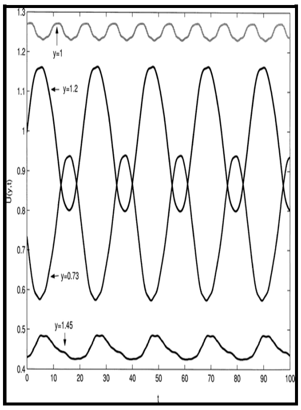
Multiwave interactions in turbulent jets

Institute for Computational Mechanics in Propulsion - Numerical study of shock wave interaction on transverse jets through multiport injector arrays in supersonic crossflow



Description: -
-
Wounds and Injuries -- therapy
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Medicine, Military
Emergency medicine
Wave interaction
Turbulent jetsMultiwave interactions in turbulent jets
-Multiwave interactions in turbulent jets
Notes: Bibliographical references: p.32-34.
This edition was published in 1989

Tags: #Low

Finite

Abstract The origin of low-frequency variability in the midlatitude jet is investigated using a two-level baroclinic channel model. Introduction Emergence of coherent jets from relatively incoherent background velocity fields occurs in both rotating and nonrotating fluids. As Ïµ is further increased the symmetric equilibrium eventually becomes unstable and at the point of neutrality there is a supercritical pitchfork bifurcation giving rise to two stable asymmetric states.

Supersonic turbulent boundary layer separation control using a morphing surface

Therefore, only zonally averaged quantities are presented in , which summarizes the properties of the equilibria. This bimodal distribution is shown in.

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Nonetheless, it is instructive to examine the ensemble mean set of equations and the structures they generate. Together, these processes can account for the O 1 -amplitude wave equilibration.

Shock wave/turbulence boundary layer interaction control with the secondary recirculation jet in a supersonic flow

The fundamental frequency associated with the limit cycle and its overtones are clearly seen. The transient wave evolution shows that wave breaking starts at the critical latitude, but as the waves grow, jetward shifts occur in both the critical latitudes and the wave breaking latitudes. The periodicity revealed in the autocorrelation of the first principal component when the zonal jet is forced by five member ensembles in the limit cycle regime of the asymptotic system is not seen in data cf.

Structural Stability of Turbulent Jets in: Journal of the Atmospheric Sciences Volume 60 Issue 17 (2003)

To obtain the Lyapunov equation we need to make the additional assumption that this finite ensemble mean is well approximated by the infinite ensemble mean. The linear stability boundary is indicated in a.

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All calculations show that the turbulence forces the wave and the eddy variance is located upstream of the block. A possible explanation for this phenomenon is reconfiguration of jet equilibria when a threshold forcing is passed in the radiative equilibrium forcing maintaining the jet.

Behavior of Multiple

The contour interval is a 0. These fluxes create a nonzero Î˜ t and Î¨ t so that the mean flow evolves in time. One theory for LFV in the atmosphere is based on the linear instability of zonally varying flows.

Multi

The stability properties of these equilibria are shown in. However, if more realistic features are included, such as relaxation of the zonal mean zonal wind toward a jetlike wind profile and dissipation by lower-layer Ekman pumping, the two-layer model can produce many of the observed large-scale midlatitude flow characteristics, including teleconnection-like stationary waves , barotropic decay , and baroclinic wave packets , as well as the zonal index.

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