

# YUNOS EL KADERI

Ph.D. Physicist



## ABOUT ME

Currently, I am doing my thesis between ETIS and LPTM labs in quantum computing. I got diplomas in computational and high energy physics. Besides quantum information theory and applications, my interests lie in fundamental physics such as the interpretations of quantum information and simulation of various physical systems. I believe a physicist should be in touch with various fields to abroad their way of thinking.



[yunos.el-kaderi@etu.u-cergy.fr](mailto:yunos.el-kaderi@etu.u-cergy.fr)



+33 6 19 60 85 45



[Yunos El Kaderi](#)



<https://github.com/yuness996>

## EDUCATION

**Ph.D. in Quantum Computing** 2022-present  
[Université de Cergy-Pontoise](#)

The goal is to study and implement of quantum error correction models on NISQ processors.

**Master II Physique et Modélisation** 2021-2022  
[Université de Cergy-Pontoise](#)

Master includes mathematical and computational physics, modeling.

**Master II FunPhys training program** 2020-2021  
[Aix Marseille University](#)

Master in high energy physics, thesis theme in Astroparticle physics.

**Master I International Paris Physics master** 2019-2020  
[Sorbonne UPMC](#)

Master in fundamental physics and its applications.

**Bachelor's degree in physics** 2016-2019  
[Lebanese university](#)

General physics.

## EXPERIENCE

**Implementation of the Grover algorithm on the IBM Cloud platform** Internship

[ETIS \(Equipe Traitement de l'Information et Systèmes\)](#)  
[LPTM \(Laboratoire de Physique Théorique et Modélisation\)](#)

Implement Grover's search algorithm and help understand the noise generated due to decoherence effect in the superconducting qubits, and see the optimal way to minimize errors. **(Python/ Qiskit)**

**Evaluate the potential of discovery of high energy cosmic ray with Lunar Seismic and Gravitational Antenna** Internship  
[EGO \(European Gravitational Observatory\)](#)

Methodology to build acoustic maps using low frequency data from an Engineered Fiber Distributed Acoustic Sensing (EFDAS) network at Virgo and their projection towards the detectability of Ultrahigh Energy Cosmic Rays. **(Python, C++, MATLAB)**

**Simulation of quantum systems**  
[Université de Cergy-Pontoise](#)

Solve time-dependent Schrodinger equation numerically. Simulate a 1D and 2D quantum tunneling in an infinite well. **(Python)**

## LANGUAGES

- ENGLISH Upper Intermediate
- ARABIC Native Language
- FRENCH Intermediate
- RUSSIAN Upper Intermediate

## SKILLS



PYTHON



C++



LATEX



MATLAB



C



Mathematica

## SOFTWARES

QISKIT:

[www.qiskit.org](http://www.qiskit.org)

GEANT4:

<https://geant4.web.cern.ch/>

References available  
upon request

## Projects

### Music genre classification

[Université de Cergy-Pontoise](#)

Machine learning code that analyzes the MFCCs of music tracks and train them through a neural network and testing it. Then solve over-fitting problem. **(Python)**

### Simulation of dark matter radiation Internship

[APC \(LABORATOIRE ASTROPARTICULE & COSMOLOGIE\)](#)

Sky mapping the coming radiation from Dark Matter decay predicted such that sterile neutrino is its candidate, start by an understanding of neutrino properties and data analysis /simulation of a data cube given. **(Python)**

### Data extraction an analysis from 2D spectroscopic mapping

[IM2NP \(Institut Matériaux Microélectronique Nanosciences de Provence\)](#)

At LUMEN-PV there is spectroscopic set-up that performs mapping measurements. Reproduce color graphs of different physical parameters, such as peak position, FWHM, peak yield, etc. **(Python)**

### Kitaev toric code in Quantum error correction

[Aix Marseille University](#)

Review on 'Topological Quantum Computing Toric Code' which is a protocol that may detect errors and perform quantum error correction through topological surfaces.

### Bifurcations of a Van der Pol oscillator in a double well

[Université de Cergy-Pontoise](#)

Self-sustained oscillators in nature can be described by Van der Pol's equation. Study the bifurcations and stabilities of the double-well. **(Matlab)**

### Big data and Energy

[Université de Cergy-Pontoise](#)

How big data help us control our consumption of energy. Demonstrate the techniques of data collection and mining and then the processing phase and analysis of data.

### Teaching

[Université de Cergy-Pontoise](#)

Python 101 practical sessions for L1 students.

### Measure the neutrino properties with P2O

[CPPM \(Centre de Physique des Particules de Marseille\)](#)

Study on the P2O experiment that follows to ANTARES to measure the CP violation phase by neutrino oscillations and mass hierarchy.