Recent Advances in Numerical Methods for Computational Fluid Dynamics on High-Performance Computing Systems.

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ABSTRACT

This mini-symposium is aiming to give insight into the most recent advancements in the field of computational fluid dynamics with a special focus on future high-performance computing environments which will be in the exascale range. The focal point of the symposium is on the improvement of computational efficiency, software design, as well as the enhancement of numerical accuracy by means of newly developed methods in the context of HPC. Furthermore, in this mini-symposium, the computational issues regarding performance and suitability for high-performance computing as well as the underlying strategies to enable large simulations will be highlighted. Moreover, we would like to provide an opportunity to showcase challenging applications and simulations on highly parallel HPC environments.

Potential applications of such methods could be in the field of aerospace, maritime, civil, biomechanical, and production engineering. We especially encourage contributions focusing on large and computationally intensive multiscale, multiphysics, and multiphase problems, as well as advanced solution strategies such as space-time formulations or high-order methods on parallel systems.

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