ADVANCES AND CHALLENGES IN FLOW CONTROL

AKI GRÖNMAN[*], JONNA K. TIAINEN[†]

[*] Lappeenranta University of Technology
P.O. Box 20, 53851 Lappeenranta, Finland
gronman@lut.fi, www.lut.fi

[†] Lappeenranta University of Technology
P.O. Box 20, 53851 Lappeenranta, Finland
jonna.tiainen@lut.fi, www.lut.fi

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ABSTRACT

Flow control plays important role in many areas of application such as transportation, energy and sports engineering. There are various methods to reduce drag, enhance lift, eliminate separation, induce reattachment, or delay stall. These methods are usually divided into active and passive approaches. The first includes e.g. vortex generating jets and geometric actuators while the latter includes e.g. riblets and dimples. The modelling of different methods can be challenging due to need for accurate information about boundary layer transition and e.g. in the case of riblets even the smallest eddies should be usually modelled.

Since different areas of study can have varying approaches on similar phenomena an opportunity to combine knowledge from other fields of research can push the current state of the art forward, which is also the first objective of the proposed minisymposium (MS). The second objective is to present and identify challenges in modelling which have to be solved in order to advance the current modelling of flow control methods.

The MS will concentrate on one hand in flow control methods but on the other hand is also interested on the accuracy and capability of the current numerical methods to capture the flow physics when different control strategies are employed. The proposed MS welcomes studies with different numerical approaches such as Direct Numerical Simulation, Large Eddy Simulation and Reynolds Averaged Navier-Stokes Simulation. It is also a place to present reviews on current state of art on a particular research area.