Abstract Submitted
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**Identifying structure models in real turbulence**[1] JAVIER JIMÉNEZ, U. Politécnica Madrid — Even when a model for the structures of a turbulent flow makes theoretical sense, it is important to test whether those structures are present in the flow, as well as how approximately and how often they appear. How that can be done is explored by tracking a linear transient-growth model for the logarithmic-layer in medium-size channel simulations ($Re_\tau$=1000–2000). The predicted linearized behavior is found in the evolution of 'minimal' Fourier modes of the wall-normal velocity, but only during bursting events accounting for about half of the total elapsed time. In particular, if a wavefront tilt angle is defined for each mode, periods of increasing forward tilt correspond to amplitude bursts. It is mostly during those periods that the tilt is well defined but, even then, the linearly most amplified perturbations do not describe the flow well. The flow evolution is explained by the model, but nonlinear initial conditions remain important for the fluctuation profiles. Quantitative measures for the level of approximation are defined and reported.

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