Abstract Submitted for the DFD07 Meeting of The American Physical Society

Acoustics of Jet Impingement on a Porous Plane NATHAN MUR-RAY, JOHN SEINER, University of Mississippi — It is well known that a high speed impinging jet has a resonance-like behavior that results from acoustic feedback from the impingement of coherent structures on the impingement plane. In this work, the acoustics produced by a sonic axisymmetric impinging jet are compared to that produced by the same axisymmetric jet impinging on a porous screen. The desire is to study the effect of the screen porosity on the feedback mechanism. In the case of air flowing over a rectangular cavity, it has been observed that the over-all noise levels are noticeably reduced as a result of the placement of a porous screen on the aft wall and trailing deck such that a small void downstream of the cavity is enclosed by the screen. However, it appears that the flow resistance provided by the screen is a driving factor in the effectiveness of this mechanism for cavity flow noise reduction. The impinging jet offers a well documented control for studying the effect of the flow resistance on a feedback mechanism that is similar in many respects to the cavity flow.

> Nathan Murray University of Mississippi

Date submitted: 03 Aug 2007

Electronic form version 1.4