DNS/LES OF TURBULENT WALL-BOUNDED FLOWS

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ABSTRACT

In spite of more than 60 years of investigation and research, turbulence is still considered an open issue due to its complexity and lack of a generic theory; however, it plays a key role in many engineering and industrial applications, such as wind energy, aerospace, atmospheric boundary layers, to name a few. In addition, with the rapid growth of computer capabilities in the last few decades, numerical predictions of turbulent flows are rapidly gaining ground; particularly, in terms of higher Reynolds numbers at the smallest turbulence-scale level. Therefore, the purpose of this mini-symposium is to debate latest research on unsteady numerical simulations of turbulent boundary layer flows where all turbulence scales (Direct Numerical Simulations, DNS) or the most significant eddies (Large Eddy Simulations, LES) are resolved. Areas of interest include: i) DNS or LES of turbulent zero pressure-gradient boundary layers in incompressible/compressible flows; ii) turbulent inflow generation methods for spatially-developing boundary layers; iii) effects of wall roughness and streamwise pressure gradients in turbulent boundary layers; iv) DNS/LES of thermal boundary layers with and without stratification; v) DNS of transitional-turbulent boundary layers, vi) numerical predictions over fully-developed channels or pipes, etc. These topics are not cast in stone; interested applicants are encouraged to contact the mini-symposium organizer to propose their contributions.