

Abstract Submitted
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Pressure Effects in Compressible Flows at the Rapid Distortion Limit REBECCA BERTSCH, SHARATH S. GIRIMAJI, Texas A&M University
— We investigate the role of pressure in rapidly sheared homogeneous compressible turbulence using the Rapid Distortion Theory (RDT). Our objective is to develop a simple dynamical model that reproduces the 3-stage turbulent kinetic energy evolution observed in compressible RDT calculations. The three stages of turbulent kinetic energy evolution are: (1) initial growth at a rate higher than equivalent incompressible flow; (2) an intermediate period of stabilization where the turbulent kinetic energy grows very slowly or not at all; and (3) final period of growth at a rate similar to incompressible flows. The dynamical model is a function of gradient and turbulent Mach numbers and attempts to shed light on the pressure-strain correlation process in compressible flows.

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