Abstract Submitted
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Parallel Simulations of Turbulent Channel Flow Using Regular and Entropic Lattice Boltzmann Schemes[1] M. SPASOV, D. REMPFER, IIT, Chicago — Lattice Boltzmann methods (LBM) have proven to be reliable tools for the simulation of a variety of complex flows. One of their advantages is that they lend themselves to efficient implementations on parallel computers. In this talk we demonstrate this advantage by presenting results from a parallel direct numerical simulation of a fully developed, incompressible, pressure driven turbulent channel flow. The results are compared to results obtained using a standard Chebyshev pseudo-spectral method. In the second part of the talk, the entropic version of the Lattice Boltzmann method (ELBM) is presented. It renders LBM non-linearly stable and hence one could in principle use fewer grid points without the risk of numerical instability. We address the question of accuracy when under-resolved simulations of turbulent channel flow are carried out using ELBM.

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