

Abstract Submitted
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A Comparison of Numerical and Experimental Results of Passive Shock Wave Attenuation in Two-Dimensional Ducts QIAN WAN, MONICA NGUYEN, VERONICA ELIASSON, University of Southern California — The study of shock wave attenuation has drawn much attention in shock wave area. One of the common ways to attenuate shock waves is to arrange multiple obstacles to block the propagation path of the shock wave. We propose an arrangement of the obstacles by placing the square or cylinder shaped obstacles along the outline of a logarithmic spiral curve, taking advantage of its ability of collecting the incident shock wave to its focal region. We simulated the process of the shock wave passing through these arrangements using the Euler equations of gas dynamics. Then, to validate the numerical results, we present corresponding experiments under the same initial conditions. Results show that the numerical and experimental methods agree well, and that placing obstacles along a logarithmic spiral curve can effectively attenuate the transmitted shock waves.

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