

Abstract Submitted
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Turbulent channel flow at $Re_\tau = 10000$ ¹ SERGIO HOYAS, Universitat Politcnica de Valencia, MARTIN OBERLACK, STEFANIE KRAHEBERGER, TU Darmstadt, FRANCISCO ALCANTARA-AVILA, Universitat Politcnica de Valencia — A new simulation of a turbulent channel flow was conducted up to the limit of $Re_\tau = 10.000$. The domain size is $2\pi h \times 2h \times \pi h$. This domain is thought to be large enough to accurately compute the one point statistics of the flow. The simulation has been carried out on 2048 SuperMUC phase II cores, at a mesh of $(6144, 2101, 6144) \approx 8 \times 10e10$ grid points. A database with approximately 100 TB has already been created, which will be analyzed further at a later stage. As it was expected, a long logarithmic layer exists with $\kappa \approx 0.40$ and extending from $y^+ \approx 70$ to $y^+ \approx 2000$. The first maximum of the indicator function is not growing anymore and remains constant. A first analysis of the intensities shows that the near wall peaks of u' , w' and p' are still growing with Reynolds number. The possible secondary maximum of u' is barely present. New scaling laws of U and u' based on symmetry theory will be also shown

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