

Aerodynamics and Flow Control Seminar Series



Turbulent Channel Flow Over an Hyper-Elastic Wall

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ABSTRACT

Many researchers studied the flow over complex walls, as found in many engineering and natural flows, in order to understand the effect of such complex boundaries on the flow field and to get inspiration for the design of novel materials able to modify the flow. The ability to design materials with specific properties could lead to novel developments in several fields spanning from aerodynamics to biology, and from chemistry to medicine. I perform numerical simulations of a turbulent channel flow over hyper-elastic walls, and in order to simulate the elastic material, I use a new simulation method for solving fluid-structure interaction problems, where a fully Eulerian formulation on a fixed Cartesian grid is employed. The turbulent flow in the channel is affected by the deformable walls even at low values of elasticity due to the non-zero fluctuations of vertical velocity at the interface that influence the flow dynamics.

SPEAKER'S BIO

Marco Edoardo Rosti is a PostDoctoral Fellow in the Mechanical Department at KTH Royal Institute of Technology. He obtained BSc in Aerospace Engineering and my MSc in Aeronautical Engineering in Italy at Politecnico di Milano and his PhD in Aeronautical Engineering at City, University of London. His research focuses on high-fidelity numerical simulations of fluid-structure interaction problems, ranging from turbulent flows over complex walls to suspensions of rigid and deformable particles and filaments.

VENUE, DATE & TIME

City, University of London

Room: D427

Building: Rhind Building

Date: 16th March, 2018

Time: 13:00-14:30

ORGANIZERS Prof. Alfredo Pinelli, Dr. Mohammad Omidyeganeh

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