



KOROLEV Magali

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First year of master physics student.

Main fields of interest : quantum physics, statistical physics, condensed-matter physics.

EDUCATION

- **International Centre for Fundamental Physics – ICFP-ENS** Sept. 2022 – July. 2024
Master's Degree – École Normale Supérieure Paris, France
Prestigious degree that is specifically intended for outstanding French and international students wishing to obtain a first-class education in fundamental physics with an immersion in an advance research ecosystem.
- **Licence Parcours Spécial Physique** Sept. 2019 – July. 2022
Bachelor's Degree – Université Paul Sabatier Toulouse, France
Selective and highly rigorous physics major/mathematics minor Bachelor's degree at Paul Sabatier University aimed towards research. Highest honors (17.81/20 in L1, 17.29/20 in L2, 18.30/20 in L3).
- **Baccalauréat S SVT spé maths section européenne** Sept. 2015 – July. 2018
High school – Lycée René Char Avignon, France
Scientific high school degree in biology, geology, physics, chemistry and mathematics, with additional electives in English (*section européenne*) and majoring in mathematics (*spé maths*). Highest honors (18.28/20).

RESEARCH EXPERIENCE

- **Quantum effects on random graphs** Feb. 2023 – July. 2022
Internship supervised by GONG Jiangbin, LEMARIÉ Gabriel Centre for Quantum Technologies, NUS, Singapore
Research internship, investigation of the interplay between complexity and quantum effects in networks. Study of complex random graphs models with tuneable finite dimension, and quantum simulations in particular in non-integer dimensions close to criticality for quantum effects displaying a phase transition. Key-words : quantum simulations, complex networks, disorder, Anderson localization.
- **Quantum chaos** Oct. 2022 – Dec. 2022
Tutored research project supervised by ARON Camille LPENS, École Normale Supérieure, France
Bibliographical research project on quantum chaos. Key-words : Berry-Tabor and BGS conjectures, Gutzwiller Trace Formula, Random Matrix Theory.
- **Strongly correlated electrons systems** Febr. 2022 – June. 2022
Internship supervised by BACKES Steffen CPHT, École Polytechnique and RCAST, University of Tokyo
Investigation of the complicated interacting many-body problem and strongly correlated systems with the Dynamical Mean-Field Theory. Key-words : quantum, solid-state and condensed-matter physics (2nd quantization, Green's functions, Hubbard and Ising models, Anderson impurity model & DMFT).
- **Quantum chaos** June. 2021 – July. 2021
Internship supervised by GEORGEOT Bertrand LPT, Toulouse, France
Introduction to chaos theory; study of the classical and quantum kicked rotator. Key-words : quantum and semi-classical physics, chaos, Anderson localization.
- **Quantum Computation and Quantum Information** Febr. 2021 – May. 2021
Tutored research project supervised by MARTINS Cyril LCPQ, Toulouse, France
Key-words : quantum mechanics, algebra, Josephson junction, quantum computers, q-bits, quantum teleportation.

TEACHING EXPERIENCE

- **Higher education** 2020 – Present
Tutor in mathematics and physics for 1st year University students since 2020 and for 2nd year University students since 2021. Courses : calculus & real analysis, linear algebra, electrodynamics & optics, newtonian & analytical mechanics, thermodynamics.
- **Secondary education** 2018 – Present
Private instructor for middle school and high school students in mathematics, physics, chemistry and biology.

LANGUAGES

- **Programming**
Python, Maple, Octave, L^AT_EX
- **Spoken Languages**
French: Native (C2); English: Fluent (C1); German: Proficient (B2); Japanese: Elementary (N5)

SOCIAL ENGAGEMENT – VOLUNTEERING

- **AEST - Amicale des Etudiants en Sciences de Toulouse** Sept. 2020 – June. 2021
Volunteer for the sciences students of Toulouse (FR) organization
- **La Croix Rouge - The French Red Cross** May. 2020 – Oct. 2020
Volunteer for the local group of the French Red Cross in Toulouse (FR)
- **ESN - Erasmus Students Network** Oct. 2018 – May. 2019
Volunteer for the Erasmus and foreign students organization : local group of Strasbourg (FR) from Oct. 2018 to Jan. 2019, local group of Mainz (DE) from Apr. 2019 to May. 2019
- **Greenpeace** Oct. 2018 – Jan. 2019
Volunteer for the local group of Greenpeace in Strasbourg (FR)
- **ADEM - Amicale des Etudiants en Mathematiques** Oct. 2018 – Jan. 2019
Volunteer for the maths students of Strasbourg (FR) organization

OTHER

- **Extra-curricular activities / hobbies**
Piano, painting, judo, theatre, traveling.
- **Work experience**
Intern in a bookshop (*Eulenspiegel Buchhandlung*) in Hochheim am Main, Germany (Aug. 2018 – Oct. 2018); Waitress (side job from Oct. 2018 to June. 2019); Production Assistant and Cultural Mediator (July 2018 and July 2019 at the *Festival d'Avignon*); Brand Ambassador for UNICEF (June. 2020 to Aug. 2020).
- **Gap year** 2018 – 2019
Gap year spent to find myself : I wanted to mature and experience the world before going to University so I spent the year traveling, working, volunteering, self-teaching how to paint, draw, sew, perfecting my English and my German and following introductory classes in biology, geology, maths and physics online.