



# Jan Oscar Pralits

Associate professor

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## *Education and training*

2003

### **Ph.D. in Fluid Dynamics**

Optimal design of natural and hybrid laminar flow control on wings  
Royal Institute of Technology Department of mechanics - Stockholm - SE

2001

### **Licentiate in Fluid Dynamics**

Towards optimal design of vehicles with low drag Applications to sensitivity analysis and optimal control  
Royal Institute of Technology Department of mechanics - Stockholm - SE

1998

### **Master of Science in Mechanical Engineering**

LES of cold flow in the EV burner  
University of Luleå - Luleå - SE

## *Academic experience*

2018 - ONGOING

### **Assistant Professor**

DICCA University of Genoa - Genoa - IT

2010 - 2018

### **Assistant Professor**

DICCA University of Genoa - Genoa - IT

2006 - 2010

### **Research assistant**

Department of Mechanical Engineering University of Salerno - Salerno - IT

2003 - 2006

### **Post doctoral Marie Curie Intra European Fellowship**

Department of Mechanical Engineering University of Salerno - Salerno - IT

## *Work experience*

2012 - ONGOING

## **Chief Executive Officer**

Wolf Dynamics srl - Genoa - IT

Founder and member of the spin-off company Wolf Dynamics which deals with consulting and training in the field of numerical fluid dynamics

2001 - 2010

## **Research Engineer (part time)**

FOI Swedish Defence Research Agency - Stockholm - SE

Computational aerodynamics and optimization at the department of computational physics

## ***Language skills***

### **Swedish**

Mother tongue

### **English**

Independent

### **Italian**

Independent

## ***Teaching activity***

### **Teaching activity**

#### **Degree courses**

Since 2012 he has been teaching the following courses at the Polytechnic School of the University of Genoa

- Advanced fluid dynamics (60 hours, 6 CFU) in the MSc program in mechanical engineering, energy and aeronautics (ay 2011/2012, 2012/2013, 2013/2014, 2014/2015, 2015/2016, 2016/2017, 2017 / 2018)
- Fluid mechanics (24 hours, 3 CFU), in the three-year degree course in chemical engineering (ay 2013/2014)
- Fundamentals of continuum mechanics (24 hours, 3 CFU), in the three-year degree course in biomedical engineering (ay 2013/2014)
- Fluid mechanics (60 hours, 6 CFU), in the three-year degree course in chemical engineering (ay 2014/2015, 2015/2016, 2016/2017, 2017/2018)

#### **Doctorate courses**

Since 2012 he has worked as a lecturer at the Ph.D. school in Civil, Chemical and Environmental Engineering, active at the DICCA of the University of Genoa, for courses

- Hydrodynamic stability, 10 hours, 2 CFU (2012/2013, 2013/2014) (Accredited code DOT1311880), Curricula in Fluid Dynamics and Processes of Environmental Engineering
- Hydrodynamic stability, 10 hours, 2 CFU (2014/2015, 2015/2016, 2016/2017) (Accredited code DOT1311880), Curricula in Fluid Dynamics and Processes of Environmental Engineering, Curriculum of Structures, Materials and Geotechnics

#### **Thesis supervision**

Doctoral thesis

- Peyman Davvalo Khongar, Fluid flow in the eye in the presence of intraocular lenses (2018)

- Krystyna Isakova, Mathematical models of fluid motion in the vitreous chamber of the human eye (2016)
- Damiano Natali, Modeling the interaction of biomimetical slender structures with a fluid flow (2015)

#### Master thesis

- Aulikki Wilhelmi genannt Hofmann, Nonmodal stability analysis of the interface between aqueous humor and vitreous substitutes after vitreoretinal surgery, Master in Industrial Mathematics, Università di Amburgo, Germania (2017)
- Giovanni Beati, Implementation of a two-stage drying model for liquid drops containing insoluble solids in OpenFOAM for spray drying applications, ingegneria meccanica energia e aeronautica (2017)
- Alberto Cominetti, Open-source Shape Optimization: an application to Bulbous Bow, ingegneria meccanica energia e aeronautica (2017)
- Stefano Pastorino, Modeling of Spray Drying using Computational Fluid Dynamics with an Open-Source software, ingegneria meccanica energia e aeronautica (2016)
- Emanuele Rondanina, A Numerical Model of Retinal Detachment, ingegneria biomedica (2014)
- Tobia Benvenuto, Incorporating laminar-turbulent transition in design of aircraft wings, ingegneria meccanica energia e aeronautica (2014)
- Marina Bruzzone, Development of a tool for the prediction of transition to turbulence over small aircraft wings, ingegneria meccanica energia e aeronautica (2014)
- Stefano Olivieri, Direct Numerical Simulations of turbulent particle-laden flows, ingegneria meccanica energia e aeronautica (2013)
- Simone Boi, Stability analysis of non-newtonian Kolmogorov flow, fisica (2013)
- Krystyna Isakova, Stability of a stratified fluid over an oscillating flat wall, Master in Mathematical Engineering, Università d'Aquila (2012)

E` Relatore di alcune tesi di Laurea triennali presso la Scuola Politecnica dell'Università di Genova, in particolare di

He has been the supervisor of some bachelor thesis at the Polytechnic School of the University of Genoa, in particular of

- Chiara Ponte, Meccanica dei fluidi tamponanti in occhi con stafiloma, ingegneria biomedica (2015)
- Orgest Kuqi, Studio della sostituzione dell'umor vitreo con una sostanza tamponante nel occhio miope, ingegneria biomedica (2015)
- Giovanni Velotta, Studio dell'assetto di equilibrio di un fluido tamponante nella camera vitrea, ingegneria biomedica (2014)
- Francesco Ghelardi, Sviluppo geometrico/aerodinamico della superficie di coda di un velivolo in volo, ingegneria meccanica (2012)
- Andrea Tripodi, Analisi dell'interazione tra un fluido e un filamento elastico (2011)

## ***Research interests***

He works in the following areas:

- Hydrodynamic stability
- Physical mechanisms for laminar - turbulent transition
- Receptivity
- Two-phase flow (bubbles, particles, phase transition)
- Dynamical systems and bifurcation analysis
- Shape optimization
- Flow control (passive, active, optimal, feedback)
- External aerodynamics
- Superhydrophobic surfaces
- Coastal Engineering
- Bio fluid dynamics (in particular of the human eye)

## ***Other professional activities***

### **Public Engagement**

He has organized educational workshops on several occasions for the scientific dissemination to children and young people during events organized by the University of Genoa and others. In particular

- March 18, 2017, at the City of children and young people in Genoa during the event Twenty thousand laboratories above the sea, organized in collaboration between the ancient port and the University of Genoa, with the workshop Soap Film: fun and research (<http://www.dicca.unige.it/ita/eventi/ventimilalaboratori/lab1.html>), (<http://www.portoantico.it/2017/laboratori-didattici-unige>)
- on 27th July 2017, at the white night of Savona, during the event 'Univercity meets Savona, with the Soap Film workshop; fun and research.
- March 25, 2018, at the Ducale of Genoa during the event Universikids (<http://kids.unige.it>), with the laboratories Soap Film : fun and research and I can fly: everyday aerodynamics.
- April 18, 2018, at the Department of Civil, Chemical and Environmental Engineering, hydraulics laboratory, in Genoa, organizes together with prof. G. Besio and prof. A. Stocchino a visit for a group of students from the high school of Rapallo, supervised by Prof. Giovanni Doderò
- on 20 April 2018, at the former Fitram (La Spezia), he held educational workshops, entitled I can fly: everyday aerodynamics and fluid visualization, during the orientation event organized by the University of Genoa.