

Abstract Submitted  
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**Large-box DNS of a turbulent channel at  $Re_\tau \approx 2000$** <sup>1</sup> SERGIO HOYAS, JAVIER JIMÉNEZ, School of Aeronautics Madrid — A DNS of a turbulent channel has been performed at  $Re_\tau \approx 2000$  in a computational box of dimensions  $(8\pi \times 2 \times 3\pi)h$ , using dealiased Fourier expansions in  $x - z$ , and compact finite differences in  $y$ . The results broadly confirm lower  $Re_\tau$ 's, but there is enough scale separation to distinguish some features of the logarithmic layer. At  $y^+ = 15$  the  $u$ -spectrum has a wall-streak component whose length is  $\lambda_x^+ = 300 - 5000$  and  $\lambda_z \sim \lambda_x^{1/3}$ , and an outer one with  $\lambda_x/h = 2 - 10$  and  $\lambda_z \sim \lambda_x$ . The former peaks near the wall, and the latter moves outwards across the logarithmic layer as  $\lambda_x$  increases. The intensities of the transverse velocity fluctuations collapse well with other Reynolds numbers when expressed in wall units, although the spanwise velocity has an unsuspected near-wall peak. The mean velocity has almost a decade of logarithmic profile. The streamwise velocity fluctuations have a short  $k^{-1}$  spectral range, but they don't collapse in wall units.

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