



ONOFRIO SEMERARO

From France to Sweden



Project: **Developing reduced-order modelling of complex fluids by machine learning**

Research topic: **Engineering**

Swedish Institution: **Chalmers University, KTH**

French Institution: **LIMSI, CNRS, Paris-Saclay University**

Dates of mobility: **08/03/2020 to 15/03/2020**

Program: **SFVE-A (ex TOR)**

PRESENTATION

[Onofrio Semeraro](#) is an associate Researcher at [CNRS](#) in [the Laboratoire d'informatique pour la mécanique et les sciences de l'ingénieur \(LIMSI\)](#), where he is part of the [DECIPHer \(Data-Enhanced modelling for computational mechanics\)](#) team. They focus mainly on applications in fluid mechanics by developing techniques for the identification and control of high-dimensional systems, using reduced order modelling and data-driven strategies. His background lies at the intersection between these subjects and fluid mechanics (e.g., hydrodynamic stability and flow control). His research is currently devoted at testing tools based on Reinforcement Learning, one of the main branches of Machine Learning and often referred to as Artificial Intelligence algorithms.

ACTIVITIES IN SWEDEN

As part of the research group at LIMSI-CNRS, Onofrio Semeraro is involved in the [FlowCon project](#) funded by the [ANR \(Agence Nationale de la Recherche\)](#), which is aimed at developing and testing algorithms commonly found in the domain of Artificial Intelligence for the control of fluid systems in realistic conditions. His specific focus is on prototypical geometries of aerodynamical interests (which are usually studied for reproducing in simplified way the flows around an airfoil, between train wagons or the rear part of a car, etc.). These activities of fundamental research are envisaged within the framework of developing sustainable, green solutions for transports.

Within the perimeter of the FlowCon project's activities, Onofrio Semeraro met the group led by [Prof. Sinisa Krajnovic](#), at the [Department of Mechanics and Maritime Sciences, division Fluid Dynamics of Chalmers University](#), to establish a collaboration between both laboratories. Onofrio Semeraro also visited the [Royal Institute of Technology \(KTH\)](#) in Stockholm as a part of the already established collaboration with the group of [Prof. Luca Brandt](#), working on complex fluids at the [Department of Mechanics](#), and for establishing links with the [Fluid Physics Laboratory](#) from the same department.