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## Professional Summary

PhD student in quantum computing with concentration in quantum programming languages, nonlocality theory, quantum networks and quantum tomography. Focused on developing methods for quantum circuit verification, entanglement verification and quantum channel learning with applications in quantum information processing.

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## Education

- 09/2023 – present** **PhD student in Computer Science**  
*Stony Brook University, New York, United States*  
Thesis advisor: *Prof. Nengkun Yu*
- 09/2022 – 08/2023** **Master in Quantum Information**  
*Sorbonne Université, Paris, France*  
Thesis: “NONLOCALITY DISTILLATION”  
Advisor: *Jean-Daniel Bancal, Mirjam Weilenmann and Peter Brown*
- 09/2021 – 08/2022** **Master in Theoretical Physics**  
*Ecole normale supérieure (ENS) de Paris, France*  
Thesis: “CLASSICAL SIMULATION OF SHALLOW RANDOM QUANTUM CIRCUITS”  
Advisor: *Prof. Omar Fawzi*
- 09/2018 – 08/2021** **Engineering program (Ingénieur polytechnicien)**  
*Ecole polytechnique, Institut polytechnique de Paris (IPP), Palaiseau, France*  
Specialized in *Fundamental Physics*

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## Publications

- 04/2025** **Entanglement certification by measuring nonlocality**, *Xuan Du Trinh, Zhengyu Wu, Junlin Bai, Huan-Hsin Tseng, Nengkun Yu and Aruna Balasubramanian, (pre-print)*.  
Impact: Novel approach for entanglement certification with applications in quantum network.
- 04/2025** **Scalable Equivalence Checking and Verification of Shallow Quantum Circuits**, *Nengkun Yu, Xuan Du Trinh and Thomas Reys, [arXiv:2504.01558](#)*  
Impact: Developed efficient algorithms for verifying quantum circuit equivalence, crucial for quantum software reliability.
- 02/2024** **Adaptivity is not helpful for Pauli channel learning**, *Xuan Du Trinh and Nengkun Yu, [arXiv:2403.09033](#)*  
Impact: Demonstrated optimal strategies for Pauli channel estimation with entangled resources, improving quantum system characterization techniques.

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## Research Experience

- 05/2023 – 09/2023** **Research internship**  
*Center for Theoretical Physics (IPhT), Commissariat à l'Énergie Atomique (CEA), France*  
Advisor: *Jean-Daniel Bancal, Mirjam Weilenmann and Peter Brown*  
Project: “NONLOCALITY DISTILLATION”  
Developed optimization-based methods for quantum nonlocality distillation with for enhancing quantum key distribution security.
- 04/2022 – 07/2022** **Research internship**  
*Inria de Lyon, Ecole normale supérieure (ENS) de Lyon, France*  
Advisor: *Prof. Omar Fawzi*  
Project: “CLASSICAL SIMULATION OF SHALLOW RANDOM QUANTUM CIRCUITS”  
Developed new methods for simulating shallow quantum circuits based on semidefinite programming.

**03/2021 – 07/2021   Research internship**

*Irène-Joliot Curie Physics of Two Infinities Lab, Orsay, France*

Advisors: *Louis Fayard, Zhiqing Zhang*

Project: “STUDY OF PARTON DISTRIBUTION FUNCTIONS ASSOCIATED TO THE UNCERTAINTY IN THE W BOSON MASS MEASUREMENT”

Analyzed the contribution of parton distribution functions’ uncertainty to the systematic uncertainty of the W boson mass measurement in the ATLAS detector.

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**Peer Review Service**

**06/2024   Reviewer**, *44th IEEE International Conference on Distributed Computing Systems*

**02/2024   Reviewer**, *International Joint Conference on Neural Networks 2024, Quantum Machine Learning Session*

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**Skills**

**Quantum Computing**

Frameworks   NetSquid, Qiskit, Quantum algorithms, Quantum channel learning

**Programming**

Languages   Python, MATLAB,C, Java

**Software & Tools**

Data Analysis   ROOT, Mathematica

Simulation   COMSOL, Ansys Fluent

**Languages**

Native   Vietnamese

Proficient (B2)   English, French

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**Achievements**

**09/2023 – 09/2025   Chairman Fellowship**

Granted by the Department of Computer Science, Stony Brook University

**10/2021 – 09/2022   VALLET Scholarship**

Financial sponsorship by the VALLET Foundation

**09/2018 – 08/2021   EIFFEL Scholarship**

Financial sponsorship by the French government

**04/2016   Third prize** in the Vietnamese Mathematical Olympiad for undergraduate students

**03/2015   Third prize** in the Vietnamese Physics Olympiad for high school students