

Romain VALLON

PhD. in Fluid Mechanics

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Scientific activities

Assoc. Prof.
Ense3 - Grenoble INP
2025 – today
Grenoble, France

Electromagnetohydrodynamics of multiphase flows, *Grenoble INP*, SIMaP
Numerical studies of multiphase flows in the presence of electric and magnetic fields.
Teachings on fluid mechanics and multiphase flows for engineering processes.

Postdoc
Centrale Lyon
2024 – 2025
Lyon, France

Inertial waves and turbulence in stratified flows, *Centrale Lyon*, LMFA
Supervised by Ass. Pr. A. Delache and F. Godefert (DR, CNRS). Funded by the French Research Agency (ANR LASWATEX). Interactions between turbulence and inertial waves are investigated in stably stratified flows. DNS are ran on national HPC. Statistics on the eddy and wave parts are derived and provided to collaborators (M2C, Rouen).

Postdoc
KTH
2022 – 2024
Stockholm, Sweden

Trace soluble surfactants in multiphase flows, *KTH*, Fluid Mechanics lab.
Supervised by Pr. S. Bagheri. Funded by the Swedish Strategic research Foundation (SSF). The effects of surfactants on the promising technology of Liquid-Infused Surfaces were studied theoretically and numerically. Three regimes are defined for the transport of trace soluble surfactants. A model disentangling the effects of lubricant recirculation and surfactant interfacial flow was derived.

PhD Thesis
Aix Marseille University
2018 – 2021
Marseilles, France

Liquid jet atomisation: statistical analysis in the close field and the far field, *Aix Marseille University*, IRPHE
Supervised by Ass. Pr. M. Abid and Pr. F. Anselmet. Funded by a scholarship from the French Higher Education Ministry (MESRI). Defended in public on November 9, 2021.

Master thesis
Tsinghua University
2017 – 2018
Beijing, China

Coherent structures in boundary layers and drag reduction, *Tsinghua University*, Laboratory for Advanced Simulation of Turbulence
Supervised by Pr. Fu Song. Funded by the *Chinese Scholarship Council*. Took part in the Chinese EU DRAGY project related to airplane drag reduction.

Education

Ministry of Higher Education
2023 – 2027
France

Lecturer qualification, section 60

French qualification for lectureship. Section 60 corresponds to the teaching fields of Mechanics, Engineering Mechanics and Civil Engineering.

Aix Marseille University
2018 – 2021
Marseilles, France

PhD., *Fluid Mechanics*, Engineering Science

Liquid jet atomisation: statistical analysis in the close and far fields.

- Studied the droplet sizes and velocities with experimental and numerical data,
- Set and ran Direct Numerical Simulations (DNS) on HPC (Occigen, CINES, France),
- Compared two fragmentation theories from turbulence and ligament dynamics,
- Quantified the phase space in terms of particulate Reynolds and Ohnesorge numbers.

Tsinghua University
2016 – 2018
Beijing, China

Master of Science, *Aerospace Engineering*, GPA: 3.0

Degree focused on Fluid Mechanics and Turbulent Flows. *Courses* : Turbulence Modelling, Advanced Fluid Mechanics, Computational Fluid Dynamics, Viscous Fluid Mechanics and Modern Space Technologies.

Centrale Méditerranée
2014 – 2016
Marseilles, France

Master of Science, *Mechanical Engineering*, GPA: 3.5

Multidisciplinary scientific education integrating Project Management. *Courses*: Fluid and Solid Mechanics, Numerical Analysis, Statistics, Automation, Chemistry, Finance, Corporate Sociology and Economics.

Languages & Skills

Native French
Professional English (TOEIC: 975)
Intermediary Swedish (B2) & Chinese
Beginner German

CFD DNS, Basilisk, C++
Data Analysis Python, Matlab
Numerics Linux, HPC, git
Editing L^AT_EX, Markdown