The Role of the Feedback Phenomenon in many Aeroacoustics Problems of Current Interest

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Abstract
Feedback phenomenon resulting in acoustic resonance is very common in a range of aeroacoustics problems of current interest. Screech in shock containing jets, cavity noise, edgetones, jet/collector interactions and howling of ejectors are but a few examples. In most of these problems involving shear layers, there is a match between the frequencies of sound and the most-preferred instability waves that are excited by the sound impinging at the edge where the shear layer begins. This paper will discuss the origins of this feedback phenomenon and the conditions under which it has the most impact. Selected examples of this phenomenon from the recent work conducted at Georgia Institute of Technology will be presented. Role of the boundary conditions and methods of controlling the phenomenon will also be discussed.