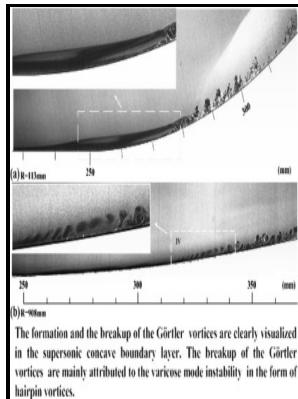


# On the instability of Görtler vortices to nonlinear travelling waves

Institute for Computer Applications in Science and Engineering - On the Receptivity Problem for Görtler Vortices: Vortex Motions Induced by Wall Roughness on JSTOR



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## Weakly Nonlinear Analysis of Vortex Formation in a Dissipative Variant of the Gross

The T-S waves gradually increased in amplitude until a few random spikes of in-phase amplitude appeared, triggering focal vortices turbulent spots , with noise. International Union of Theoretical and Applied Mechanics. However, prior to the point at which flow reversal is encountered the total streamwise velocity profile is found to be highly inflectional in nature.

## Tollmien

Schubauer and Skramstad introduced SH sound into the boundary layer by creating SH fluttering vibrations of a BL ferromagnetic ribbon in their 1941 experiments, similarly triggering turbulence at lower flow rates. The occurrence of a secondary instability mode is indicated by the formation of a small horseshoe eddies generated between the two neighboring vortices traveling streamwise, to form mushroom-like structures as a consequence of the non-linear growth of the Görtler vortices.

## Weakly Nonlinear Analysis of Vortex Formation in a Dissipative Variant of the Gross

His research interests are boundary layer flows and hot-wire anemometry. In this case, then, the vortex and the travelling wave drive each other, and indeed the whole flow structure is described by an infinite set of coupled nonlinear differential equations.

## On the Secondary Instability of the Most Dangerous Görtler Vortex

The statistical equilibria of the conservative dynamics of the Gross-Pitaevskii equation GPE with a finite range of spatial Fourier modes are characterized using a new algorithm, based on a stochastically forced Ginzburg-Landau equation SGLE , that directly generates grand-canonical distributions. It is shown that this coefficient is exponentially small in the latter limit so that it is unlikely that this mode can be stimulated directly by wall roughness. These T-S waves would gradually increase in amplitude until they broke up into the vortices, noise and high resistance that characterize turbulent flow.

## **Tollmien**

The velocity contours in the cross-sectional planes at several streamwise locations show the growth and breakdown of the vortices.

## **Weakly Nonlinear Analysis of Vortex Formation in a Dissipative Variant of the Gross**

The vortex ring translational velocity has a dependence on temperature that is an order of magnitude above that of the crystal lattice, an effect that is related to the presence of finite-amplitude Kelvin waves.

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