Abstract Submitted
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**Direct Numerical Simulation of turbulent heat transfer up to $\mathbf{Re}_\tau$ =2000**[1] SERGIO HOYAS, JEZABEL PREZ-QUILES, FEDERICO LLUESMA-RODRGUEZ, Instituto Universitario de Matematica Pura y Aplicada, Universitat Politecnica de Valencia — We present a new set of direct numerical simulations of turbulent heat transfer in a channel flow for a Prandtl number of 0.71 and a friction Reynolds number of 2000. Mixed boundary conditions, i.e., wall temperature is time independent and varies linearly along streamwise component, have been used as boundary conditions for the thermal field. The effect of the size of the box in the one point statistics of the thermal field, and the kinetic energy, dissipation and turbulent budgets has been studied, showing that a domain with streamwise and spanwise sizes of $4\pi$h and $2\pi$h, where h is the channel half-height, is large enough to reproduce the one point statistics of larger boxes. The scaling of the previous quantities with respect to the Reynolds number has been also studied using a new dataset of simulations at smaller Reynolds number, finding two different scales for the inner and outer layers of the flow.

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