Advances in high-order discretisation methods and model reduction methods for CFD problems

5000 scientific computing

Andrea ferrero\*, tommaso taddei†

\* Corso Duca degli Abruzzi 24, 10129 Torino, Italy

Department of Mechanical and Aerospace Engineering, Politecnico di Torino

andrea\_ferrero@polito.it

† A33, 351 Cours de la Libération, 33400 Talence

Inria Bordeaux, Team MEMPHIS, IMB, UMR 5251, Univ. Bordeaux

tommaso.taddei@inria.fr

**Key words:** Instructions, Minisymposium, Computational Mechanics, Fluid Dynamics.

ABSTRACT

The last few decades have witnessed a growing interest towards high-order discretisation methods and model order reduction for CFD applications. High-order methods [2] have proven their effectiveness to capture relevant phenomena including vortex dominated flows, flows with large flow separations, aero-acoustics. At the same time, model order reduction methods --- and in particular projection-based model reduction [1] --- are rapidly becoming an indispensable tool to deal with parametric studies associated with inverse problems, uncertainty quantification, optimal design. The aim of the minisymposium is to bring together researchers working on both fundamental and applied aspects of model reduction and high-order methods, to provide a forum for discussion, interaction, and assessment of these two classes of methods, with particular emphasis on CFD applications.

**REFERENCES**

1. G. Rozza, D.B.P. Huynh, & A.T. Patera, Reduced basis approximation and a posteriori error estimation for affinely parametrized elliptic coercive partial differential equations. *Archives of Computational Methods in Engineering*, Vol. 15 (3), pp. (2007).
2. Z. J. Wang et al., High-order methods: current status and perspectives, *International Journal for Numerical Methods in Fluids* *Vol. 72 (8), pp. 811-845, (2013).*