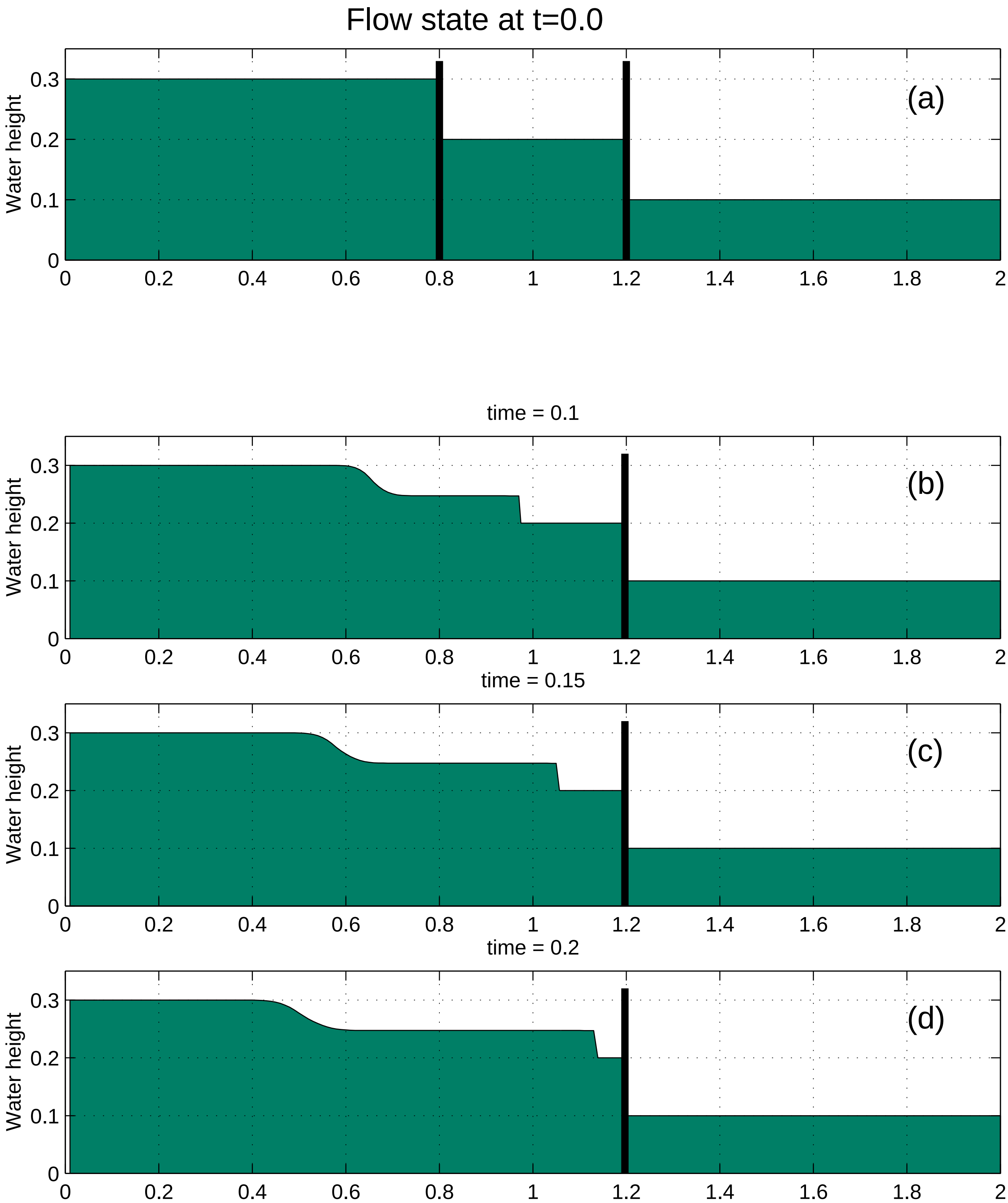

Flow state at t=0.0
Water height
0 0.1 0.2 0.3
0 0.2 0.4 0.6 0.8 1 1.2 1.4 1.6 1.8 2
(a)
time = 0.1
Water height
0 0.1 0.2 0.3
0 0.2 0.4 0.6 0.8 1 1.2 1.4 1.6 1.8 2
(b)
time = 0.15
Water height
0 0.1 0.2 0.3
0 0.2 0.4 0.6 0.8 1 1.2 1.4 1.6 1.8 2
(c)
time = 0.2
Water height
0 0.1 0.2 0.3
0 0.2 0.4 0.6 0.8 1 1.2 1.4 1.6 1.8 2
(d)

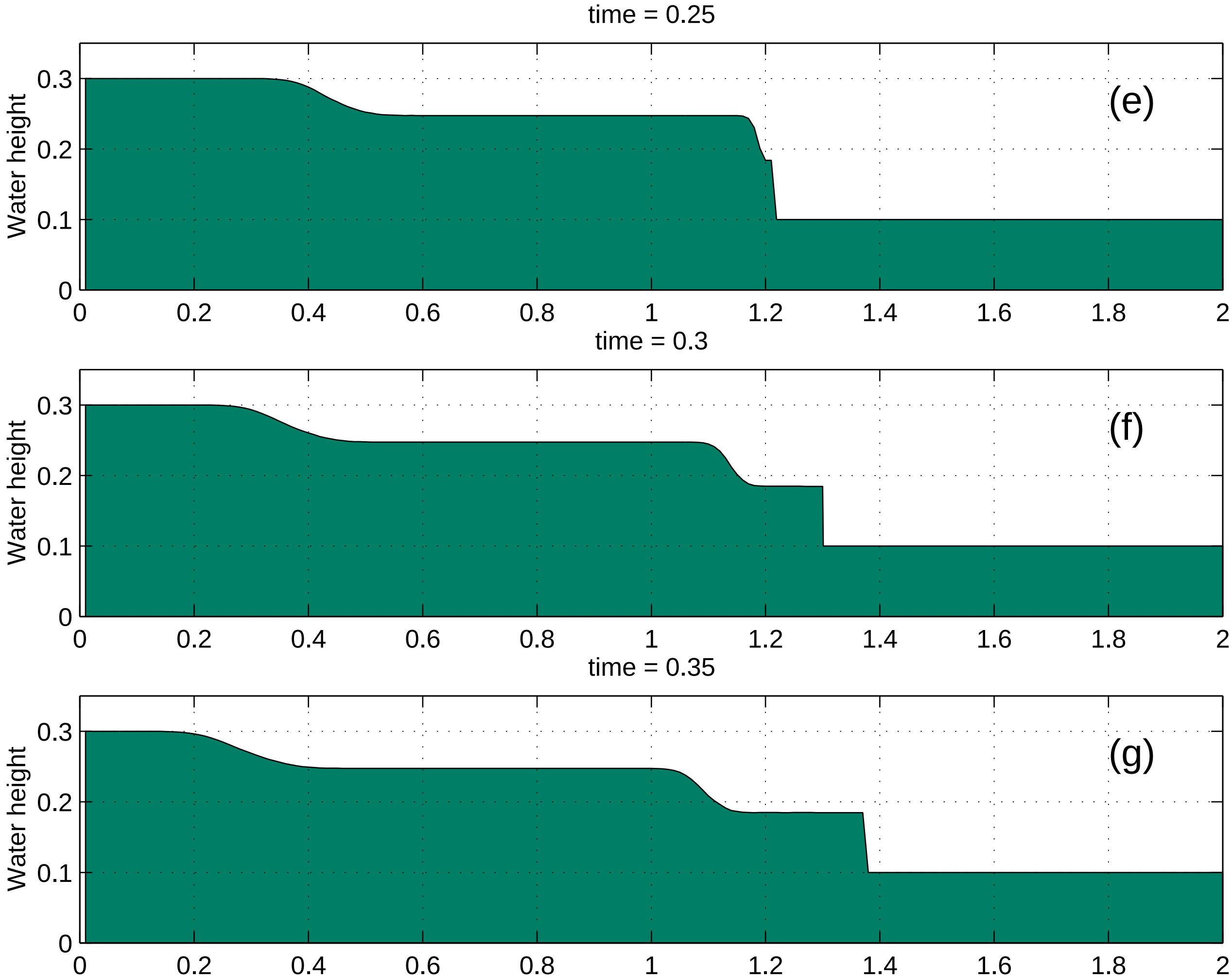
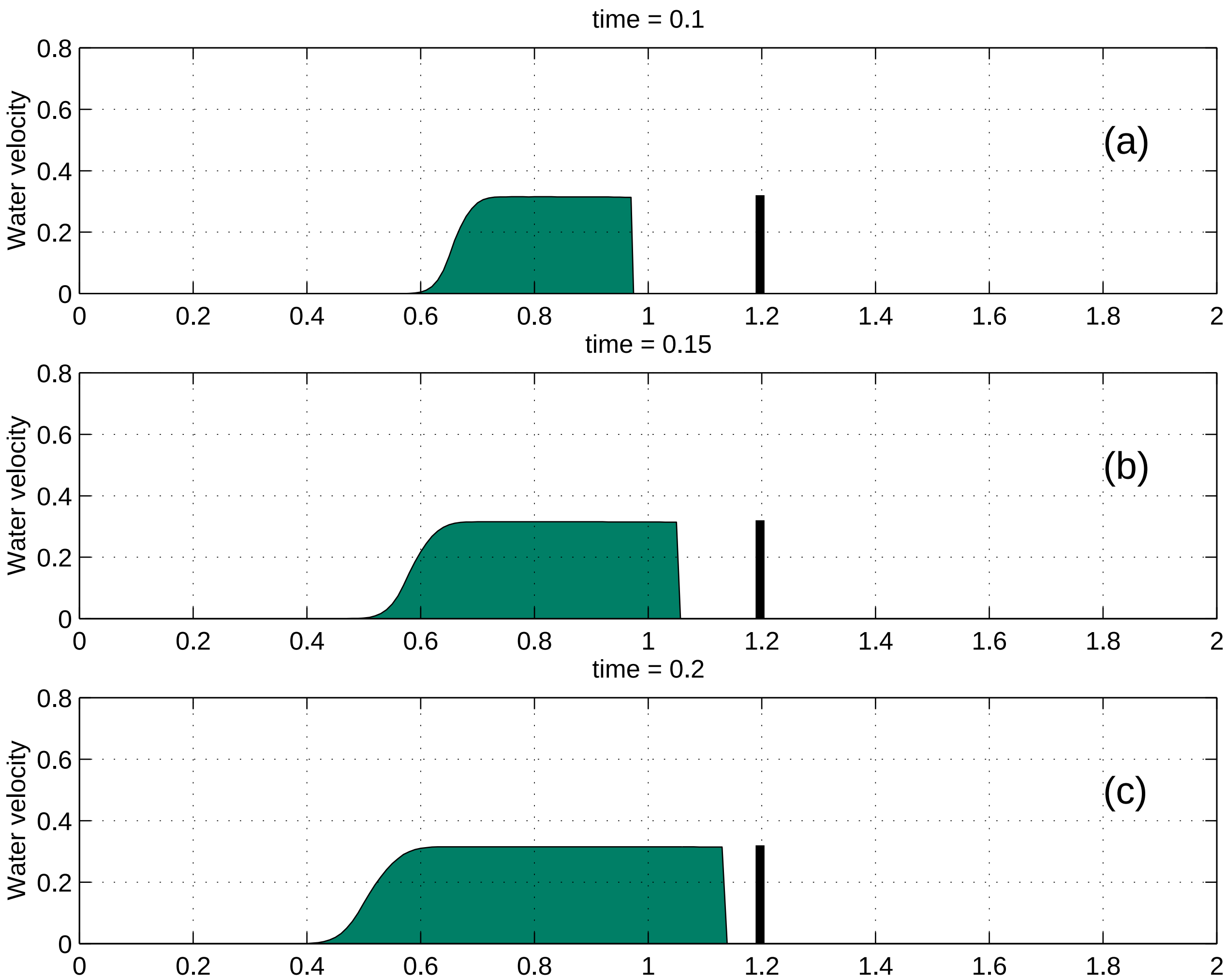


Figure 1: Evolution of water height in the two-dam problem. Shock-adaptive Godunov scheme. $h = 0$ (Eulerian). (a) $t = 0.0$ (b) $t = 0.1$ (c) $t = 0.15$ (d) $t = 0.2$ (e) $t = 0.25$ (f) $t = 0.3$ (g) $t = 0.35$.


time = 0.1
time = 0.15
time = 0.2
Water velocity
(a)
(b)
(c)
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2

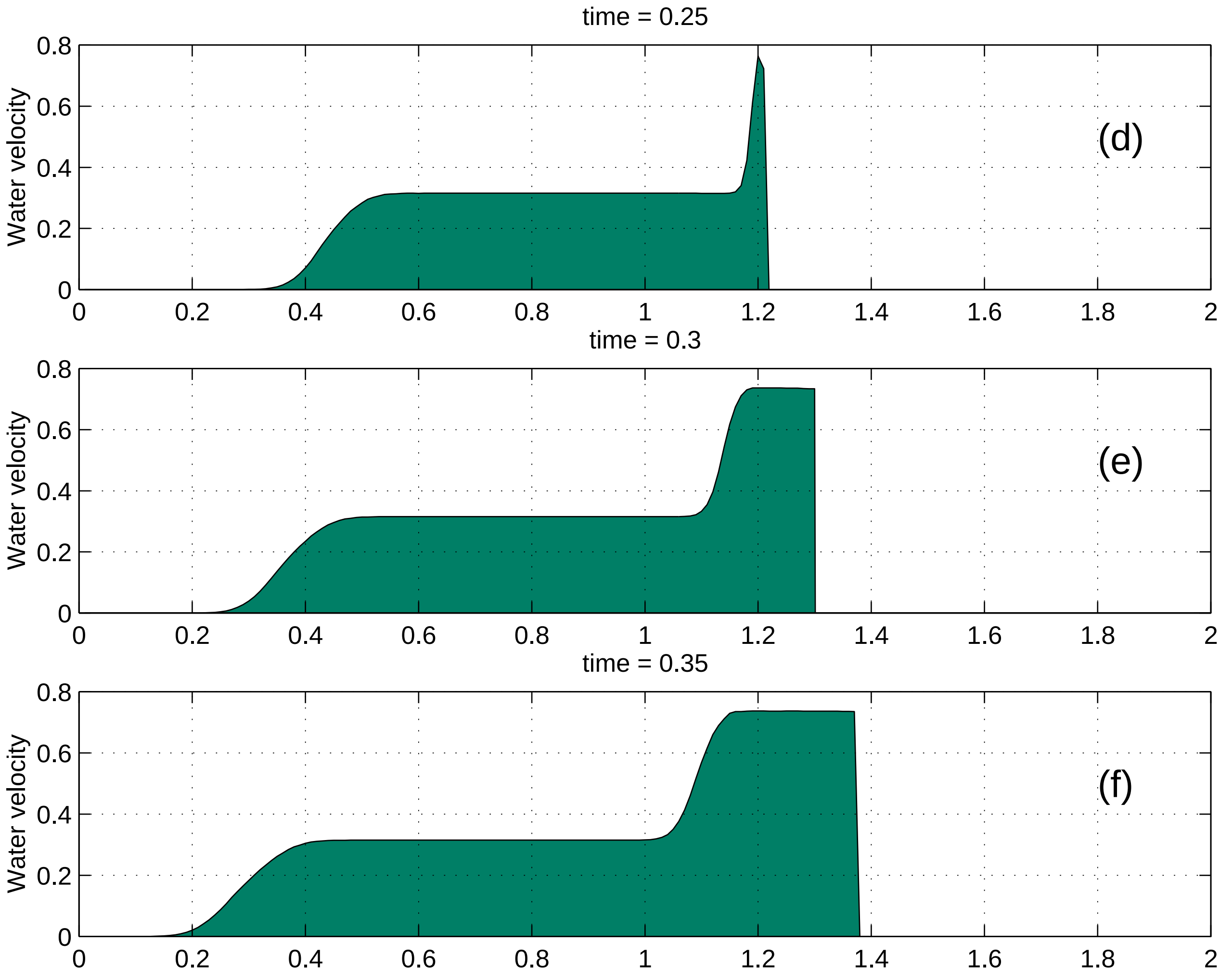


Figure 2: Evolution of particle velocity in the two-dam problem. Shock-adaptive Godunov scheme. $h = 0$ (Eulerian). (a) $t = 0.1$ (b) $t = 0.15$ (c) $t = 0.2$ (d) $t = 0.25$ (e) $t = 0.3$ (f) $t = 0.35$.

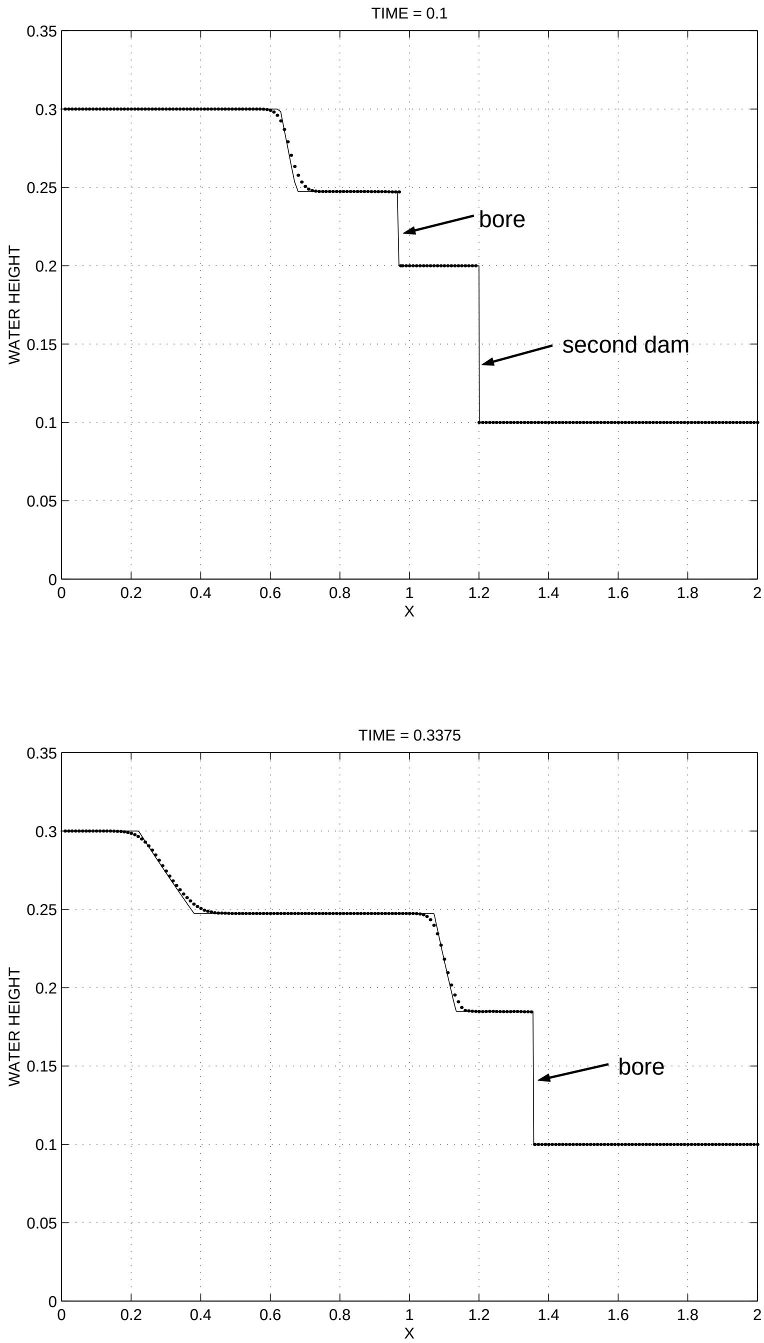


Figure 3: Comparison of exact (solid line) and computed (dots) solutions before (upper plot) and after (lower plot) the collapse of the second dam. Shock-adaptive Godunov scheme. $h = 0$ (Eulerian).

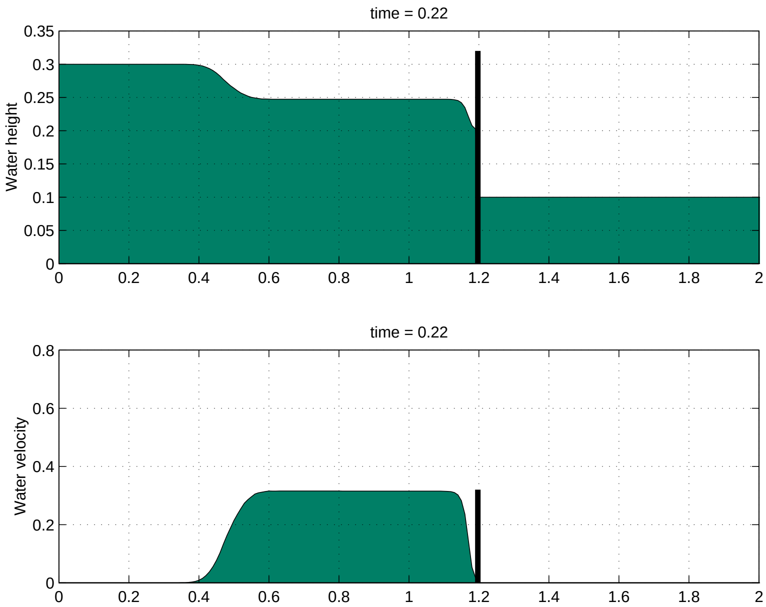


Figure 4: Water height and particle velocity at $t = 0.22$. Godunov scheme. $h = 0$ (Eulerian).

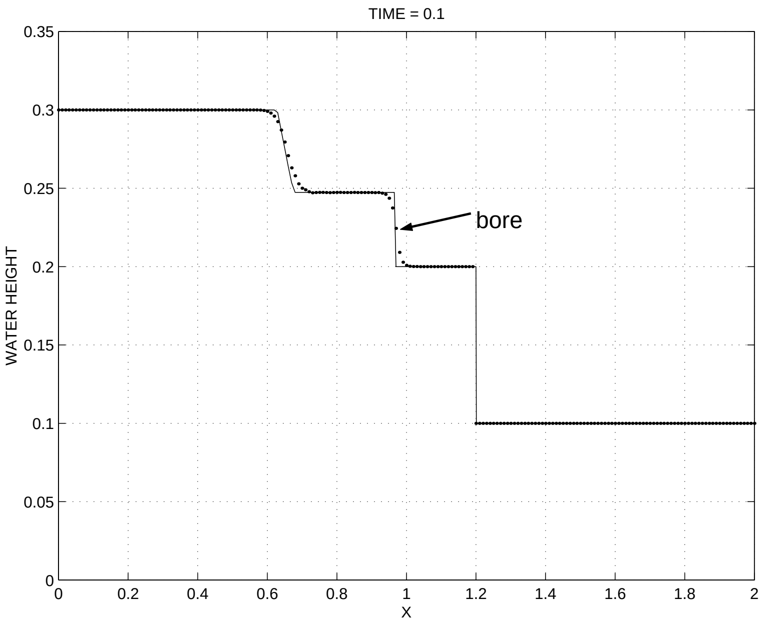


Figure 5: Comparison of exact (solid line) and computed (dots) solutions before the collapse of the second dam. Godunov scheme. $h = 0$ (Eulerian).

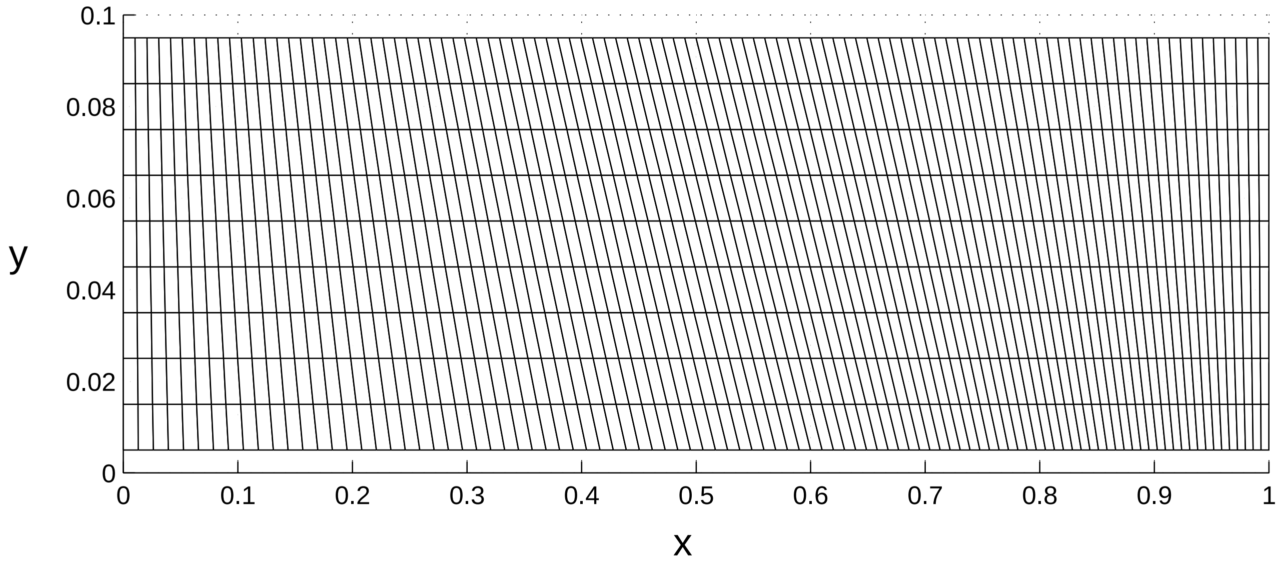


Figure 6: Initial grid for the Salzman test problem.

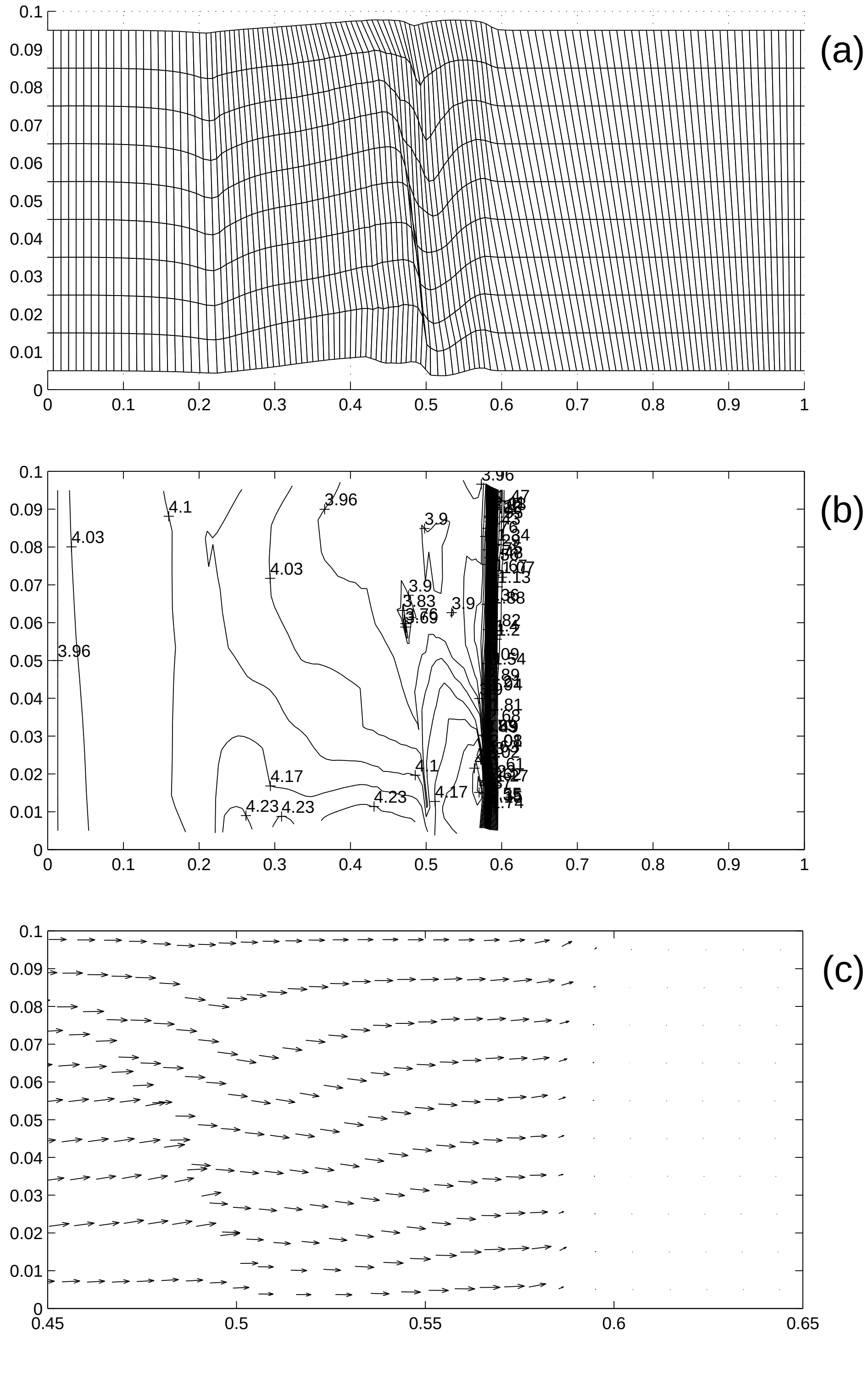


Figure 7: Computed solution to Salzman problem. $t = 0.06$, $h = 0.999$. (a)Flow generated grid; (b)Contours of water height; (c)Velocity distribution.

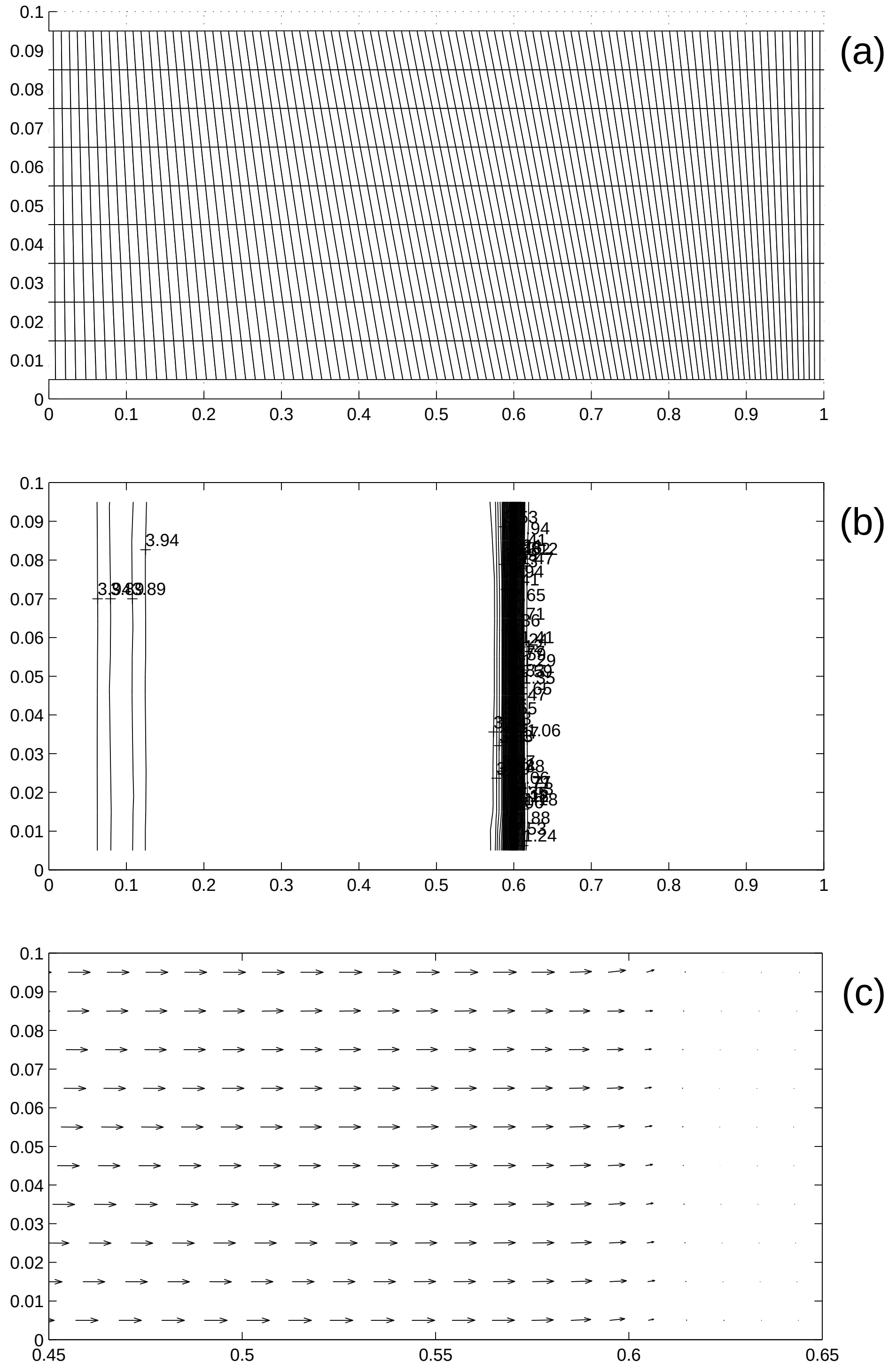


Figure 8: Computed solution to Salzman problem. $t = 0.06$, grid-angle preserving h. (a)Flow generated grid; (b)Contours of water height; (c)Velocity distribution.

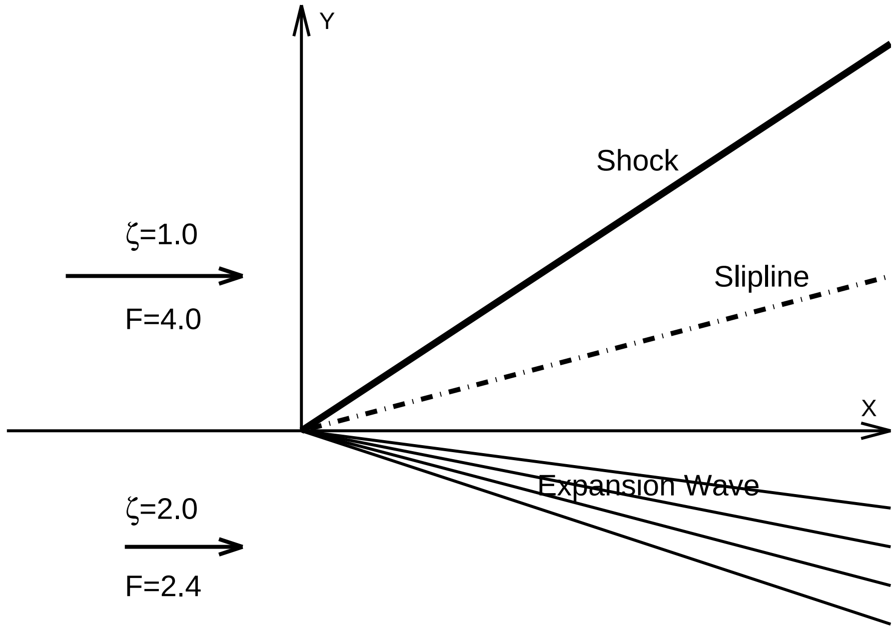


Figure 9: Sketch of a steady Riemann problem.

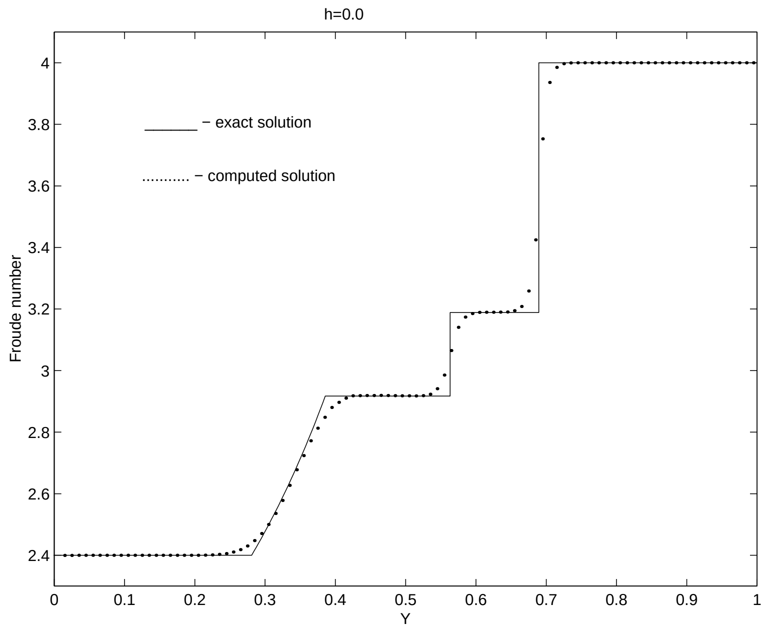


Figure 10: Froude number distribution in a steady Riemann problem computed by the present unified code, $h = 0$ (Eulerian).

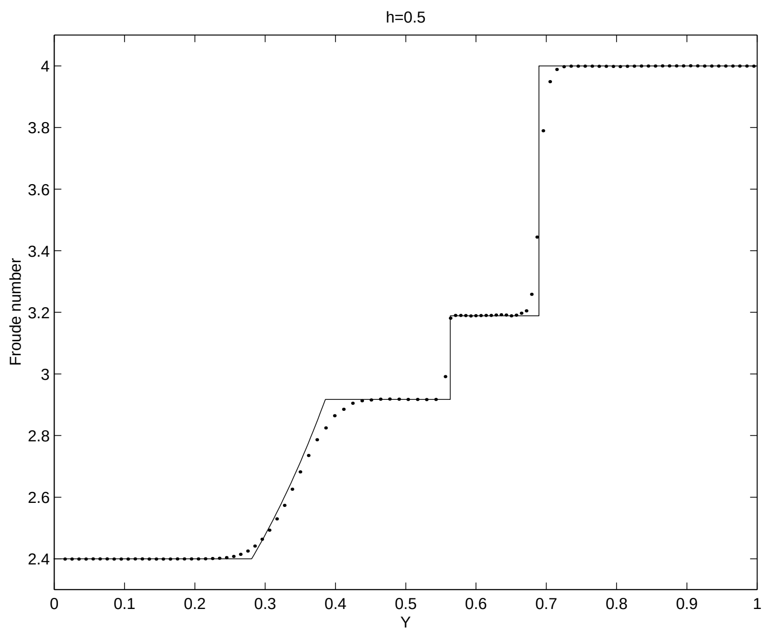


Figure 11: Froude number distribution in a steady Riemann problem computed by the present unified code, $h = 0.5$.

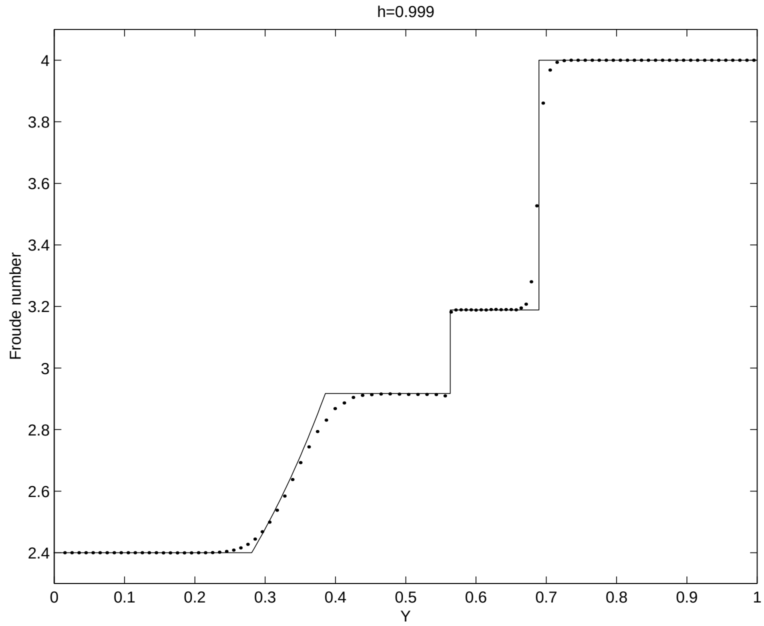


Figure 12: Froude number distribution in a steady Riemann problem computed by the present unified code, $h = 0.999$.

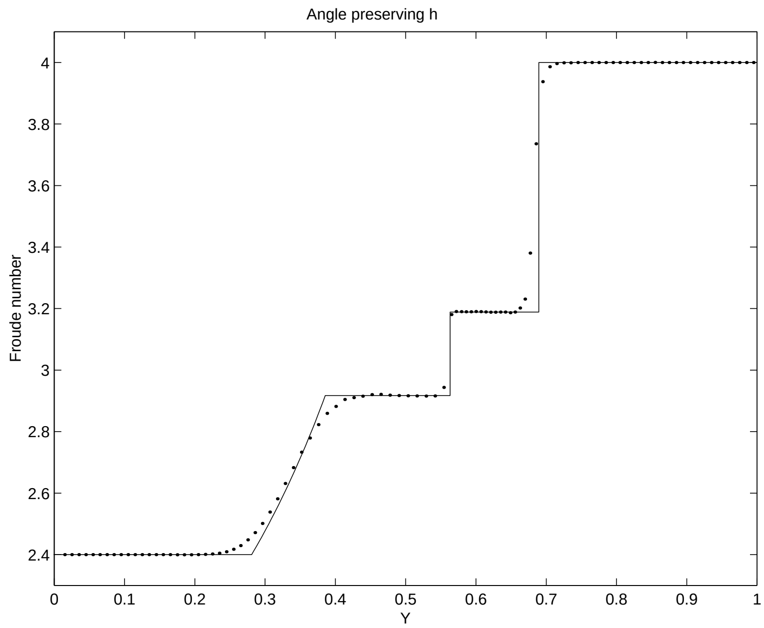


Figure 13: Froude number distribution in a steady Riemann problem computed by the present unified code with h chosen to preserve grid angles.

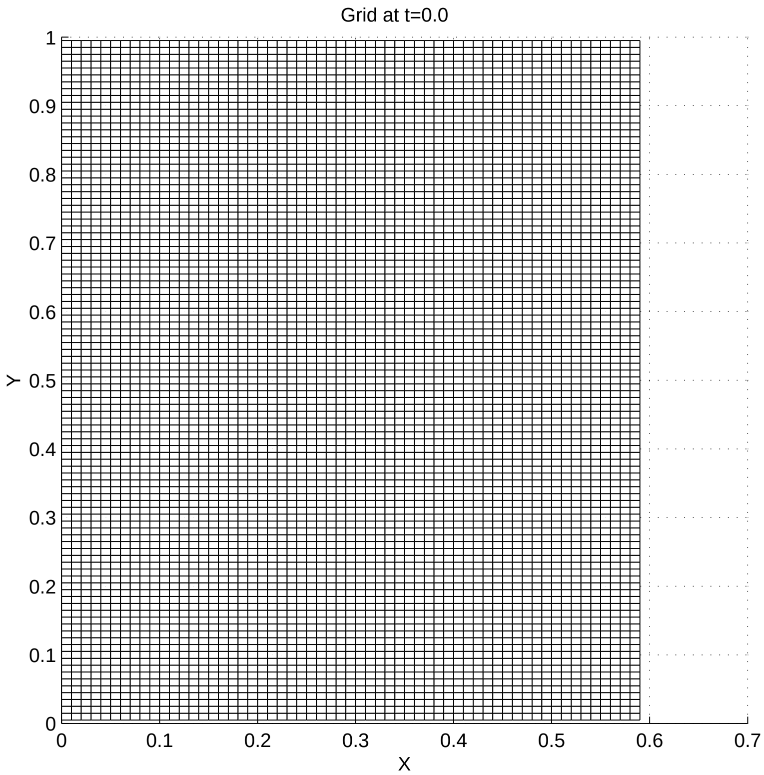


Figure 14: Eulerian ($h = 0$) grid, also used as initial grid for all cases in the steady Riemann problem.

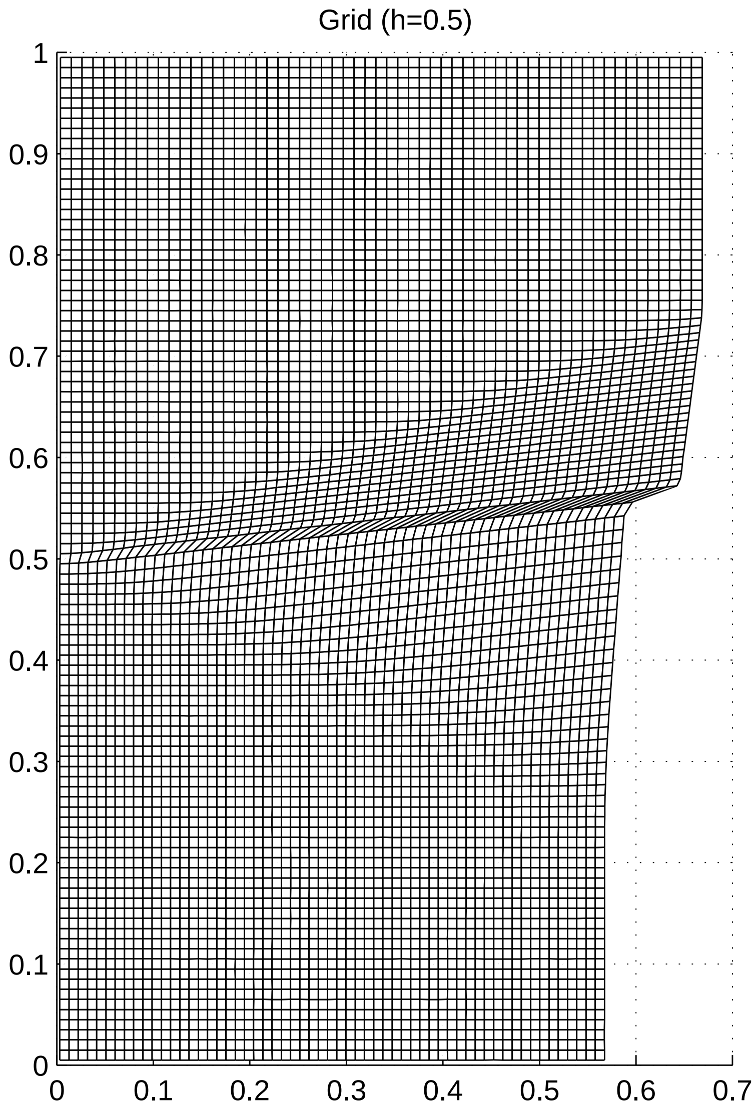


Figure 15: Flow generated grid in steady Riemann problem, $h = 0.5$.

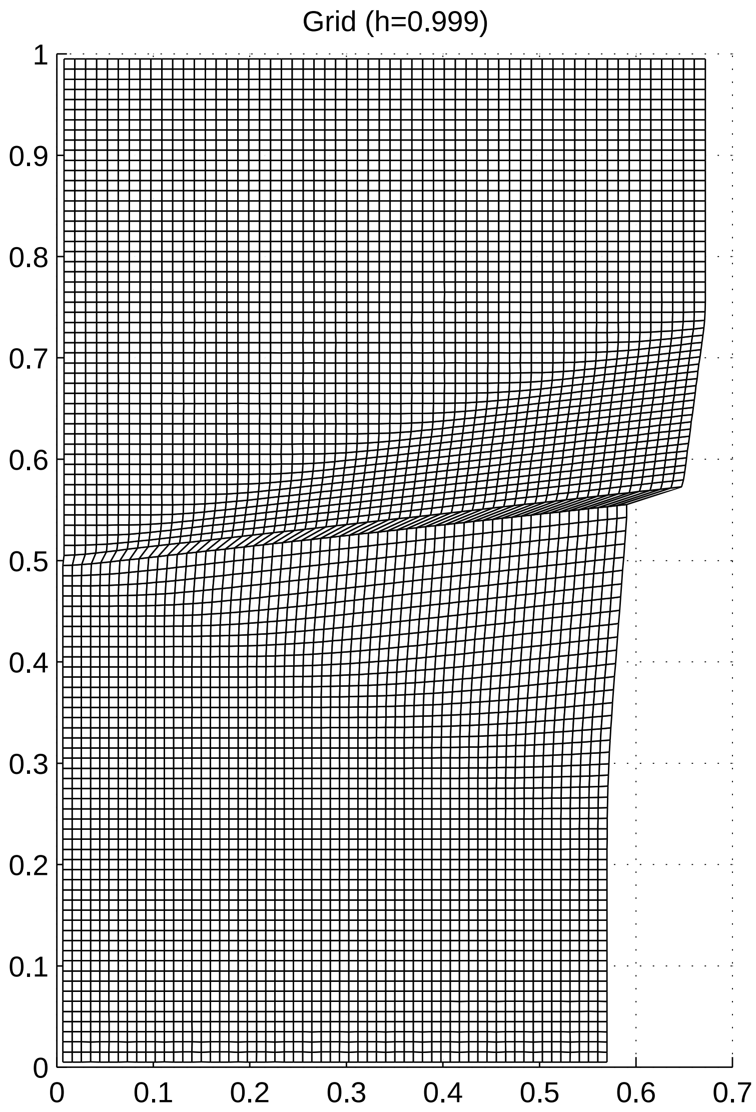


Figure 16: Flow generated grid in steady Riemann problem, $h = 0.999$.

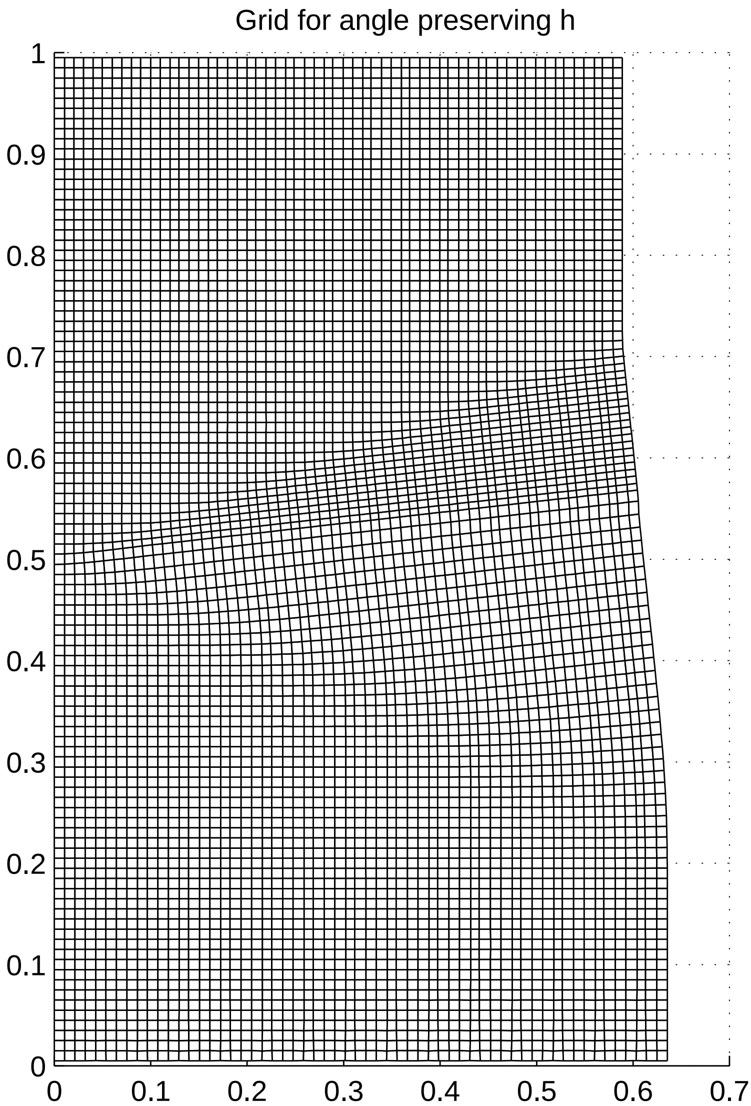


Figure 17: Flow generated grid in steady Riemann problem, h chosen to preserve grid angles.

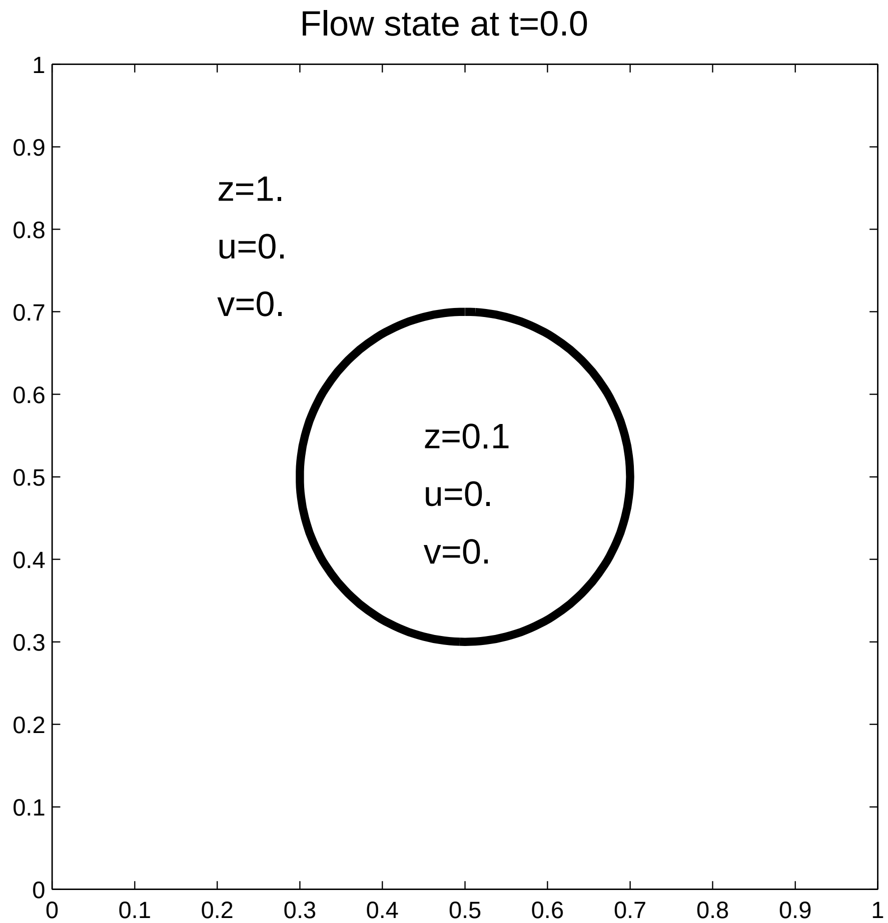


Figure 18: The initial state for the "implosion/explosion" problem.

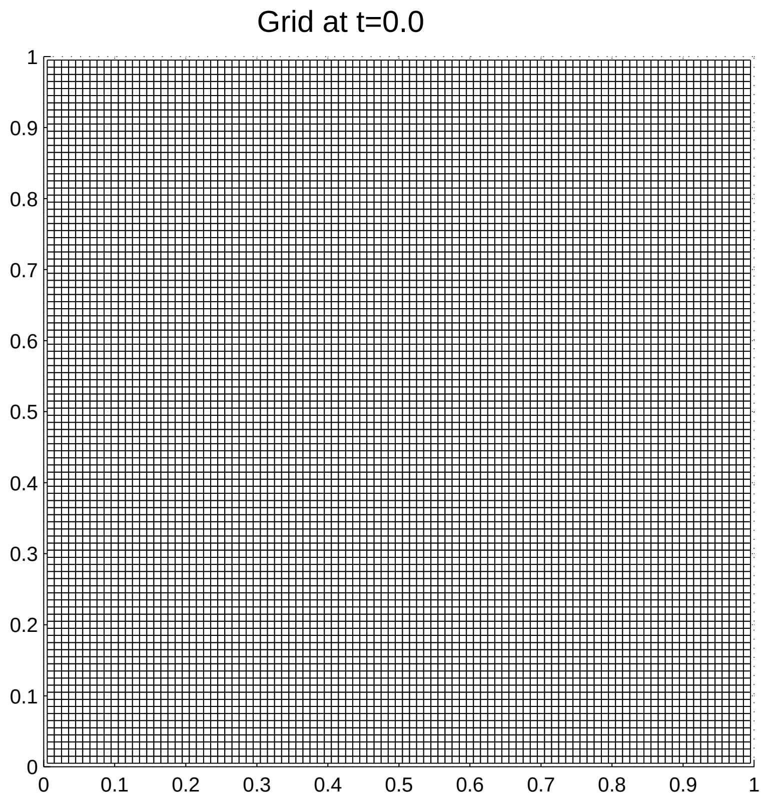


Figure 19: The initial grid for the "implosion/explosion" problem.

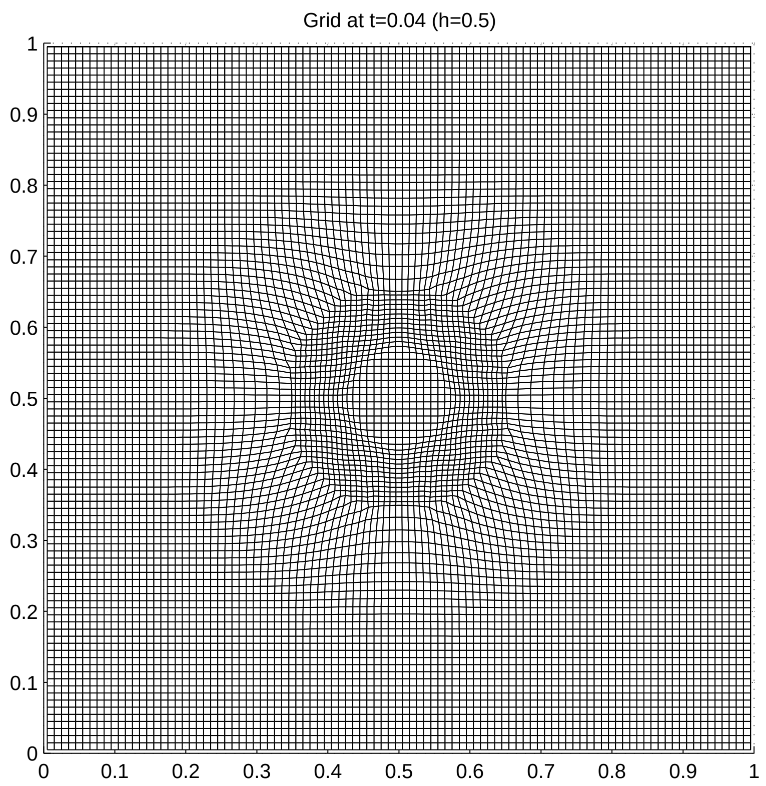


Figure 20: Flow-generated grid at $t = 0.04$ in an "implosion/explosion" problem; $h = 0.5$.

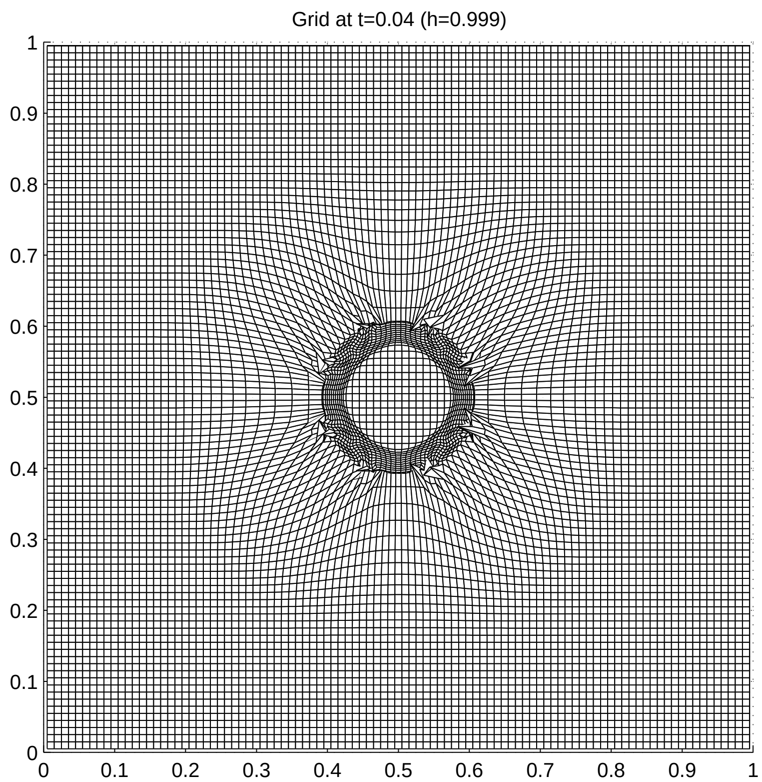


Figure 21: Flow-generated grid at $t = 0.04$ in an "implosion/explosion" problem; $h = 0.999$.

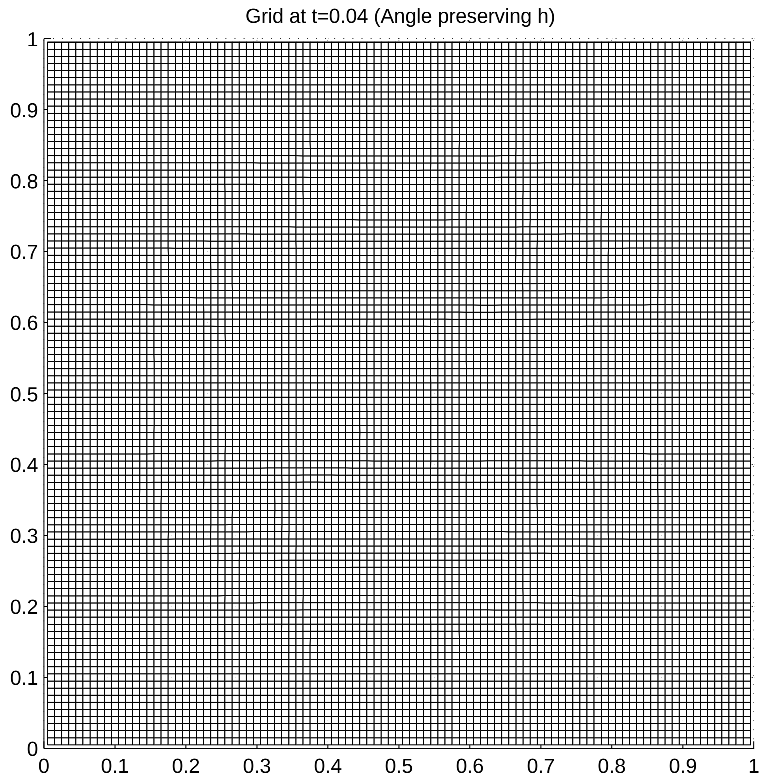
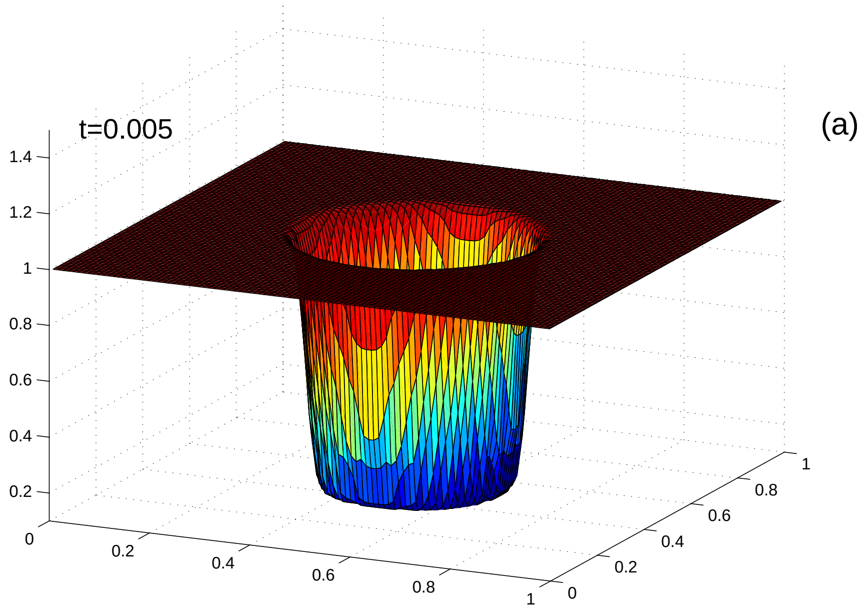
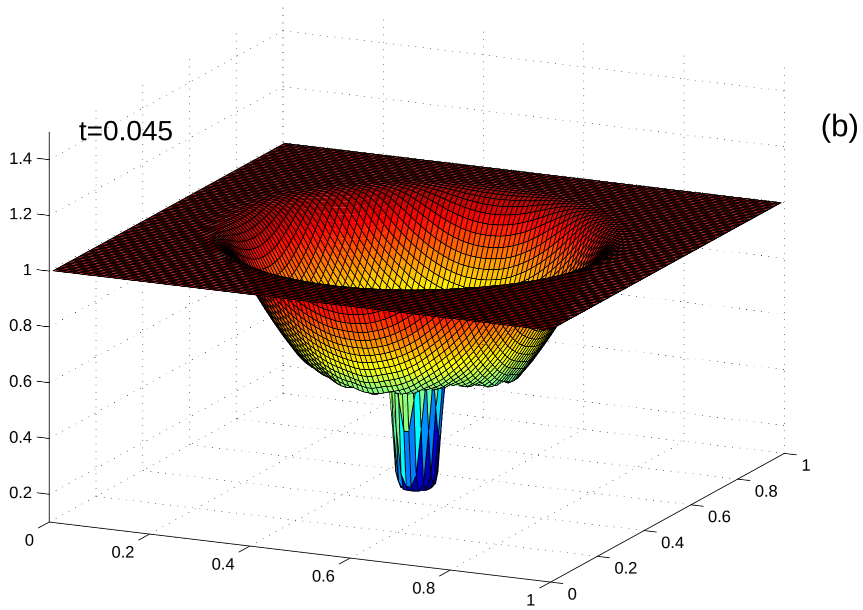
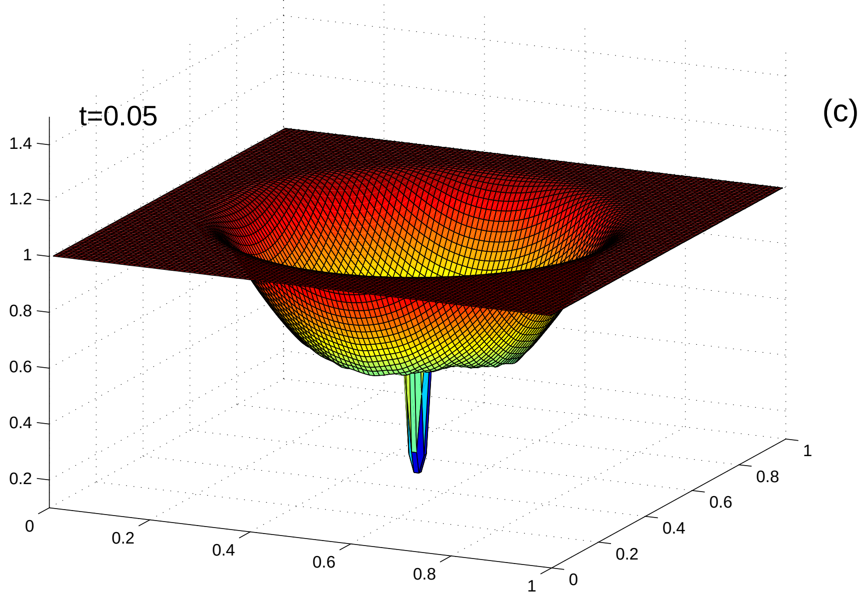
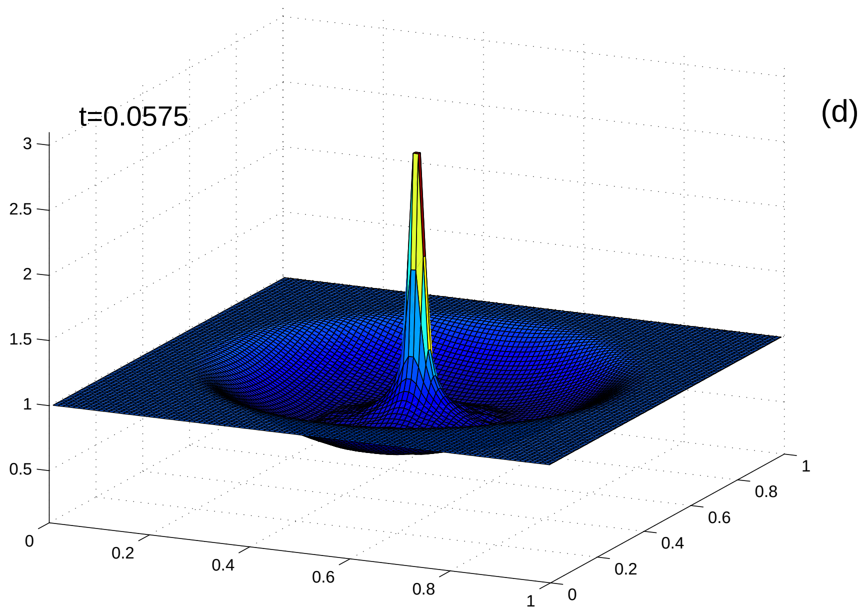


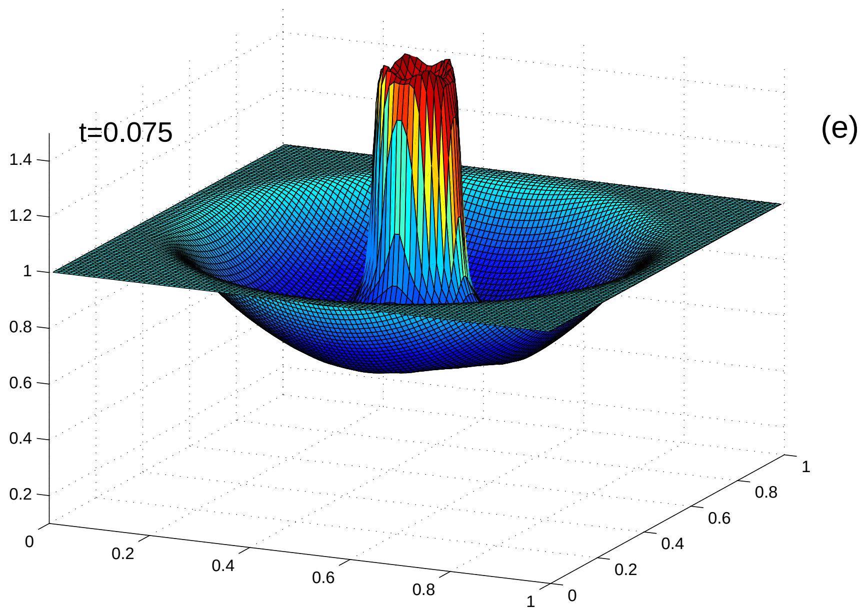
Figure 22: Flow-generated grid at $t = 0.04$ in an "implosion/explosion" problem; grid-angle preserving h.


t=0.005
(a)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0.2
0.4
0.6
0.8
1
0
0.2
0.4
0.6
0.8
1

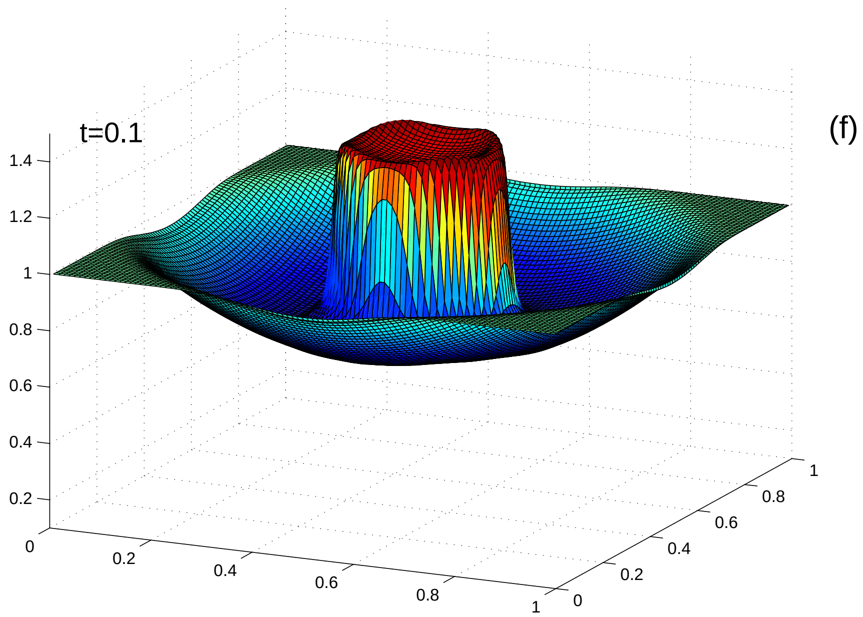

t=0.045
(b)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0.2
0.4
0.6
0.8
1
0
0.2
0.4
0.6
0.8
1


t=0.05
(c)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0.2
0.4
0.6
0.8
1
0
0.2
0.4
0.6
0.8
1


t=0.0575
(d)
3
2.5
2
1.5
1
0.5
0
0.2
0.4
0.6
0.8
1
0
0.2
0.4
0.6
0.8
1



t=0.075
(e)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0.2
0.4
0.6
0.8
1
0
0.2
0.4
0.6
0.8
1



t=0.1
(f)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0.2
0.4
0.6
0.8
1
0
0.2
0.4
0.6
0.8
1

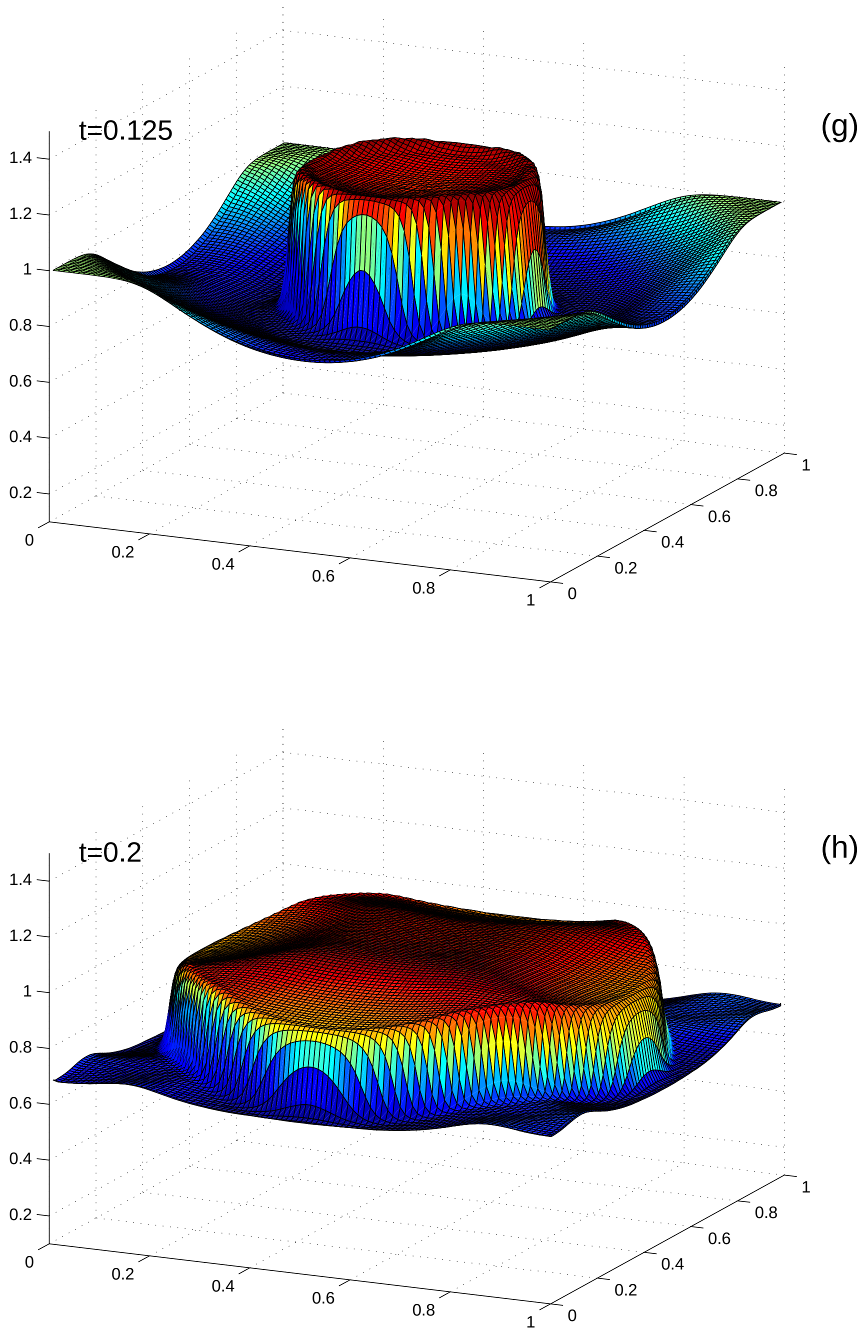


Figure 23: Evolution of water height with time in an "implosion/explosion" problem; grid-angle preserving h. (a) $t = 0.005$, (b) $t = 0.045$, (c) $t = 0.05$, (d) $t = 0.0575$, (e) $t = 0.075$, (f) $t = 0.1$, (g) $t = 0.125$, (h) $t = 0.2$,

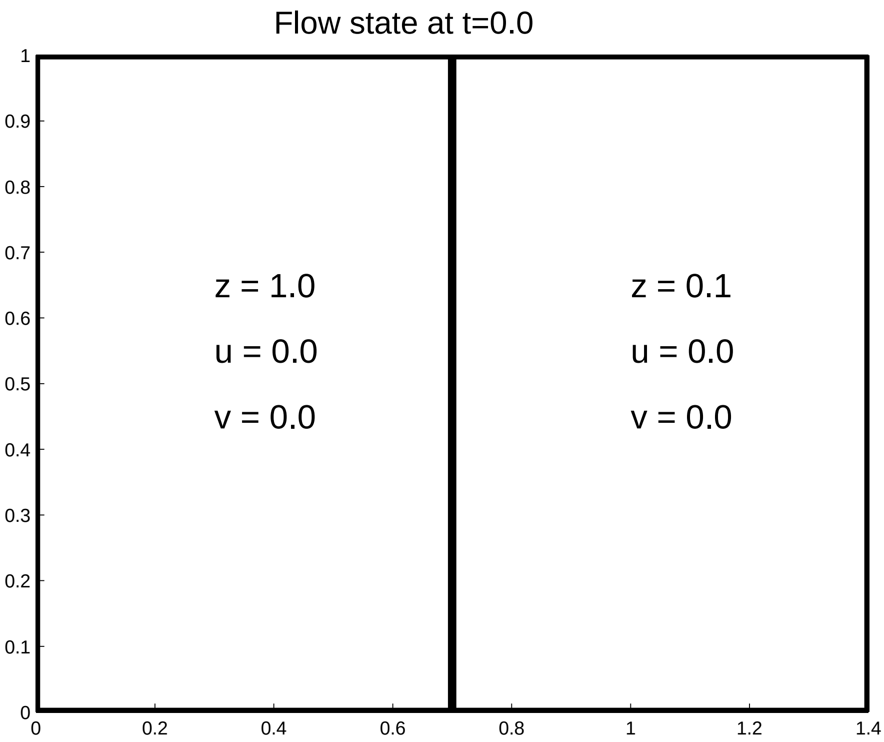


Figure 24: The initial state for the 2-D dam break problem.

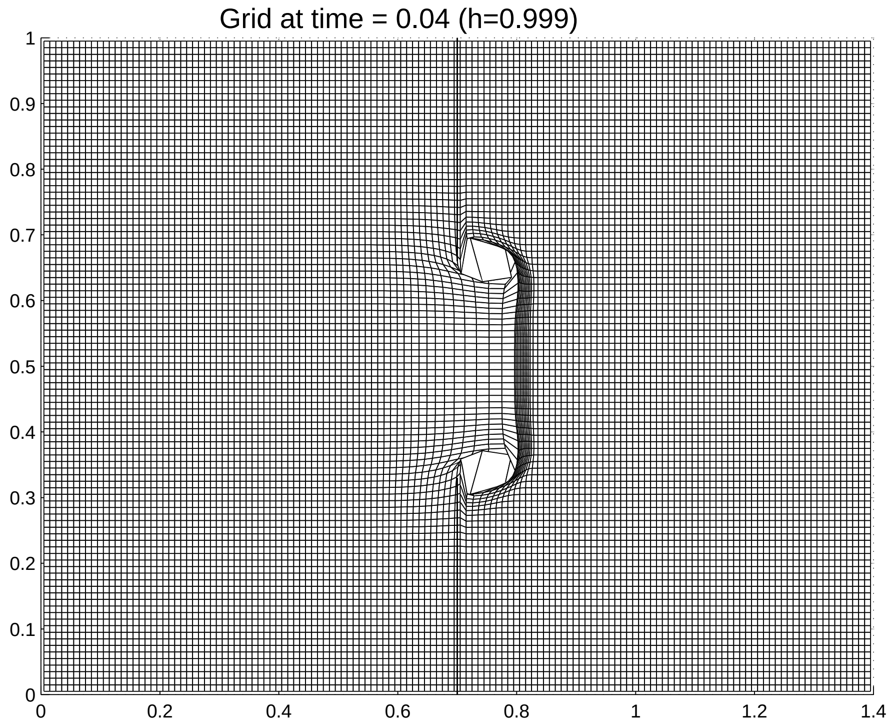


Figure 25: Flow-generated grid at $t = 0.04$ in an 2-D dam break problem; $h = 0.999$.

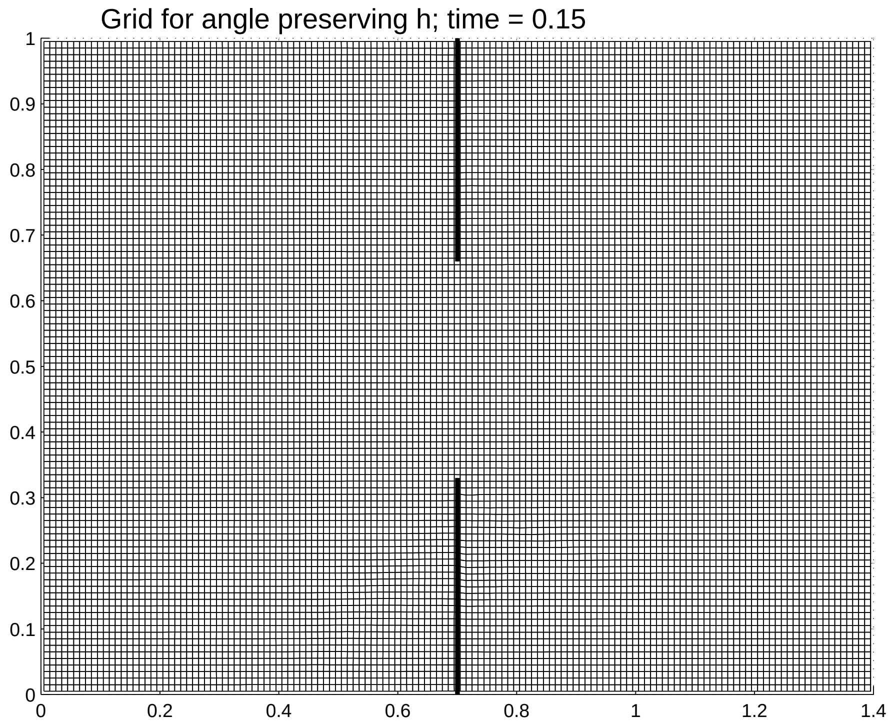


Figure 26: Flow-generated grid at $t = 0.15$ in an 2-D dam break problem; grid-angle preserving h.

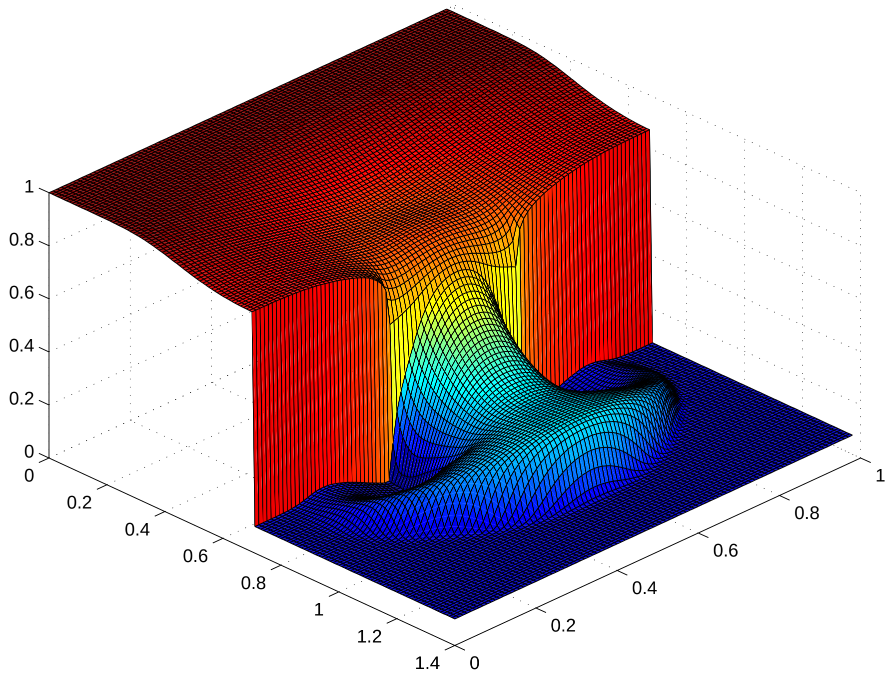


Figure 27: Water height at $t = 0.15$ after breaking of the dam in an 2-D dam break problem; grid-angle preserving h.