

# RAFAEL GALLEZE

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## SCIENTIFIC INTERESTS

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### Calculus of variations

Optimization under constraints, optimal control, geodesics, eikonal equation, elasticity.

### Lagrangian and hamiltonian mechanics

Hamiltonian systems, celestial mechanics.

### Fluid mechanics

Euler and Navier-Stokes equations, conservation laws, entropy.

## FORMATION

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### Master - Mathematics and interactions

Sep. 2021 – Jun. 2023

Program Analysis, Partial Differential Equations, Probability

*University of Bordeaux*

including :

- Tools for the analysis of (non-)linear PDE
  - Applications to fluid dynamics, Leray and Kato's theorems, paradifferential calculus, anisotropic/inhomogeneous N-S.
  - Spectral theorem and applications.
- Semigroup theory and control.
- Harmonic analysis, Calderon-Zygmund operators, Paley-Littlewood theory.
- Reading seminary on an introduction to microlocal analysis, pseudo-differential operators.

### Bachelor's Degree in Mathematics

Sep. 2019 – May 2021

Program Fundamental Mathematics, Semesters 3 to 6

*University of Bordeaux*

### Engineering School

Professional cooperative engineering training

Sep. 2018 – Mar. 2019

*CESI, Angoulême, France*

### CPGE (preparatory classes for engineering school contests)

Sep. 2014 – May. 2016

Program Mathematics Physics, option Computer Science

*Lycée La Martinière Monplaisir, Lyon, France*

## PROFESSIONAL EXPERIENCE

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### Research Internship

March 1st, 2023 – June 8th, 2023

Internship (under the supervision of Mathieu Colin)

*Institut Mathématique de Bordeaux, France*

- Research Internship. Orbital stability of standing waves for a nonlinear Maxwell-Schrödinger system.
- Master's thesis : <https://rafael-galleze.emi.u-bordeaux.fr/pdf/Memoire.pdf>

### Voluntary Initiation Internship to Research

Mar. 2021 – Jul. 2021

Trainee

*University of Bordeaux, France*

- Initiation Internship to Research. Study of shock behaviours in partial differential equations.

### Short term jobs

Jan. 2017 – Jul. 2017

Temporary worker

*(Lyon, France)*

### Private lessons

Feb. 2015 – Jun. 2015

Help to homework and study, mathematics and physics, highschool and first Bachelor's Degree levels

*Lyon, France*

## SKILLS

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**Languages:** french (native), english (Fluent. TOIEC score : 965).

**Programming languages:** Python (Intermediary. Libraries matplotlib, scipy, numpy).

## OTHER INTERESTS

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**Sport:** Vovinam Việt Võ Đạo (martial art, 12 years of practice).

**Arts:** Music composition for short films, painting, wood-carving.

**Popular science:** to adjust to any type of audience in order to convey the ideas of mathematics and physics concepts. Set aside the technicalities.