MODERN NUMERICAL METHODS AND SIMULATIONS TECHNIQUES FOR COMPLEX FLOW PROBLEMS

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ABSTRACT

This mini-symposium brings together young researchers and experts working on modern numerical methods, state-of-the-art discretizations and simulation techniques for complex flow problems. These include multiscale-flow problems, non-Newtonian flow, visco-elastic flows, coupled flow problems, up to fluid-structure interactions. Usually, standard out-of-the-box discretization methods are not feasible, since they are not efficient and lack robustness with respect to variations in model, discretization, and material parameters. To overcome these challenges, it is necessary to consistently rely, for example, on error controlled adaptivity, multi-scale algorithms, or on hybrid methods that combine different approaches, e.g., finite element methods and neural networks. This mini-symposium welcomes contributions both from the numerical analysis side and scientific computing, and is intended as a fruitful moment of interdisciplinary exchange of ideas.

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