

Abstract Submitted
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Experimental Investigation of Passive Shock Wave Mitigation using Obstacle Arrangements MONICA NGUYEN, QIAN WAN, VERONICA ELIASSON, University of Southern California AME Department — With its vast range in applications, especially in the defense industry, shock wave mitigation is an ongoing research area of interest to the shock dynamics community. Passive shock wave mitigation methods range from forcing the shock wave to abruptly change its direction to introducing barriers or obstacles of various shapes and materials in the path of the shock wave. Obstacles provide attenuation through complicated shock wave interactions and reflections. In this work, we have performed shock tube experiments to investigate shock wave mitigation due to solid obstacles placed along the curve of a logarithmic spiral. Different shapes (cylindrical and square) of obstacles with different materials (solid and foam) have been used. High-speed schlieren optics and background-oriented schlieren techniques have been used together with pressure measurements to quantify the effects of mitigation. Results have also been compared to numerical simulations and show good agreement.

Monica Nguyen
University of Southern California

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