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ADVANCED LARGE-EDDY SIMULATION-BASED TECHNIQUES FOR COMPLEX TURBULENT FLOWS TRACK 2000

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ABSTRACT

Most of turbulent flow problems cannot be directly computed from the Navier-Stokes equations because not enough resolution is available to resolve all relevant scales of motion. Therefore, practical numerical simulations have to resort to turbulence modeling techniques such as large-eddy simulation (LES) where the large scales of motion are explicitly computed, whereas effects of small-scale motions are modeled. Since the advent of CFD, many subgrid-scale models have been proposed and successfully applied to a wide range of flows. However, most of the difficulties in LES are associated with the presence of walls where SGS activity tends to vanish. Therefore, apart from many other relevant properties, LES models should properly capture this feature [1, 2]. Numerically, this implies an accurate resolution of the near-wall region which results on a (extremely) high computational cost at high Reynolds numbers. This leads to the conclusion that, in the foreseeable future, the feasibility of LES simulations at high-Reynolds numbers will have to rely on a higher degree of modelization in the near-wall region [3, 4]. In this context, the objective of this Minisymposium is to bring together people working on advanced, cutting-edge methods for LES of turbulent flows with special emphasis to wall-bounded problems and unsteady separated flows at high Reynolds numbers where a higher degree of modelization (*e.g.* hybrid RANS-LES methods, wall-modeled LES) is usually required.

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