

The simulation of the shaped charge with hyperelastic model

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The hyperelastic model have received more and more attention since this model satisfies the second law of thermodynamics. We used the hyperelastic model to simulated the dynamic deformation of liner and the programmed burn model to simulate the detonation process of explosives. We use the particle level set method and the real ghost fluid method to deal with the multi-material interaction. Both one-dimensional and two-dimensional axisymmetric test cases are presented. The simulation shows good agreement with the experiments especiWith the simulation the reversed velocity gradient can be observed especially in the phenomenon of reverse velocity gradient.

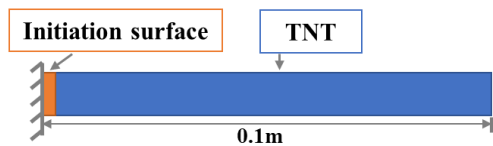


Fig.1 One dimensional test case

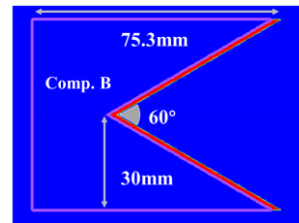


Fig.3 The initial configuration of the shaped charge

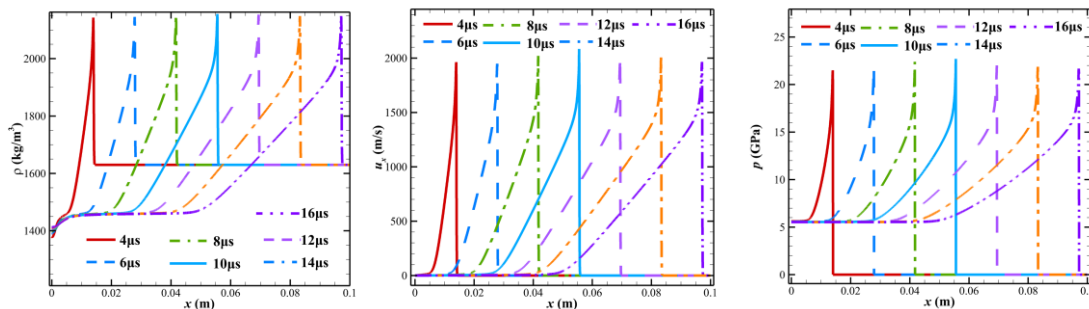


Fig.2 The density, velocity and pressure in TNT using the programmed burn model.

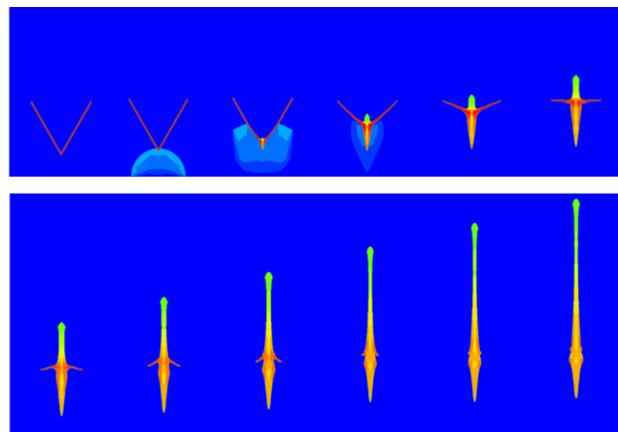


Fig.3 The formation process of shaped charge jet.