Philippe MELIGA, PhD
10/08/1978
CNRS Chargé de Recherche

CNRS | CEMEF
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Current Situation

- CNRS Chargé de Recherche in the CFL Computing and Fluids Research group at CEMEF | since 2019
- Holder of the ANR project INHALE on coupling IA and CFD for surfactant replacement therapy | since 2024
- Member of the ERC project CURE on brain aneurysms | since 2022
- Steering committee member for ERCOFTAC SIG47 group on 3D wakes | since 2017

Education

- Habilitation to Direct Research (HDR) in Mechanics, Aix-Marseille University | 2018
  Commitee: M. Braza (IMFT), J.-M. Chomaz (LadHyX), U. Ehrenstein (M2P2), F. Gallaire (EPFL), L. Jacquin (ONERA, rev.), P. J. Schmid (Imperial College London, rev.), S. Zaleski (ð'Alembert, rev.)
- PhD in Mechanics, Ecole Polytechnique | 2008, with highest honors
  Commitee: J.-P. Bonnet (PPrime), J.-M. Chomaz (LadHyX, adv.), J. D. Crouch (Boeing, rev.), D. Henningson (KTH), H. Lambaré (CNES), J. Magnaudet (IMFT, rev.), P. Sagaut (ð'Alembert), D. Sipp (ONERA)
- DEA in Mechanics | Ecole Polytechnique & Univ. Pierre et Marie Curie | 2004, with highest honors
- Diplôme d'Ingénieur, Ecole Polytechnique | 2008

Research Interests

- Modeling and control of instabilities in fluid mechanics: linear and non-linear stability, bifurcations, transition, pattern formation.
- PDE-constrained optimization and the adjoint method: shape and topological optimization.
- CFD : mixed and stabilized finite element methods, level sets, triple decomposition, RANS modeling.
- Flow control by optimal decision making: deep reinforcement learning, digital twins, application to the control of transport phenomena in biological fluids.

Positions

- CNRS Chargé de Recherche at M2P2 Lab., Marseille, France | 2010-19
- Post-doc fellow, Lab. of Fluid Mechanics and Instabilities, EPFL, Lausanne, Switzerland | 2009-10
- Post-doc fellow, Hydronamics Lab., Ecole Polytechnique, Palaiseau, France | 2008-09, funded by Saint Gobain Recherche
- PhD student, ONERA, Dept. of Fundamental and Experimental Aerodynamics, Meudon, France | 2004-08, funded by CNES
- Research assistant, Dept. of Aeronautics and Astronautics, MIT, Cambridge, USA | 2002-03

Distinctions

- Atos - Joseph Fourier Award, best national research team in Numerical Simulation and HPC, 2019
- AFM (French Mechanics Association) Paul Germain Award for best national PhD thesis in Mechanics, 2009
- Ecole Polytechnique Award for best PhD thesis, 2009

Supervision

PhD students: 10 (4 ongoing) | Postdoc: 4 | Master students: 4

Bibliometry

- 41 articles in peer-reviewed, international journals (complete list on Scopus)
- 72 communications in international conferences with proceedings and review committee