Abstract Submitted
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The nature of turbulence at high Mach numbers SHARATH GIRIMAJI, Texas A&M University — We begin by listing the features of a *real* turbulence flow field and identifying the quintessential characteristics. We contrast these with the main features of wave-like motion. We examine the competition between *wave-like* and *real* turbulence characteristics in two elementary flow cases: (i) direct numerical simulation (DNS) of a decaying flow field that is initially anisotropic and purely dilatational; and (ii) DNS and linear analysis of a homogeneously sheared velocity field which is initially entirely solenoidal. The first case examines the nonlinear aspects while the latter study addresses linear processes as well. Return-to-isotropy, potential-to-dilatational energy partition and broad-bandedness of the energy spectra are examined. Important, but not necessarily conclusive, arguments are presented.

Sharath Girimaji
Texas A&M University

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