Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

The confinement effect of inert materials on insensitive high explosives[1] YUTAO SUN, MING YU, LI TANG, Institute of Applied Physics and Computational Mathematics (IAPCM), China — The paper aims at investing the confinement effect of inert materials on insensitive high explosives by means of shock polar curve and phenomenological reaction model. The confinement types are categorized by the shock polar theory, which built on the leading shock wave based on the detonation ZND model. If the sonic velocity of the confinement material is less than the CJ velocity of an explosive, the shock polar theory can be utilized. In general, there are several types of interactions that give a ?match? of the pressure and streamline-deflection across the interface between IHE and confinement material. A two-dimensional Lagrangian hydrodynamic method with three-term Lee-Tarver rate law is used to numerically simulate all types of confinement interactions. The important character of confinement material include: compressibility, thickness, the representative assembled layers, such as bakelite-iron and iron-beryllium. An improved detonation model is established to simulate the pre-compression effect on unreact explosive.

[1]Supported by NSFC No.11101046

Yutao Sun
Institute of Applied Physics and Computational Mathematics (IAPCM)

Date submitted: 13 Nov 2013 Electronic form version 1.4