

Abstract Submitted
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Return to Isotropy of a Filtered Turbulent Field CLARK PEDERSON, The University of Texas at Austin, ROBERT MOSER, Institute for Computational Engineering and Sciences, The University of Texas at Austin — Large-eddy simulations are often applied to anisotropic turbulence, including shear flows, expansions, and contractions. While much focus has been directed towards proper estimation of subfilter dissipation, this is an incomplete picture. Improving LES models requires understanding the time-evolution of anisotropic turbulence and the anisotropic interactions between resolved and unresolved scales. Here, we examine the behavior of anisotropic turbulence as it returns to isotropy. Homogeneous, isotropic turbulent fields were transformed into anisotropic fields by applying rotation, shear, and axisymmetric contractions. From this initial condition, direct numerical simulations of the return to isotropy were performed. The time-evolution of various measures of anisotropy are analyzed. Finally, the implications of these results for LES models are examined.

Clark Pederson
University of Texas System

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