

[Marusic, I.](#); [Mathis, R.](#); [Hutchins, N.](#)

Predictive model for wall-bounded turbulent flow. (English) [Zbl 1226.76015](#)
[Science 329, No. 5988, 193-196 \(2010\).](#)

Summary: The behavior of turbulent fluid motion, particularly in the thin chaotic fluid layers immediately adjacent to solid boundaries, can be difficult to understand or predict. These layers account for up to 50% of the aerodynamic drag on modern airliners and occupy the first 100 meters or so of the atmosphere, thus governing wider meteorological phenomena. The physics of these layers is such that the most important processes occur very close to the solid boundary – the region where accurate measurements and simulations are most challenging. We propose a mathematical model to predict the near-wall turbulence given only large-scale information from the outer boundary layer region. This predictive capability may enable new strategies for the control of turbulence and may provide a basis for improved engineering and weather prediction simulations.

MSC:

[76F40](#) Turbulent boundary layers

Cited in **1** Review
Cited in **65** Documents

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