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High Resolution Numerical Simulation of Detonation Diffraction of Condensed Explosives CHENG WANG, Beijing Institute of Technology — In this paper, A high resolution large scale parallel computation software is developed based on positivity preserving for finite difference WENO method, high order boundary treatment method, multi-medium interface treatment. A new method for deriving the partial derivative of pressure in respect of every conserved quantity is proposed. The software can simulate detonation diffraction problems for two-dimensional condensed explosives. The numerical simulation results revealed the forming reasons of the low-pressure region, the low-density region, the "vortex" region and the "dead zone" in the vicinity of the corner. Furthermore, it demonstrated that the retonation will generate along the inner wall, and it plays an important role in the process of detonation diffraction. Finally, we obtain that the propagating state of detonation wave around the corner is generally determined by two factors: the transverse shock wave along the inner wall downwards and the extending curved detonation wave.

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