

## RÉSUMÉ

**Name:** Dimitri Alexandre COBB

**Date and place of birth:** 15th of Mai 1994, Châtel St-Denis (Switzerland)

**Citizenships:** U.S.A. et Swiss

**Adress:** 97, avenue Debourg, 69007, Lyon

**Phone number:** +336 60 11 00 31

**E-mail:** cobb@math.univ-lyon1.fr

**Web page:** [math.univ-lyon1.fr/homes-www/cobb/index.html](http://math.univ-lyon1.fr/homes-www/cobb/index.html)

**ORCID:** <https://orcid.org/0000-0001-5681-7050>

## Current Position

PhD student in Mathematics, under the supervision of Francesco Fanelli in *l'Université de Lyon 1*. Title: Mathematical analysis of models of fluids in interaction with a magnetic field.

## Education

**2012-2015:** CPGE in *lycée Paul Cézanne* and *lycée du Parc*, Mathematics and Physics MP\*,

**2015-2019:** studies in *l'Ecole Normale Supérieure de Rennes*, department of mathematics, and 2nd year of Masters in *l'ENS de Lyon* (2018-2019),

**2019-present:** PhD in mathematics in *l'Université de Lyon 1* under the supervision of Francesco Fanelli.

## Diplomas and Selective Examinations

**2015:** Entry in *l'ENS de Rennes*

**2016:** Bachelor in Mathematics, “very good” rating

**2017:** Bachelor in Physics, “very good” rating

**2018:** Agrégation de Mathématiques, rank 14/1529

**2019:** Masters in advanced Mathematics (PDEs and applications), “very good” rating

## Publications

My research articles can be found on [my web page](#). My main area of research is mathematical fluid mechanics, in particular: magnetohydrodynamics, incompressible fluids, certain singular perturbation problems and Littlewood-Paley analysis.

- With Francesco Fanelli, *On the fast rotation asymptotics of a non-homogeneous incompressible MHD system*, Nonlinearity 34. n. 4 (2021), 2483
- With Francesco Fanelli, *Rigorous derivation and well-posedness of a quasi-homogeneous ideal MHD system*, Nonlinear Analysis: Real World Applications, vol. 60, 103284, 2021
- With Francesco Fanelli, *Elsässer formulation of the ideal MHD and improved lifespan in two space dimensions*, arXiv : 2009.11230v1 (submitted), 2020
- With Francesco Fanelli, *Symmetry breaking in ideal magnetohydrodynamics: the role of the velocity*, J. Elliptic Parabol. Equ. (2021)
- *Bounded solutions in incompressible hydrodynamics*, arXiv:2105.03257v1 (submitted), 2021.

## Talks and Seminars

Notes for some of my talks, as well as some other texts I wrote (my Master's thesis, internship reports, and other things) can also be found on [my web page](#).

- *The RAGE theorem*. Talk given in *l'ENS de Rennes* for a meeting of the 4th year students. June 2019
- *When there is no divergence*. PhD students' seminar in Lyon. December 2020
- *Lifespan of Solutions in Ideal Magnetohydrodynamics*. Kick-off workshop for the ANR project CRISIS. April 2021
- *Fourier multipliers in hydrodynamics*. Landau seminar of l'IRMAR (*Université de Rennes*). April 2021
- *The influence of non-linearity on determinism: Burgers equation*. Séminaire de la détente mathématique (causal talk for students of all levels). October 2021
- *On the well-posedness of plane MHD*. PDE and Mathematical Physics seminar in Bordeaux. October 2021

## Referee for International Journals

Journal of Parabolic and Elliptic Equations: 1

## Research visits

**2021:** *Institut de Mathématiques de Bordeaux*, invited by Franck Sueur

## Participation to conferences

- *Fluid Mechanics: qualitative study and asymptotic behavior of solutions*, August 29th – September 3rd 2021, in Peyresq (France).
- *Mathematical Fluid Dynamics*, August 13-21th 2021, Cargèse (Corsica)
- *Journées EDP*, May 30th – June 3rd 2021, in Obernai (France)
- *Vorticité, Rotation et Symétrie (V) – Résultats globaux et phénomènes non-locaux*, October 26-30th 2021, in the CIRM (Marseille)
- *Turbulence in fluids and PDEs*, January 27-31th 2020, in l'EPFL (Lausanne)
- *Non-Homogeneous Fluids: Asymptotic Models and Interface Evolution*, September 23-27th 2019, in the CIRM (Marseille)

## Teaching

**2021-2022:** Analysis for Economics 1 et 2 (2nd year students)

**2020-2021:** Mathematics for Physics 3 (2nd year students) and Analysis for Economics 2 (2nd year students)

**2019-2020:** Fundamentals of Mathematics 1 (1st year students)

**2018-2019:** Oral examination in Mathematics in *lycée du Parc* (2nd year MP\* PSI\*)

## Miscellaneous

**Languages:** Being a dual (US-Switzerland) citizen, I speak both French and English fluently. I am also currently learning German.

**Programming:** *C*, *CamL* and *Python*, I have also used the computation tools *SciLab* and *Maple*.

**Administrative responsibilities:** PhD students' delegate, 2020-2022