Giuseppe Parasiliti Rantone

Mathematical Modeling · Computational Fluid Dynamics

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Born in Italy, 1996.
***International** avaliability.*
"Memento audēre semper."

Education

Politecnico di Milano (PoliMi)

B.S. and M.S. in Mathematical Engineering

Milan, Italy *Aug. 2015 - Dec. 2020*

- Got a Scholarship for both B.S. and M.S.

Sorbonne University (SU)

M.S. in Mathématiques de la Modélisation (Mathematical Modeling)

Paris, France *Sep. 2019 - Oct. 2020*

- Several courses taken from UPMC-Fluid Mechanics and École Polytechnique
- Internship within the laboratory Jacques-Louis Lions (LJLL) in cooperation with Gaz Transport and Technigaz (GTT), a leading company in gas distribution.

Sorbonne University, Institut Jean Le Rond d'Alembert

PhD in Fluid Mechanics

Paris, France. *Oct. 2020 - PRESENT*

- Modeling and Numerical Simulation of gas flows in the spaces of isolation of liquefied natural gas tanks.
- Financed by the company GTT.
- 50 hours formation on management: how to manage a team, how to lead a project, how to deal with time and stress.

Teaching

Vectorial analysis and multiple integrals

Professor's aide *2021*

- Bachelor of Mechanics, Sorbonne University
- 40h

Work Experience

Institut Carnot Smiles and laboratory LJLL in collaboration with the company GTT

Internship, project launching: Modeling of a network for the transportation of liquefied natural gas

Paris, France *Apr. 2020-Sept.2020*

- Physical and Mathematical Modeling of the problem.
- Construction of numerical algorithms.
- Simulation of simple pipeline configurations
- Coding in Python.

Institut Jean Le Rond d'Alembert - UPMC at Sorbonne University in collaboration with Institut Summit

PhD financed by GTT: pursuing of the same project

Paris, France *Oct. 2020 - PRESENT*

- Simulation of complex pipeline configurations.
- Coding in Python and C++.

Other Experiences

Wolfram Research Inc.

Summer School

Champaign, IL, U.S. *Jun. 2022 - Jul. 2022*

- Study of laminar fluid flow in squared arrangements of pipes and fractal meshes such as the Sierpinski carpet and the Menger Sponge. *Click here for more details*.

CEMRACS 22

Summer School on Transport Phenomena

CIRM, Marseille,France *Jul. 2022 - Aug. 2022*

- Reduction in velocity of Vlasov-Poisson-Fokker-Planck equations for the analaysis of kinetics of plasma.

Academic Projects

DICA (Department of civil engineering) & MOX (Modeling and Scientific Computing laboratory) at PoliMi

Project author. *Milan, Italy* *Apr. 2018 - Jul. 2019*

- Project on continuous finite elements torsion analysis through stress method.
- Project on Discontinuous Galerkin approximation of the Laplace eigenproblem on polygonal meshes.

LJLL (Jacques-Louis Lions Laboratory) at SU

Project author. *Paris, France* *Sep. 2019 - Jan. 2020*

- Project on the numerical comparison between inviscid and viscous flow.

Presentations

French Congress of Mechanics

Congress

Nantes, France *2022*

- Presentation of the results on the physical and mathematical modeling of gas flows at low Mach number.

14^{th} European Fluid Mechanics conference

Conference

Athens, Greece *2022*

- Presentation of the results on the numerical modeling of gas flows at low Mach number.

Natural convection days

Conference.

Orsay, France *2023*

- Presentation of the results obtained for the simulation of a thermosyphon with a low Mach number regime from a mechanical point of view.

Congress of young researchers in Mathematics and its applications

Congress.

Paris-Saclay University, France *2023*

- Presentation of the results obtained for the simulation of a thermosyphon with a low Mach number regime from a mathematical point of view.

Thesis Works

Microelectronic technology: quantitative aspects of doping and diffusion processes

Author. *Thesis Work* *Feb. 2018*

- Undergraduate Mathematical Engineering thesis at PoliMi.

Analysis of the flow of an ideal gas under the assumption of low Mach regime

Author. *Thesis Work* *Sep. 2020 & Dec.2020*

- Master thesis for both PoliMi and SU.

Physical and mathematical modeling of the flow of liquefied natural gas at low Mach number and numerical simulation for pipeline network.

Author. *Thesis Work* *IN PROGRESS*

- Ph.D. thesis at SU.

Writings

Hyperbolic reduced model for Vlasov-Poisson equation with Fokker-Planck collision

Co-Author. *Proceeding* *2022*

- In phase of publication.

Modeling of a gas flow under low Mach regime in pipeline networks

Main Author. *Mechanics & Industry* *2022*

- Submitted.

Modeling gas flow in a thermosyphon with a 1 D low Mach number expansion

Main Author. *Journal of computational Physics* *2023*

- Submitted.

Modeling of a gas flow and establishment of the junction conditions in a pipeline network

Main Author. *2024*

- In progress.

Other Skills

Soft Skills

Solid analytical and theoretical background, fast learner, flexible, hard worker. ENFJ-T personality: reliable, receptive, passionate, altruistic, charismatic.

Language Skills

- **Italian**: native speaker
- **Spanish**: level C2
- **English**: level C1
- **French**: level C1

Programming and Markup Languages

- **Python, C++, LaTeX, Mathematica,GitLab**: strong knowledge due to extensive use at work/university and in experiences (Wolfram Summer School);
- **Matlab, C**: very good knowledge due to use at university, in projects (DICA, MOX) ;
- **FreeFEM, Gerris, Basilisk, SQL**: good knowledge due to the use at university and in projects like that at LJLL.