



Andrea Combette

Mater's Degree

Physics Student

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🐙 GitHub Profile

🌐 LinkedIn Profile

🌐 Personal Website

1 Education

•Lycée Joffre, Montpellier

2018

High School Degree

mark : 19.63/20, with honors

•UFR Médecine, Montpellier

2019

PACES (common first year of health studies)

rank bio-physics: 5/3336

•Lycée Joffre, Montpellier

2020-2021

Undergraduate courses to prepare nationwide competitive exams in liberal sciences

rank : 2/40

•Ecole Normale Supérieure, Paris

2022

BSC Degree in Physics

mark : 11.20/20

•Ecole Normale Supérieure, Paris

2023

M1 ICFP in Physics

mark : 16.04/20

2 Experience

•IPGG - Institut Pierre-Gille de Gennes

May 2023

Intern

Paris, France

- Electro-Osmosis Filtration with nano-membrane
- Study of the Hysteresis in the flow

•IMS - Intégration Matériaux Systèmes

July 2023

Intern

Bordeaux, France

- Neural Signals generation with MEARec
- GUI interface implementation
- Optimization of a Spiking Neural Network

•IBENS - ENS biology Institute

September 2023 - February 2024

Intern

Paris, France

- Spikesorting pipelines, working on Lussac
- Exploration of Purkinje's cells in cerebellum

•LKB - LPENS

September 2023 - February 2024

Intern

Paris, France

- NV centers in diamond, practical project
- Characterization of NV center's orientation in the diamond

•Swiss Plasma Center - EPFL

February 2024 - July 2024

Intern

Lausanne, Suisse

- Characterization of Plasma Turbulence in the TCV Tokamak
- Machine Learning application in non-linear regime of plasma Turbulences

3 Personal Projects

•Computational Statistical Physics Overview

2024

Study of Hamiltonian dynamics, Thermostating effect, Finite size effect and thermodynamic integration

- Tools & technologies used: python, numpy
- Achievements : Study of the Ising model, the Lennard-Jones model

•Study of Poincaré Waves

2023-2024

Solving equatorial Shallow Water Equation using Chebyshev Spectral Method

- Tools & technologies used: python
- Achievements : Study of equatorial wave decomposition into Rossby waves and Kelvin waves modes

•Generating realistic matter fields for cosmological simulations (ML)

2023-2024

CNN and diffusion network models, use of Quijote and CAMELS datasets

- Tools & technologies used : Pytorch, Python, Globus
- Achievements : Generating 2D samples of matter fields

•Hydrodynamics and mechanics simulations

2021-2022

Optimization of Von Karman Street for Energy Harvesting

- Tools & technologies used: Comsol (finite element calculus, API), Python
- Achievements : Build an optimized Generator using induction and von Karman Streets

•SpikeWizard package : scipy pipeline for automated fitting process

2023-2024

Python Package for spikes fitting : <https://spikewizard.readthedocs.io/>

- Tools & technologies used: python, pip, sphinx
- Achievements : Build a python package for spikesorting and fitting and its documentation
- Contribution : <https://github.com/Chatr0uge/SpikeWizard/tree/development>

•ThemeChanger : python package (in development)

2023-2024

Python package using K-Neighbors algorithm for color detection and color matching

- Tools & technologies used: python, bs4
- Achievements : Build a python package for automated color matching in images and files
- Contribution : <https://github.com/Chatr0uge/ThemeChanger>

•VsCode Theme

2023-2024

VsCode theme using ThemeChanger package

- Tools & technologies used: python, vscode marketplace
- Achievements : Build 3 themes for vscode
- Contribution : <https://github.com/Chatr0uge/SmoothBurn-theme-for-VsCode>

4 Technical Skills and Interests

Languages: French, English (B2|C1), German (B1|B2)

Developer Tools: Python, HTML, CSS, L^AT_EX, Solidity

Frameworks: Machine Learning application in Physics

Soft Skills: Guitarist, DJ, Producer, graphic designer

Coursework: Data Science PSL Formation, ICFP Master ENS

Areas of Interest: Informatic, Sciences, Music, Graphic Art, Sport

5 Positions of Responsibility

•Associative coordinator, BOUM - mixclub

2023-2024