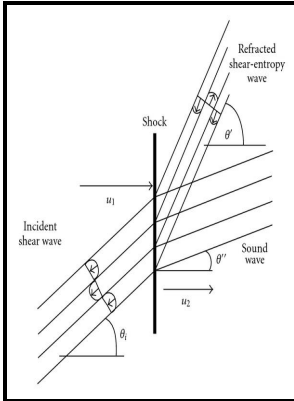


Sound generated by interaction of a single vortex with a shock wave

Institute of Aerophysics - The shock



Description: -

- Shock waves

Aerodynamic noisesound generated by interaction of a single vortex with a shock wave

- UTIA report -- no.61 sound generated by interaction of a single vortex with a shock wave

Notes: Includes bibliographical references.

This edition was published in 1959



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Tags: #Simulation #of #shock #and #vortex #interactions

Sound generation by a pair of co

At intermediate flow rates, several non-harmonically related frequencies occurred simultaneously, suggesting that several corrugations were involved in the sound generation.

Shock

The rollup of the shear layer of the injectant gas results in the formation of the counter-rotating streamwise vortices, which are then responsible for entrainment and eventually mixing of injectant and supersonic crossflows. The characteristic dimension is that of the object lateral to the flow and the characteristic speed is that of the impinging flow. The analysis of wall-pressure spectra reveals that all control configurations shift the high-energy low-frequency range to higher frequencies, while the energy level is significantly reduced only if suction acts in the rear part of the separated zone.

Shock

The measured frequency was close to 140 Hz.

Physics of whistles

The phenomenon of swirl instability has been shown to occur in other situations. When a subsonic jet impinges on a cavity, jet instability becomes part of the feedback loop as with the hole tone. The uniformity of the measured sound field for this whistle confirmed its monopole-like nature.

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