



INSTITUT
POLYTECHNIQUE
DE PARIS

Quantum Engineering: QEng

Graduate Program in

Quantum Information Science and Technologies

Program Coordinator: romain.alleaume@telecom-paris.fr

QEng in brief:

Access PhD Program (M2)

6-months intensive training on Q Science & Tech

😊 Extended Course Offer in 2024

➤ 6 Courses (about 4 courses / week)

- **QEng301: Crash Courses in Q Physics, Q Information and Q Computing** (3 ECTS), in partnership with ARTeQ, ENS Paris-Saclay (ARTeQ-QEng)
- **QEng302: Quantum Hardware** (3 ECTS) in partnership with ARTeQ, ENS Paris-Saclay (ARTeQ-QEng)
- **QEng303: Q Information Theory** (3 ECTS) Telecom Paris (QEng)
- **QEng304: Q Cryptography** (3 ECTS) Telecom Paris (QEng)
- **QEng305: Advanced Quantum Computing** (4.5 ECTS) Telecom Paris (QEng)
- **QEng306: Q Error Correction and Diagrammatic Q Computing** (3 ECTS), in partnership with Univ. Paris-Saclay (M2 QDCS -QEng)

➤ **PRIM380: Supervised 4-months Research Project (PRIM), (12 ECTS)**

- Weekly supervision, 4 months duration (mid-oct => mid-feb)

➤ **QEng307: Preparation à la recherche de stage**

- 1 course + 2 personalized coaching sessions

QEng Alumni: internships after the program (and more)

QEng Student Name	Year	Internship Title	Internship Host	Activity after QEng
Raja Yehia	2017	<i>Quantum repeater protocols</i>	QuTech Delft	PhD, LIP6
Raphaël Aymeric	2017	<i>Numerical approaches for key rate computation in QKD</i>	IQC, Waterloo Canada	PhD, Télécom Paris Engineer, Thales
Emilien Lavie	2018	<i>Theoretical Quantum cryptography</i>	CQT, Singapore	PhD, Singapour
Sofiène Jerbi,	2018	<i>Quantum Machine Learning</i>	Innsbruck university	PhD, Innsbruck PostDoc, ICFO
Arnaud Gazda	2018	<i>Quantum Circuits Optimization</i>	Atos Quantum	Engineer (CDI) Atos Quantum
Charles Christen	2018	<i>Proposal of gravitational anti-matter acceleration measurement</i>	LKB, Paris	Corps Armement, DGA
Julia Callebat	2018	<i>Evaluation of Post-Quantum Cryptography NIST submissions</i>	UVSQ, Versailles	
Joachim Tomasi	2019	<i>Quantum Artificial Intelligence</i>	QUTIS Bilbao	Engineer, Qubisoft
Lucien Grouès	2019	<i>Quantum LDPC codes</i>	Inria Paris	PhD, Inria Paris
Margarita Veshchezerova	2019	<i>Quantum algorithms for optimization</i>	EDF Paris Saclay	PhD, LORIA Engineer, TerraQuantum
Yuan YAO	2019	<i>Application of Q algorithms to chemical reaction simulation</i>	Total Paris Saclay	PhD, Télécom Paris PostDoc, Xanadu
Pierre-Antoine Mouny	2020	<i>Engineering of transmons quantum computers</i>	ETH Zürich	PhD, Sherbrooke (Canada)
David Fainsin	2020	<i>Space segment of the European Quantum Communication Infrastructure</i>	Airbus Defense and Space, Toulouse	PhD, LKB - Sorbonne U, Paris
Hamza Jnane	2020	<i>Quantum Computational Chemistry</i>	Sungkyunkwan Uni Korea	PhD, Oxford, UK

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QEng Student Surname Name	Year	Internship Title	Internship Host	Activity after QEng
Gabriel Silva Viera de Melo	2023	<i>Quantum Data Science</i>	IBM, Gif sur Yvette	PhD, Yale University
Gregory Brivady	2023	<i>Algo Q pour aeronautique</i>	CAP GEMINI, Toulouse	
Martin Novello	2023	<i>Réécriture de circuits quantiques</i>	LORIA, Nancy	
Jules Dany	2023	<i>Quantum computational chemistry</i>	BASF, Hannovre	
Ben Ismail Rayen	2024	<i>Quantum Machine Learning et Optimization</i>	Qubisoft	
Idris Delsol	2024	<i>Quantum Error Correction</i>	Freie Universität Berlin	
Kriss Gutierrez Anco	2024	<i>Hybrid-Qubit encoding for Q photonic variational algorithms.</i>	Quandela	
Tristan Philippe	2024	<i>Blind Quantum Computing</i>	CQT Singapore	
William Piedot	2024	<i>From chip to Screening</i>	Alice & Bob	
Clément Poirson	2024	<i>Quantum error correction - Quantum LDPC codes</i>	QSL- Univ Edinburgh	
Rola Saidi	2024	<i>NISQ Algo for probabilistic safety estimation</i>	EDF R&D Saclay	
Amine Souiri	2024	<i>Shadow tomography and Quantum Machine Learning</i>	IBM- Bois Colombe	
Thomas Vinet	2024	<i>Quantum Algorithms</i>	Perimeter Institue Canada	

Modalités d'inscription

- Candidatures sur dossier
- 3A transverse: ouverte à tous les élèves de Télécom Paris (et de l'IMT, candidature sur dossier)
- Nombre limité de places, plusieurs viviers (TP, X, IMT)

Calendrier

- Candidature par email **avant le 15 Avril 2024:**
romain.alleaume@telecom-paris.fr
- Pièces demandées:
 - CV
 - Lettre motivation
 - Notes de 1^{ère} et 2^{ème} année (L3/M1)