- Developing a heuristic model to study how Wick rotation affects on quantum random walk

Traffic flow with self-driving car (July 2017 - June 2019)

- Mentored by Ekapong Hirunsirisawat and Teerasit Termsaithong
- Running traffic simulations of self-driven and human-driven cars to investigate the role of cars' parameters on the traffic flow.
- Developing a coarse-grained model to describe the macroscopic behavior of cars from their microscopic parameters

PUBLICATIONS

[1] T. Nateeboon, C. Cholsuk, T. Vogl, and S. Suwanna, "Modeling the performance and bandwidth of single-atom adiabatic quantum memories", doi:10.1063/5.0188597

PREPRINTS

[2] G. Gour, D. Kim, T. Nateeboon, G. Shemesh, and G. Yoeli, "Inevitable Negativity: Additivity Commands Negative Quantum Channel Entropy" doi:10.48550/arXiv.2406.13823

CONFERENCE PUBLICATIONS

[3] T. Nateeboon, T. Termsaithong, and E. Hirunsirisawat, "Macroscopic model for multi-anticipation self-driving cars," *Journal of Physics: Conference Series*, **1380(1)**, 012099 – 2019 doi:10.1088/1742-6596/1380/1/012099

[4] T. Nateeboon, H. Tawabutr, T. Termsaithong, and E. Hirunsirisawat, "Ability to damp traffic wave when controlling every car on the road by FollowerStopper controller," *Journal of Physics: Conference Series*, **1144**, 012087 – 2018 doi:10.1088/1742-6596/1144/1/012087

- CONFERENCE TALKS
- [5] T. Nateeboon, C. Cholsuk, T. Vogl, and S. Suwanna, “Effects of cavity and atomic decay rates on efficiencies of quantum memory”, *Condense Matter and Quantum Matierial 2023*, IOP, Birmingham, UK – May 28-30, 2023
 - [6] T. Nateeboon and S. Suwanna, “Partial Wick Rotation in Quantum Random Walk”, *Siam Physics Congress 2021*, Thai Physics Society, Online– May 24-25, 2021
 - [7] T. Nateeboon, T. Termsaithong, and E. Hirunsirisawat, “Macroscopic model for multi-anticipation self-driving cars,*Siam Physics Congress 2019*, Thai Physics Society, Hat Yai, Songkla, Thailand – June 6-7, 2019
 - [8] T. Nateeboon, H. Tawabutr, T. Termsaithong, and E. Hirunsirisawat, “Ability to damp traffic wave when controlling every car on the road by FollowerStopper controller,” *Siam Physics Congress 2018*, Thai Physics Society, Pitsanulok, Thailand – May 21-23, 2018
 - [9] T. Nateeboon, H. Tawabutr, T. Termsaithong, and E. Hirunsirisawat, “Traffic Flows Simulation in the Mixing of Human-Driven and Self-Driving Cars,” *8th SciUS Forum*, Ministry of Science and Technology, Hat Yai, Songkla, Thailand – May 2-5, 2018

TRAINING

Research visit (February-April, 2023)

- at the Friedrich Schiller University Jena
- host by Prof. Tobias Vogl and the integrated quantum system research group
- developing a quantum memory model for adiabatic type quantum memories
- observing experiments in quantum optics and photonics

Web Design: Strategy and Information Architecture (August-September, 2022)

- A Coursera course for UX design of website focusing on the site map
- Learning to design, evaluate, and identify user needs and customer needs
- [link to the certificate](#)

Quantum Thermodynamics Summer School (August 23-27, 2021)

- Introduction to open quantum evolution, resource theory, and quantum information.
- Hosted by ETH Zurich and Squid (Schools for Quantum Information Development)

Using Python to Access Web Data (June-August, 2021)

- A Coursera course on how to retrieve, store, and manipulate data from web or api via various Python commands
- [link to the certificate](#)

Summer School on Quantum Computing (SCQC 2021) (July 27-30, 2021)

- Basic gate operations and quantum algorithms
- Coding on IBMq machine via Qiskit

3rd Thailand School on High-Energy and Astro-Physics (July 4-10, 2021)

- Physics foundation necessary to understand particles physics
- Introduction to the concept of Field Theory and dark matter

The 5th KMUTT Summer School on Theoretical Physics: Complex Systems & Biophysics (June 28 - July 1, 2021)

- Dynamical systems and their applications in physics and biology.

The 4th KMUTT Summer School on Theoretical Physics: Multi-Scale Modelling (June 10 - 14, 2019)

- Modelling and running simulation for in physical and chemical systems
- Coding workshops and programming tutorial

SKILLS

Language

- Thai (Native)
- English (Advanced) - IELTS 7.5
- German (Beginner)

Software

- Mathematica
- Git

Computer language

- Python (Numpy, Pandas)
- LaTeX
- HTML
- Javascript
- CSS

SCHOLARSHIPS

Junior Science Talent Project's Scholarship

from National Science and Technology Development Agency, Ministry of Higher Education, Science, Research and Innovation – (2019-Present)

- monthly stipend and tuition fee
- A nation-wide and highly selective program supporting science and technology students in domestic academic institutions

Science Classrooms in University-Affiliated School Project's Scholarship (SCiUS)

from Ministry of Science and Technology of Thailand – (2016-2019)

- a government funded program which admit the selected students to a specialized STEM highschool
- covered the tuition fee, meals, dormitory, and extracurricular activities

AWARD

Physics senior project competition

won and awarded from the Siam Physics Society - June 2023

- competitive program for undergraduate students nationwide.
- the prize included 25,000 THB of cash and a Princess Galyani Vadhana trophy

Popular award for poster session in SCiUS Forum

from Ministry of Science and Technology of Thailand – 2018

Voted by students and staff in a nation-wide science project competition

REFERENCES

Sujin Suwanna, Ph.D.

sujin.suw@mahidol.ac.th

- Assistant Professor at Department of Physics, Faculty of Science, Mahidol University
- My undergraduate advisor and mentor