Special Issue

Experimental Fluid Dynamics and Fluid-Structure Interactions

Message from the Guest Editor

Fluid–structure interactions (FSIs) play a crucial role in determining the aerodynamic performance and structural integrity of both large Commercial Transport Aircrafts (CTAs) and small aircrafts known as Micro Air Vehicles (MAVs) or Unmanned Air Vehicles (UAVs). MAVs/UAVs are inherently lightweight and flexible, and are hence susceptible to structural vibrations. Traditionally, CTA wings are designed to withstand extreme forces during gust encounters, turbulence, or maneuvers, thus resulting in reinforcing and adding weight, which compromises fuel efficiency. More efficient lightweight wing designs have become increasingly attractive to address the demands of reaching Net Zero emissions. As a result, FSIs have attracted great attention in both academic and industrial communities not only to understand the underlying flow physics, but also to exploit their structural flexibility for flight/flow control. The development of techniques in flow-/structure-related measurements provides a great opportunity to address FSIs not only for aerospace applications, but also for the design of many other engineering systems such as wind turbines, engines, and bridges.

Guest Editor

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