Shock Wave Mitigation Using Lessons Learned from Shock Focusing Techniques QIAN WAN, VERONICA ELIASSON, University of Southern California AME Department — Shock wave mitigation in channels has been a topic of much attention in the shock wave community. One approach is to use obstacles of various geometries arranged in different patterns to attenuate an incident shock wave. Following the numerical work of A. Chaudhuri et al. (2012), which used cylinders, squares and triangles placed in staggered and non-staggered subsequent columns, we present simulations using a different obstacle pattern that more efficiently attenuates shock waves. Instead of using a matrix of obstacles, we have investigated square-shaped obstacles placed along a logarithmic spiral curve inspired by our previous work on shock focusing using logarithmic spirals. Results indicate that a logarithmic spiral could be an efficient way to collect and reflect the main part of the incident shock wave, thus improving techniques of shock wave attenuation in channels.

Qian Wan
University of Southern California AME Department