

Abstract Submitted
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The “Pullin scheme” for non-stationary turbulence ROBERT RUBINSTEIN, NASA Langley Research Center — The Pullin scheme obtains a solution of the Euler equations from a particle kinetic Boltzmann solution by relaxing the distribution function to a Maxwellian at each time step. We investigate the analog for turbulence closures, using the classical Heisenberg model applied to non-stationary turbulence due to either periodic or linearly increasing forcing as an illustration. Relaxing the spectrum to a local Kolmogorov steady-state spectrum at each time step enforces the Tennekes-Lumley balance between vortex stretching and enstrophy destruction and thereby causes the solution to reproduce the behavior of simple finite dimensional models. We explore the connection between incomplete relaxation and models intermediate in complexity between the full closure and the simplest finite dimensional models.

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