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The minimal logarithmic region.<sup>1</sup> OSCAR FLORES, U. Politecnica de Madrid, JAVIER JIMÉNEZ, UPM and CTR Stanford — We present a 'minimal' DNS of a turbulent channel with smooth walls at  $Re_{\tau} \approx 2000$ . The simulation is performed in a periodic domain with streamwise and spanwise lengths  $\pi h/2 \times \pi h/4$ . Below  $y/h \approx 0.2$ , it reproduces the mean and fluctuating velocity profiles and spectra of the logarithmic region of full-sized turbulent channels, although the largest scales are absent. The simulation is minimal in the sense that it essentially fits a pair of the characteristic wall-attached eddies identified in the logarithmic region by del Álamo *et al* (2006). As in full-channels, these eddies are associated with large low-momentum streaks ( $\Delta z^+ \approx 500$ ), here of infinite length, which break up after sinuose meandering. The break-up results in a wall-normal velocity ejection, and in a sweep behind it. While the former transports low-momentum fluid across the logarithmic region, the sweep interacts with the remaining part of the streak, and reorganizes it into a ramp that eventually decays by what appears to be a different, less violent, process.

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