Alexandre Guernut

2nd year Ph.D. student
Inria – Université de Lorraine

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Nancy, France

Professionnal experiences

Research internship – MOCQUA team (Loria) — Nancy, France
Topological Concatenation for 2D Quantum Error Correction — *6 months – 2021*

Theoretical designs and performance benchmarking of a deformation of 2D color codes. The deformation applies the concatenation principle to topological codes, allowing a trade-off between code distance and easiness of stabilizer measurements.

R&D internship – Atos R&D Quantum — Les-Clayes-sous-Bois, France
Automatic transpilation and optimisation of quantum circuits — *3 months – 2020*

Routine development for Atos' `myQLM` framework : unitary synthesis, automatic transpilation of quantum circuits between universal gate sets, pattern optimisation of quantum circuits.

Publications and conferences

3rd International Workshop on Quantum Resource Estimation — ISCA, online
Presentation of my internship — *2021*

Education and degrees

Quantum Computing Ph.D. — Nancy, France
Efficient Fault-Tolerant Quantum Computation with Quantum LDPC Codes — *2021-Today*

École polytechnique fédérale de Lausanne — Lausanne, Switzerland
Exchange semester, Major : Computer Science and Applied Mathematics — *2020*

Grenoble INP - Ensimag — Grenoble, France
Engineering School, Major : Computer Science and Applied Mathematics — *2018 – 2021*

Lycée Louis-le-Grand — Paris, France
Prep School for French "Grandes Écoles" entrance examination, MPSI/PSI* — *2016 – 2018*

Baccalauréat - Série Scientifique — France
Scientific high school diploma - With high Honours — *2016*

Wide-ranging scientific education : Mathematics (Linear Algebra, Statistics), (Quantum) Physics and above all Computer Science (Algorithmics, Numerical methods, Combinatorial Optimisation)

Skills

- **Languages** :

  - French : Native speaker
  - English : C1 (TOEIC: 985)

- **Development languages :** Python, C(++), Java, LaTeX