

Abstract Submitted
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Numerical investigation on optimizing blast wave focusing effects for multiple munitions SHI QIU, VERONICA ELIASSON, University of Southern California — The phenomenon of blast wave focusing onto a specified target has been studied. Simulations were performed in which multiple munitions were placed in a circular pattern around a target. The number of munitions was varied through multiple cases while the total energy distributed among all munitions was held constant. Previous research shows that there exists an optimal number of munitions to produce the most extreme conditions at the target while simultaneously reducing collateral damage. Two numerical approaches, inviscid Euler equations and geometrical shock dynamics were used to study the interaction between blast waves in order to further investigate the optimization problem. To generate initial conditions for geometrical shock dynamics simulations on interaction between blast waves, it was found that a transition point between regular reflection and irregular reflection needs to be determined in advance. Both experimental and theoretical investigation is included to study the transition condition. Optimization strategy for focusing blast waves is also discussed.

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