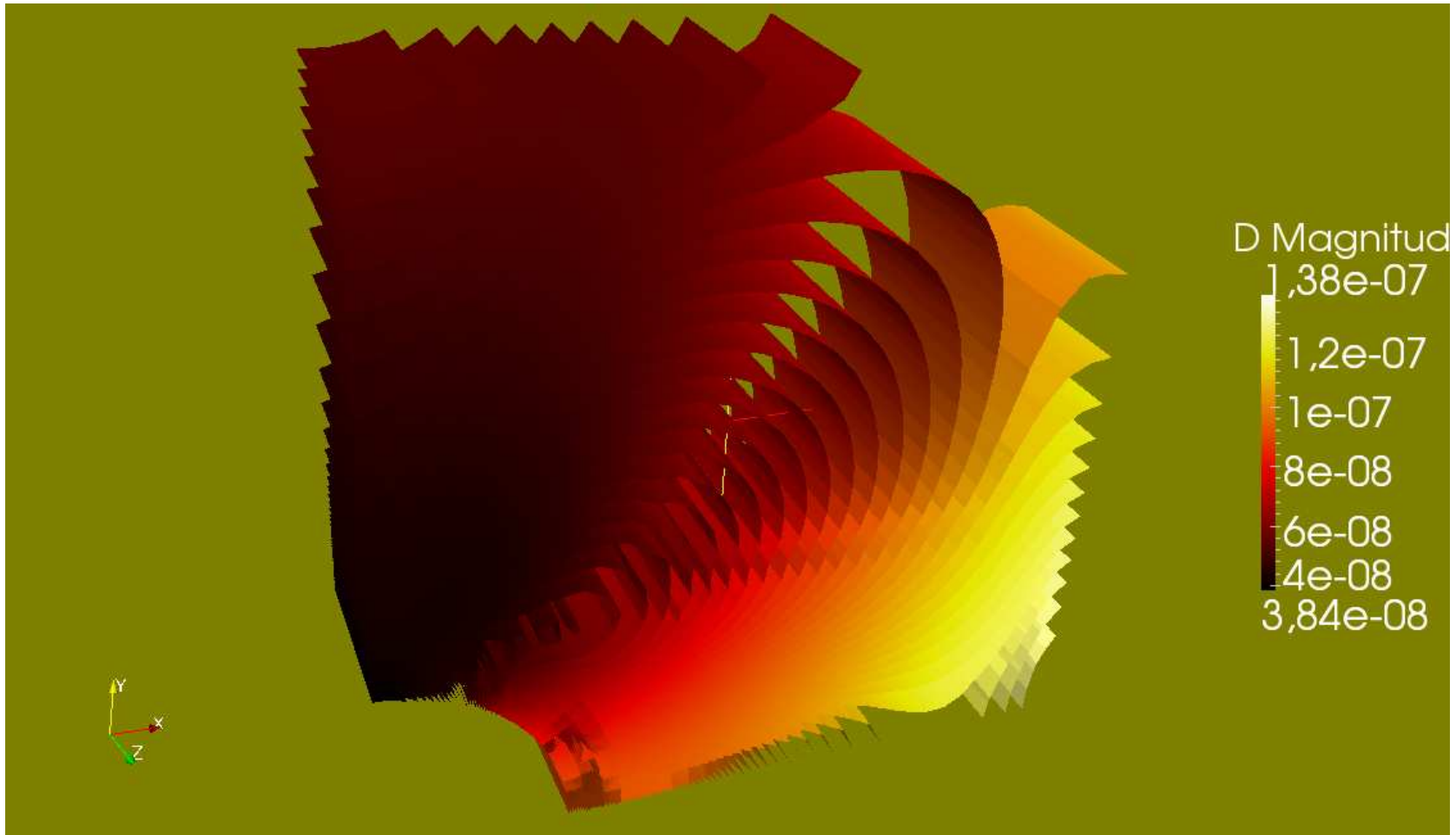


## Assignment 1



## Content:

- mhdFoam
- sonicLiquidFoam
- sonicFoam
- simpleFoam
- snappyHexMesh exercise
- potentialFoam
- interFoam
- solidDisplacementFoam
- icoFoam

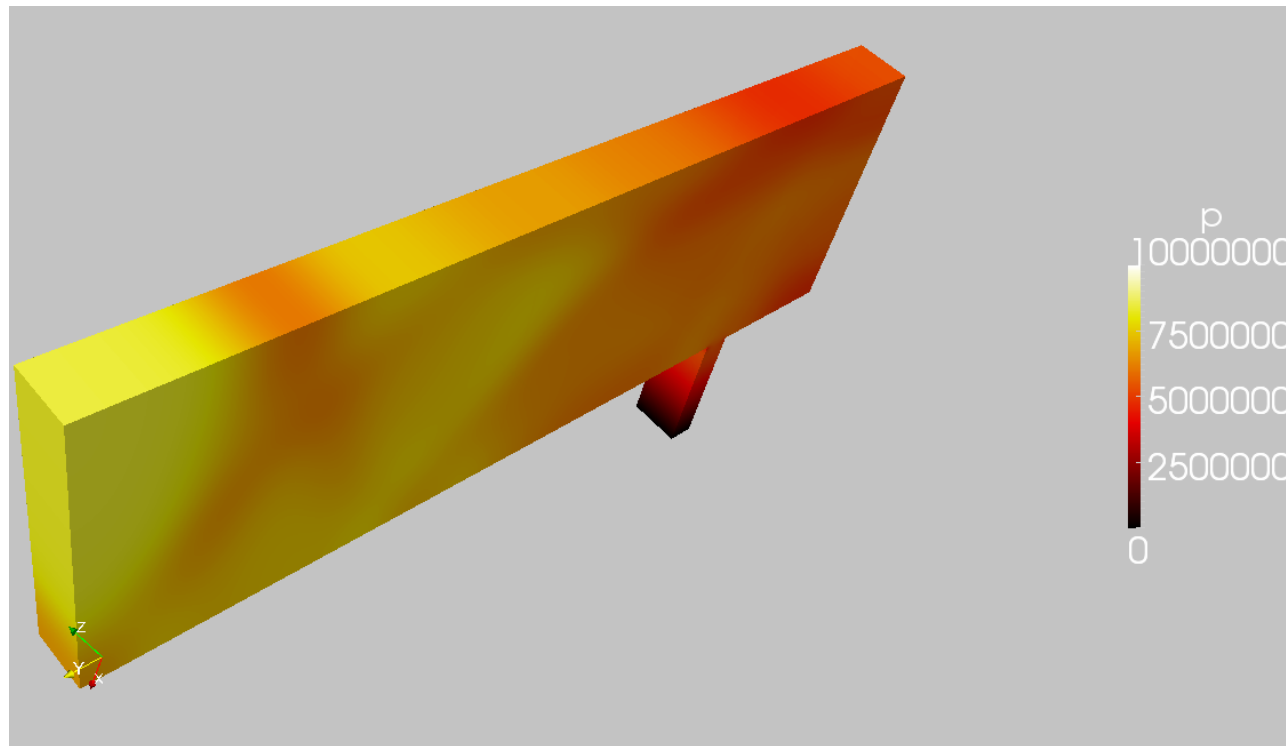
## mhdFoam:hartmann run using OpenFOAM-1.7.1

- In **system sampleDict** fields slightly modified in line **36** *fields* ( $p$ ,  $U_x$ ,  $U_y$ ) and in **system controlDict**  $\Delta T$  set as 0.0005 and  $\text{endTime}$  set as 1
- In **0 p**, **0 U**, and **0 B** random modifications
- Run: blockMesh, mhdFoam, foamCalc components U, sample and foamToVTK
- Paraview run, the y-component of velocity **U<sub>y</sub>** displayed

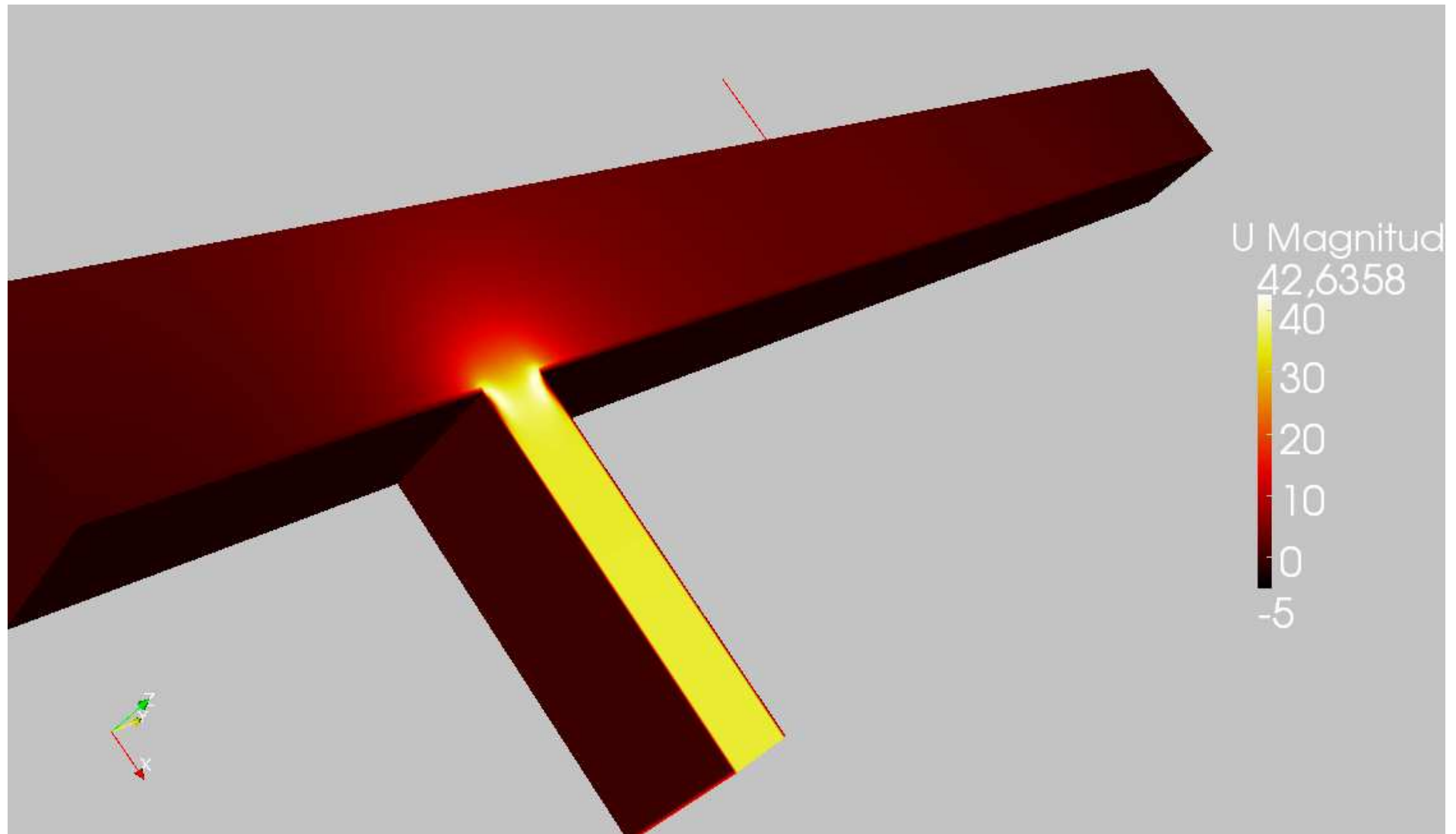


## SonicLiquidFoam: decompressionTankFine run using OpenFOAM-1.5

- In **system/controlDict** slightly modified
- In **constant/polyMesh/ blockMeshDict** modified slightly

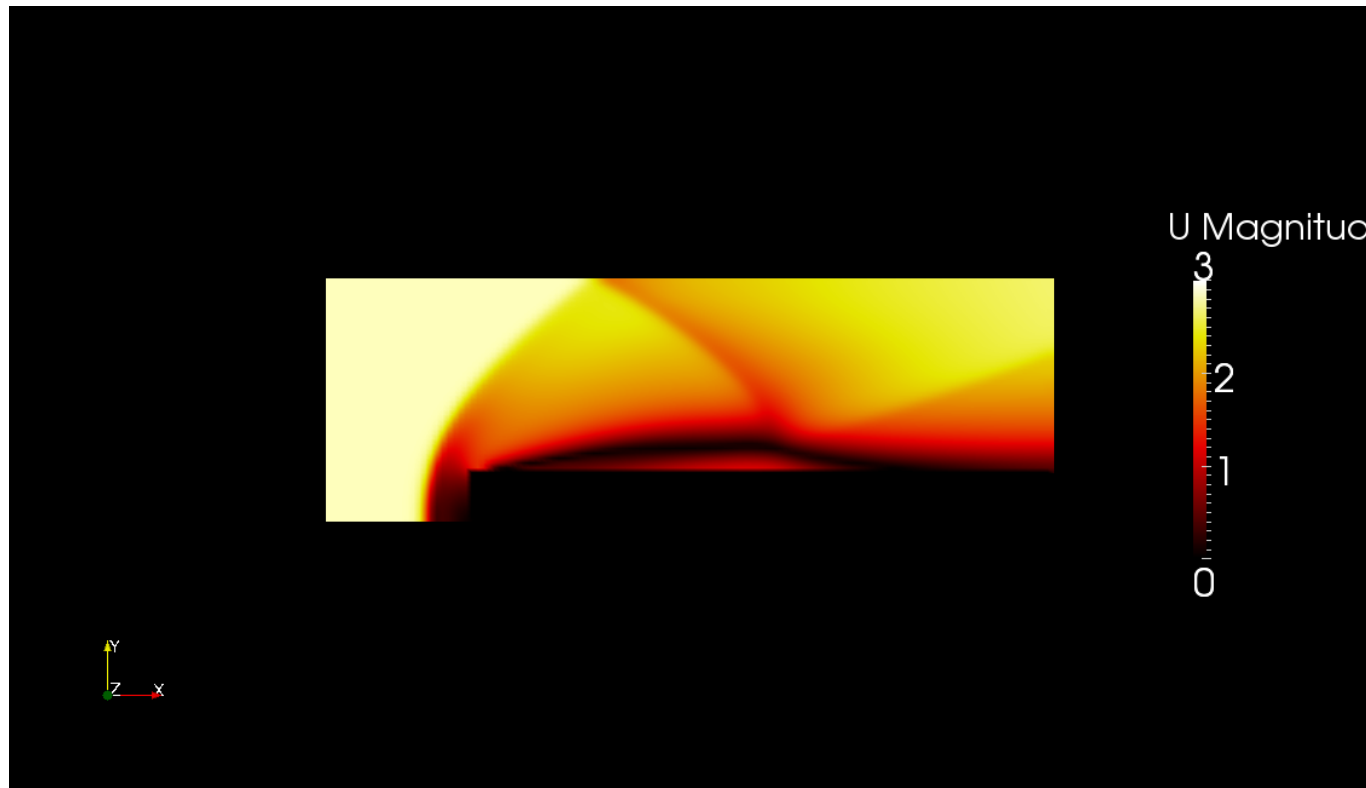


## decompressionTankFine U magnitude

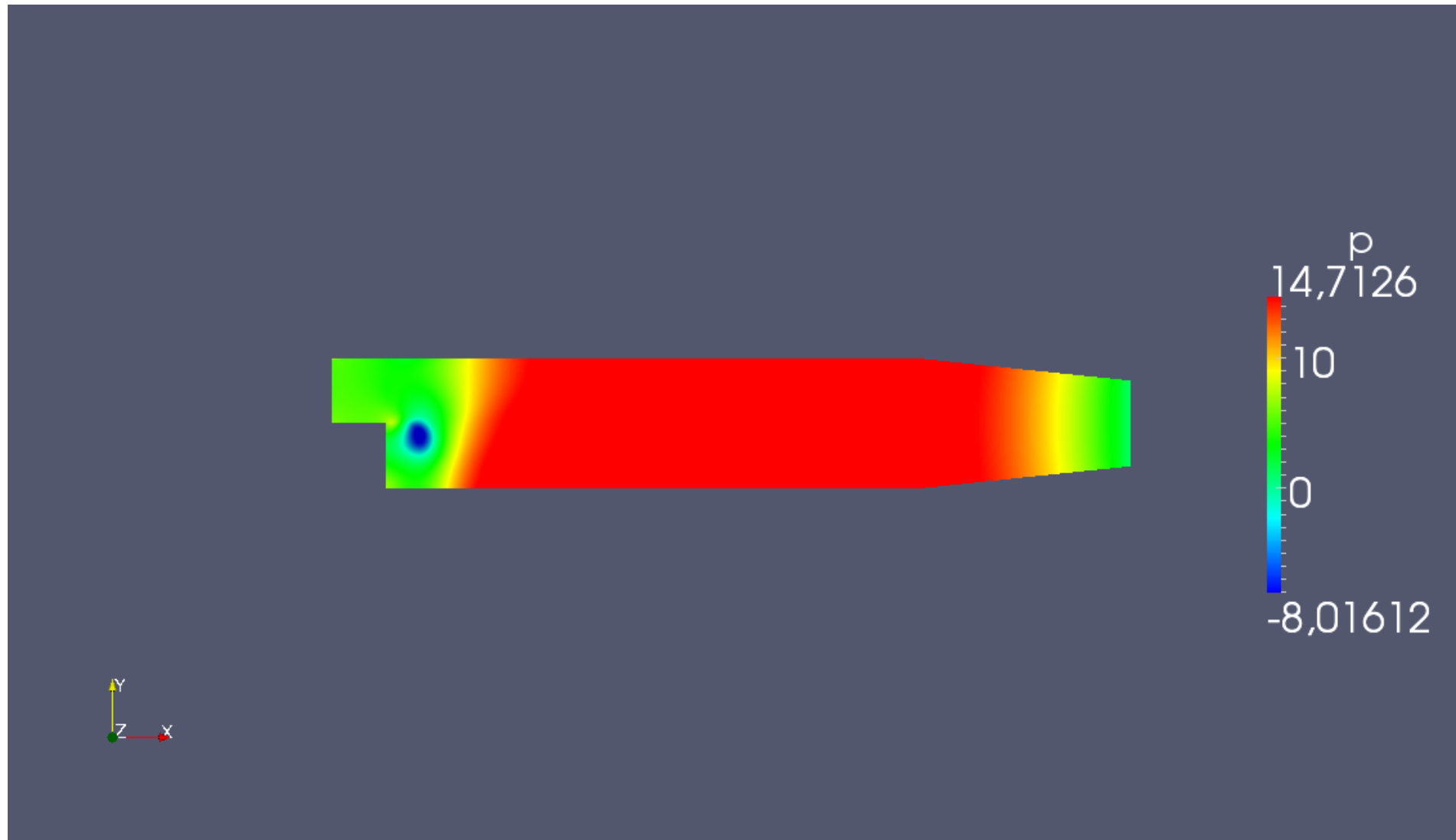


## sonicFoam: forwardStep run using OpenFOAM-1.7.1

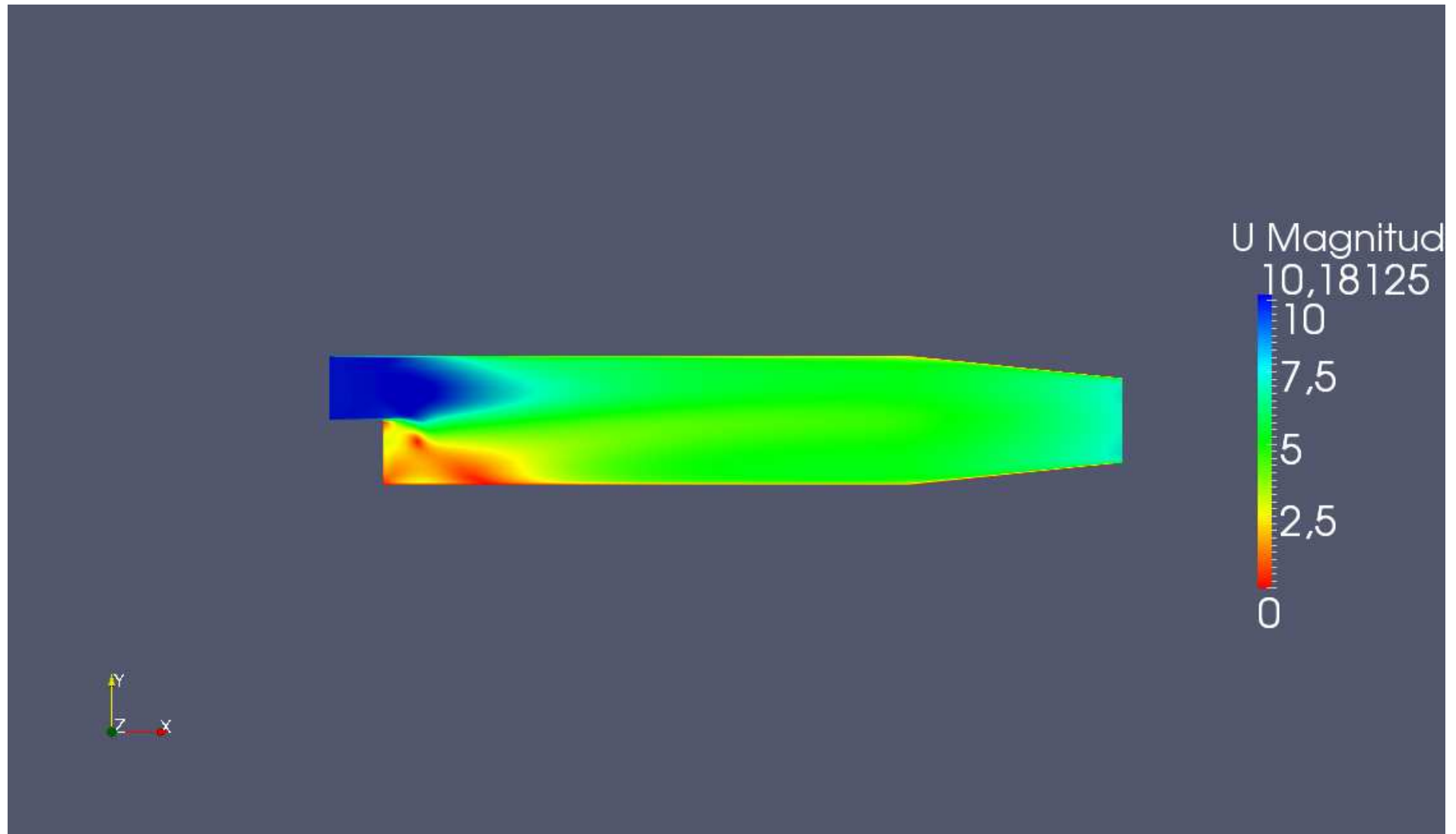
- Modifications made for blockMeshDict and controlDict



simpleFoam:PitzDaily run using OpenFOAM-1.7.1



simpleFoam:PitzDaily run using OpenFOAM-1.7.1

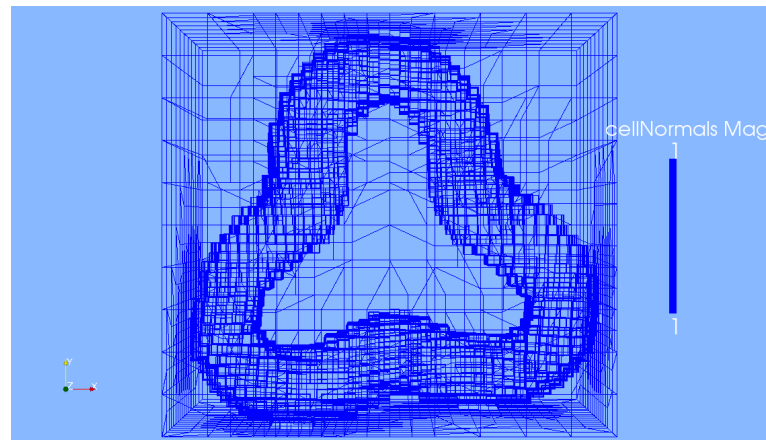
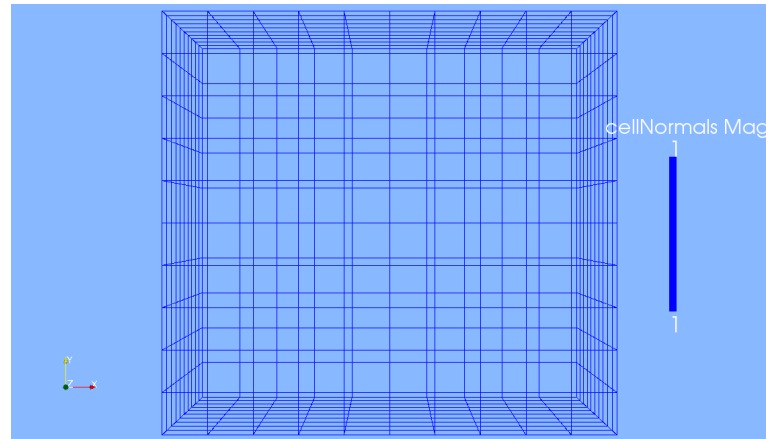




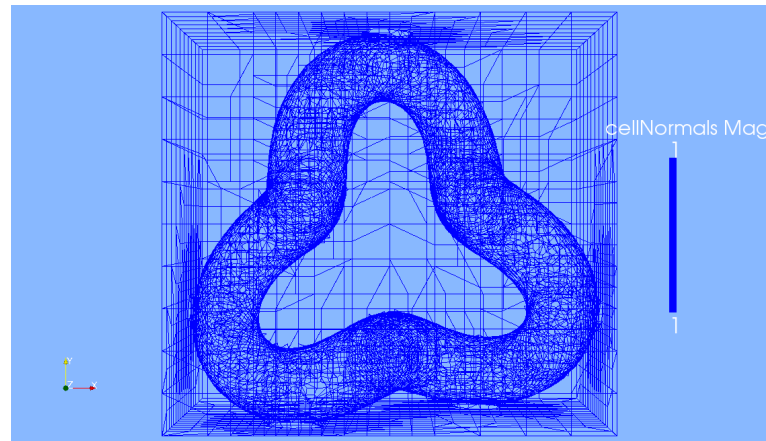
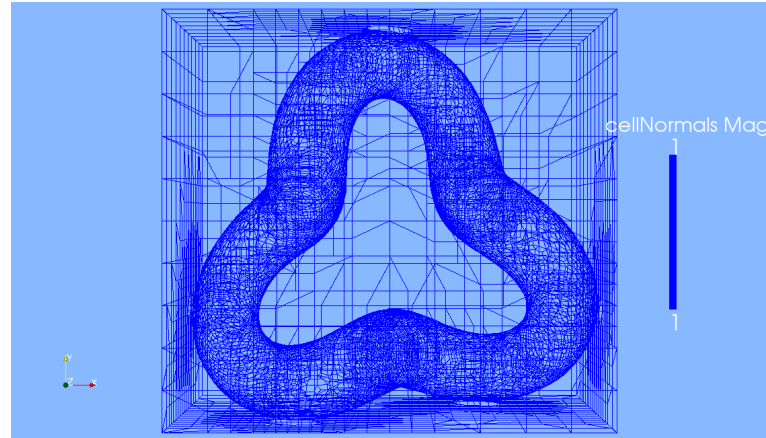
## snappyHexMesh run using OpenFOAM-1.7.1

- Found from Netgen (Netgen is an open source mesh generator) sample files an sample stl-file called wrappedtube and copied that in the **/constant/triSurface** directory
- Using paraview it can be noticed that the dimensions vary along axis roughly as  $x[-142; 142]$ ,  $y[113;153]$  and  $z[-55;55]$ , the blockMeshDict-file modified so that the cube block was larger than the wrapped tube in stl
- *i.e.* in the beginning of the file **constant/blockMeshDict** changed values of *vertices()* accordingly
- Modifications to **system/snappyHexMeshDict** so that it read the stl-file that is in **/constant/triSurface**,
- Run *blockMesh*
- Run *snappyHexMesh* so that in **system/snappyHexMeshDict** *castellatedMesh*, *snap* and *addLayers* are all set *.true*.

## snappyHexMesh run using OpenFOAM-1.7.1

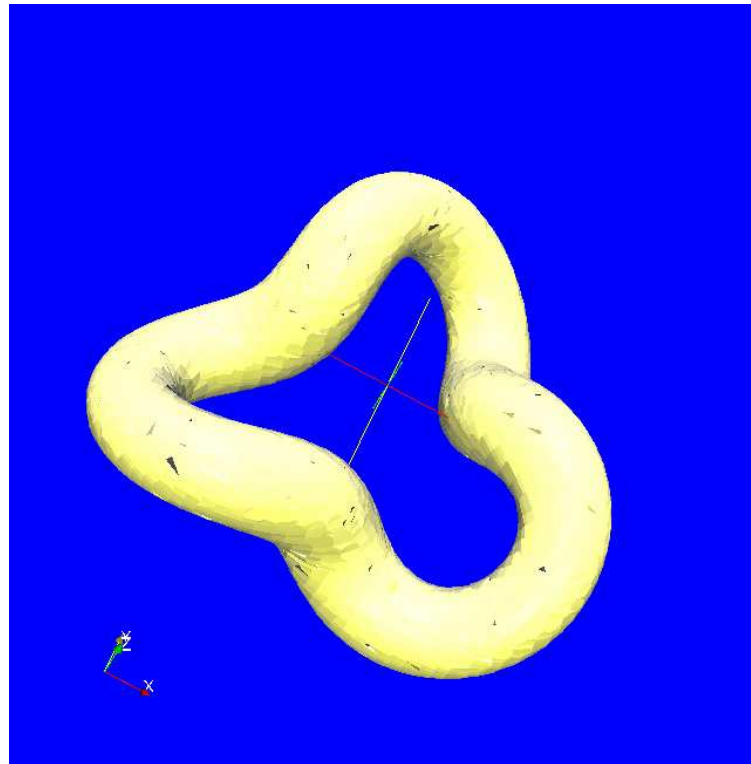


## snappyHexMesh run using OpenFOAM-1.7.1

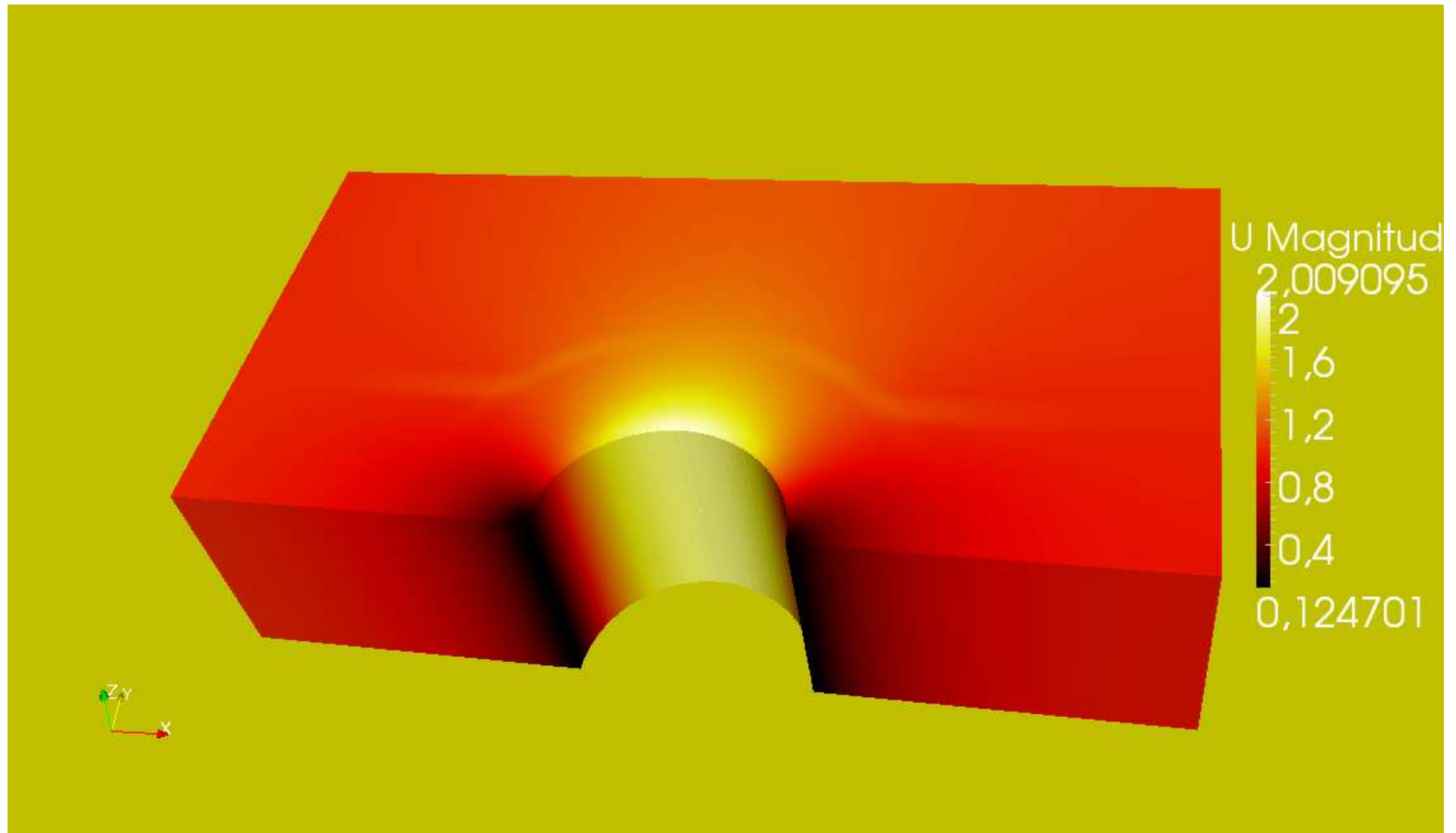


## snappyHexMesh run using OpenFOAM-1.7.1

- In snappyHexMeshDict first used locationInMesh (5.196 3 5.5) and then locationInMesh (15 -95 -40).

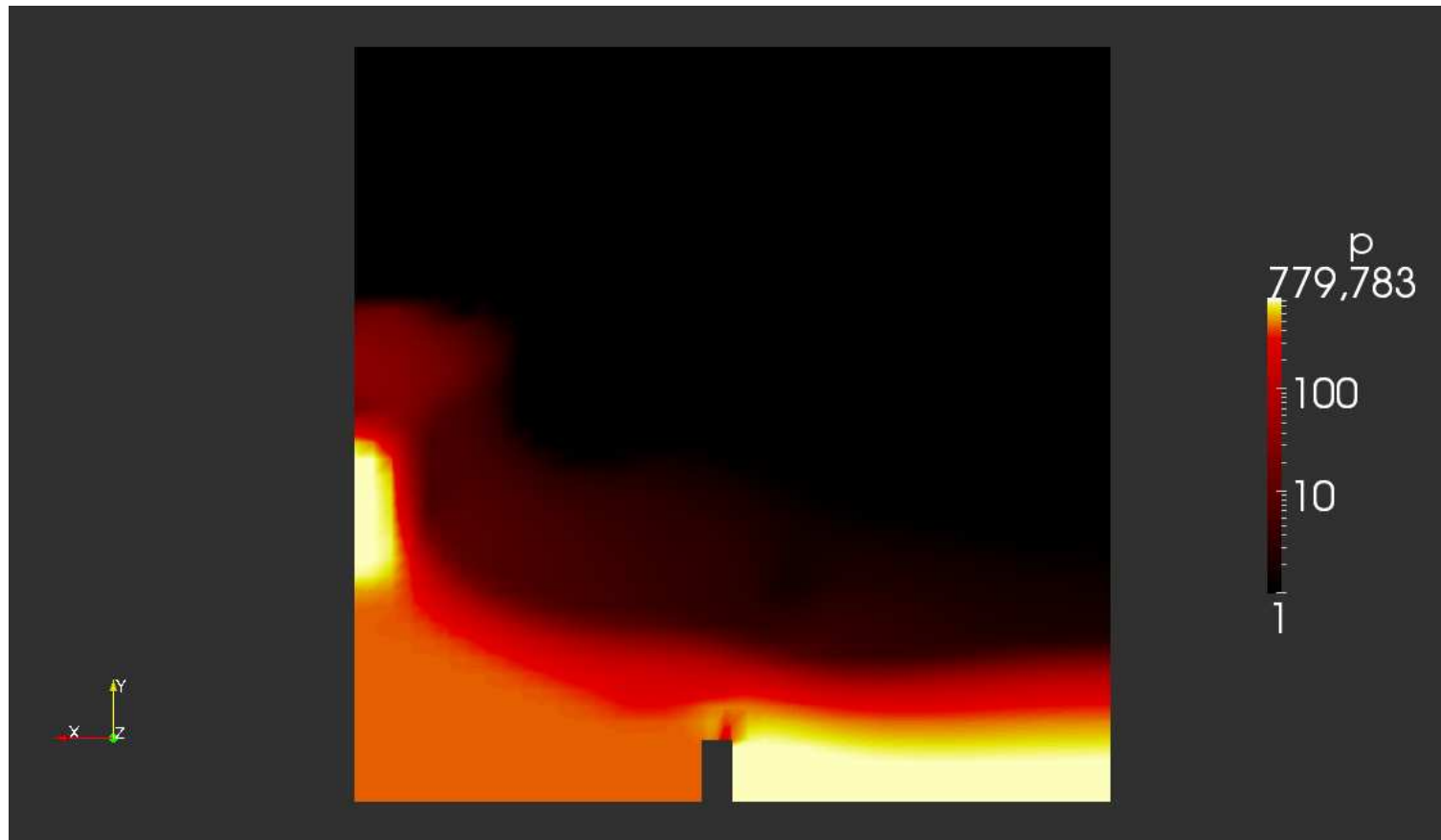


potentialFoam:cylinder run using OpenFOAM-1.5



## interFoam:damBreakFine run using OpenFOAM-1.7.1

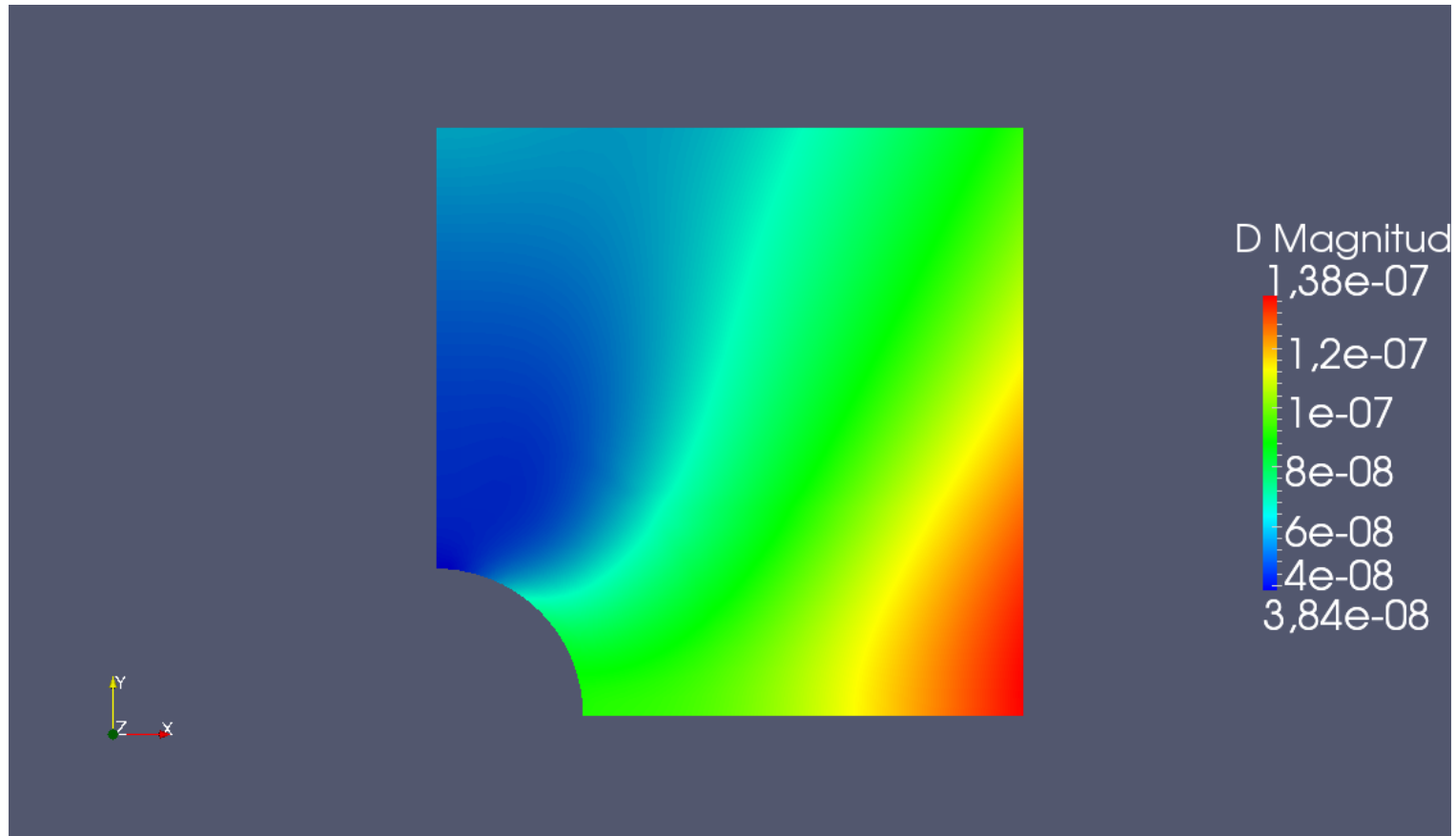
- The modifications made for the tutorial in interfoam laminar damBreak at controlDict deltaT changed to 0.00005 (originally 0.001) and endTime to 10 (originally 1s)



interFoam:damBreakFine run using OpenFOAM-1.7.1

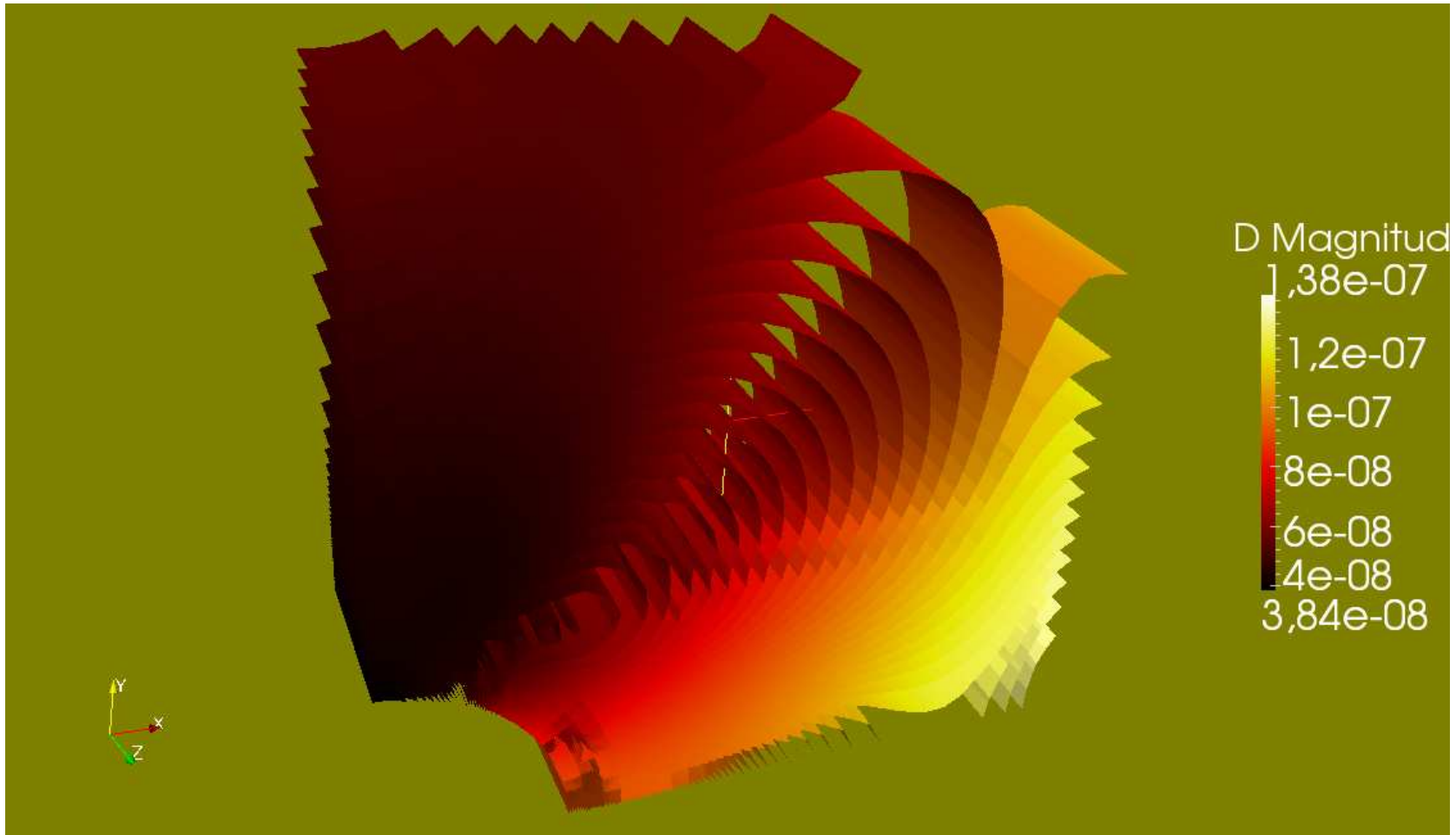


solidDisplacementFoam:plateFoam run using OpenFOAM-1.7.1

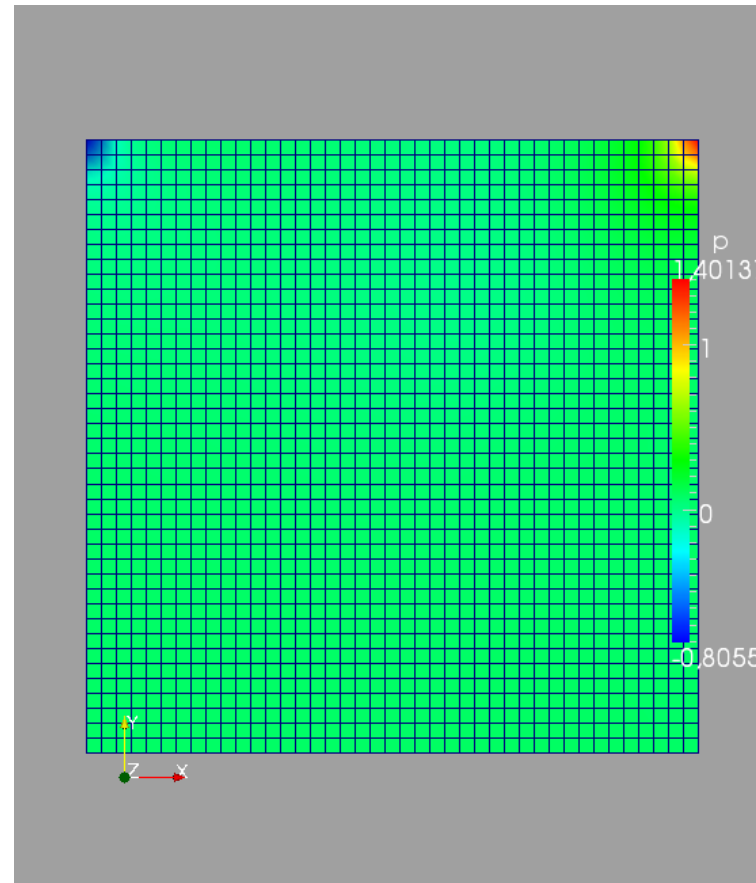




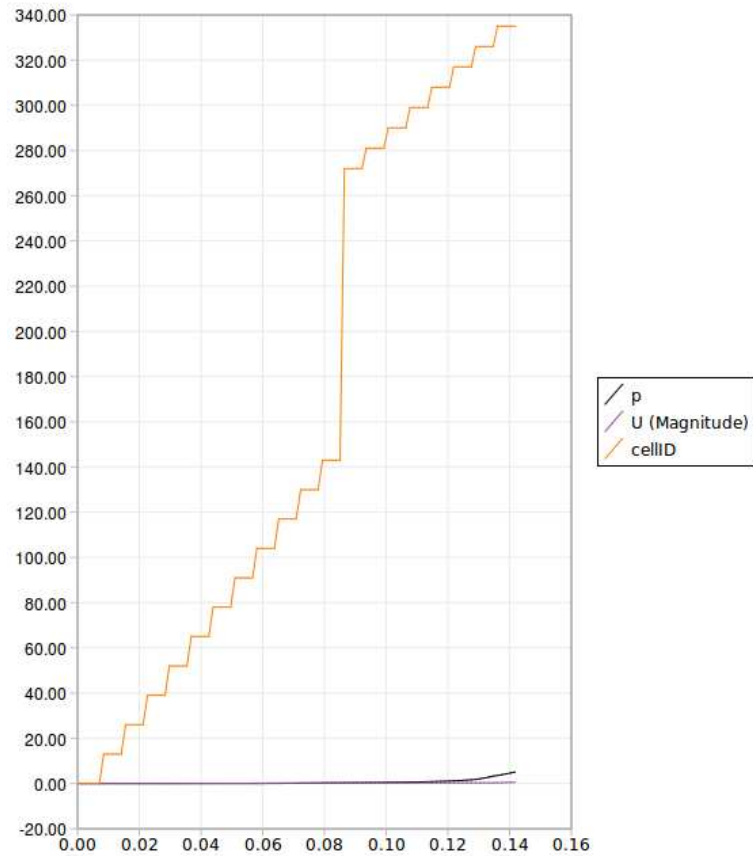
solidDisplacementFoam:plateFoam contours displayed



icoFoam run different cavity cases using OpenFOAM-1.7.1



For cavity case plotOverLine applied



The end

