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**Mitigating Shock Waves Using Solid Obstacles with Semi-Circular Grooves** NICHOLAS AMEN, University of Southern California, ARTURO CAJAL, Universidad Nacional Autónoma de México (UNAM), VERONICA ELIASSON, University of Southern California — An experimental investigation was performed to assess the effectiveness of multiple obstacles with semi-circular grooves placed along a logarithmic spiral curve as a method to attenuate a shock wave. Previous research has shown that the use of multiple obstacles arranged in a log spiral configuration can attenuate a shock wave by reducing the energy of the wave. In this study, four different obstacle cross-sections in the same log spiral configuration were considered. All spirals had square cross-sections with zero, one, two, or three semi-circular grooves in each face. They were placed inside a shock tube where the incident, reflected, and transmitted shocks were visualized with high-speed schlieren imaging and the pressure histories were recorded with four pressure transducers. Each case was studied varying shock Mach numbers between  $M=1.1$  and  $M=1.5$ . The pressure traces were used to establish incident, reflected, and transmitted shock strength and wave speed. Results for the zero groove case were compared to that of the one, two, and three groove cross-sections which show that increasing the number of grooves has a profound effect on the generation of the reflected wave and impacts the transmitted wave via vortex generation behind the spiral.

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