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Return-to-isotropy of anisotropic dilatational turbulence KURNCHUL LEE, SHARATH S. GIRIMAJI, Texas A&M University — Turbulence in compressible flows differs from its incompressible counterpart due to the activation of thermal energy mode. In this study, we examine the return-to-isotropy process in initially anisotropic compressible turbulence. A Boltzmann Bhatnagar-Gross-Krook (BGK) equation based numerical scheme is employed for direct numerical simulations of the anisotropic compressible turbulence. The initial turbulence field is made of both solenoidal and dilatational components. The objective of the study is to investigate the various effects of compressibility: (i) the rate of return-to-isotropy of dilatational turbulence; (ii) the rate of return-to-isotropy of solenoidal turbulence; and (iii) the role of pressure dilatation in return-to-isotropy.

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