IMPACT OF SHOCK AND DETONATION WAVES ON WALL CORNER

BEN-DOR,G.; LI,H.

Impact of shock and detonation waves on a structure results in a considerable overpressure, which could damage the structure itself The maximum overpressure mainly occurs at a wall comer whose resistance ability to the impact is usually the least. Therefore, there is a special need to understand the impact effect in order to design more reliable structures against accidental and catastrophic blast damages.

lt is assumed that the wall comer, for simplicity, consists of two wedges. Only regular reflection (RR) configurations over two wedges, which corresponds to large inclined wedge angles, are considered in this study. Based on the classic two- and three-shock theories, the governing equations are derived and solved. Overpressures versus both, the inclined wedge angles and the strengths of the incident shock and detonation waves, are presented. lt is found that the overpressure resulting from a shock impact is larger than that resulting from a detonation for the same incident Mach number, while the temperature rise after a detonation impact is much higher than that of a shock wave. More details will be given in the full paper.