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Numerical simulations of blast/shock wave propagations after nuclear explosions[1] SEUNGHO SONG, Dept. ME, Yonsei University, JUNG-IL CHOI, YIBAO LI, CHANGHOON LEE, Dept. CSE, Yonsei University — Pressure waves develop immediately after nuclear explosions and start to move outward from the fireball. The most of initial damages are caused by the blast waves. We performed the blast wave propagations by solving two-dimensional and axisymmetric Euler equations. For shock capturing, inviscid fluxes are discretized using a variant of the piecewise parabolic method (PPM) and an approximate Riemann solver based on Roe's method is used. A clean air burst of fireball above the ground zero is considered. The initial condition of fireball is given at the point of breakaway that shock waves are appeared on the surface of the fireball. The growth of fireball is also calculated by solving one-dimensional radiation hydrodynamics (RHD) equation from point explosion. Characteristics of the blast wave propagations due to the various heights of burst and amount of the nuclear detonations are investigated. The results of parametric studies will be shown in the final presentation.

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