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**Turbulent mean flow profile in 2D channel flow**[1] VILDA MARKEVICIUTE, RICH KERSWELL, University of Cambridge — Two-dimensional channel flow is well known to exhibit chaotic behaviour in which structures common to turbulent flows such as vorticity sweeps, large-scale intermittency, and quasi-periodic bursting are observed (Jimenez 1990). Recently, Falkovich and Vladimirova (2018) have found that the time-averaged turbulent mean flow at constant pressure gradient exhibits a remarkably simple wave-like structure which is known to exist for low Reynolds numbers (Re), including below the linear instability threshold (Re=5772). Trying to confirm this finding, here we revisit this flow imposing constant mass flux driving instead. At least in short channels, we find unexpectedly long-lived asymmetric states beyond a critical Reynolds number where the turbulence is confined to one of the channel walls. This poses an interesting question of how long one needs to wait to recover the expected symmetric mean flow or whether there really is bistability of turbulent states centred on one or other of the walls.

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