Applied Computational Fluid Dynamics using OpenFOAM

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ExaSlate

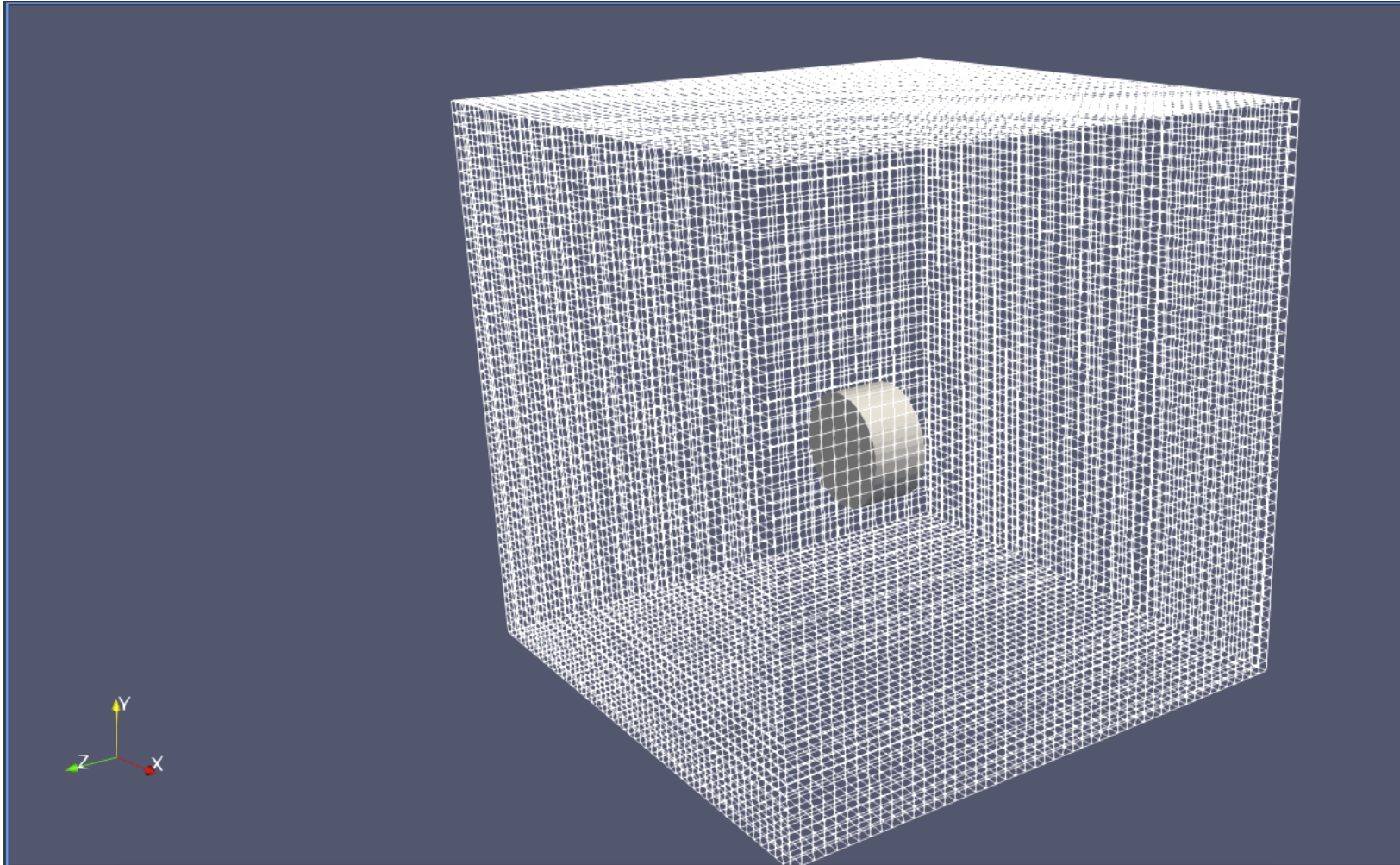*Mon & Thu : 5 PM to 7 PM*

Course co-ordinators
- Mr. Blesscin
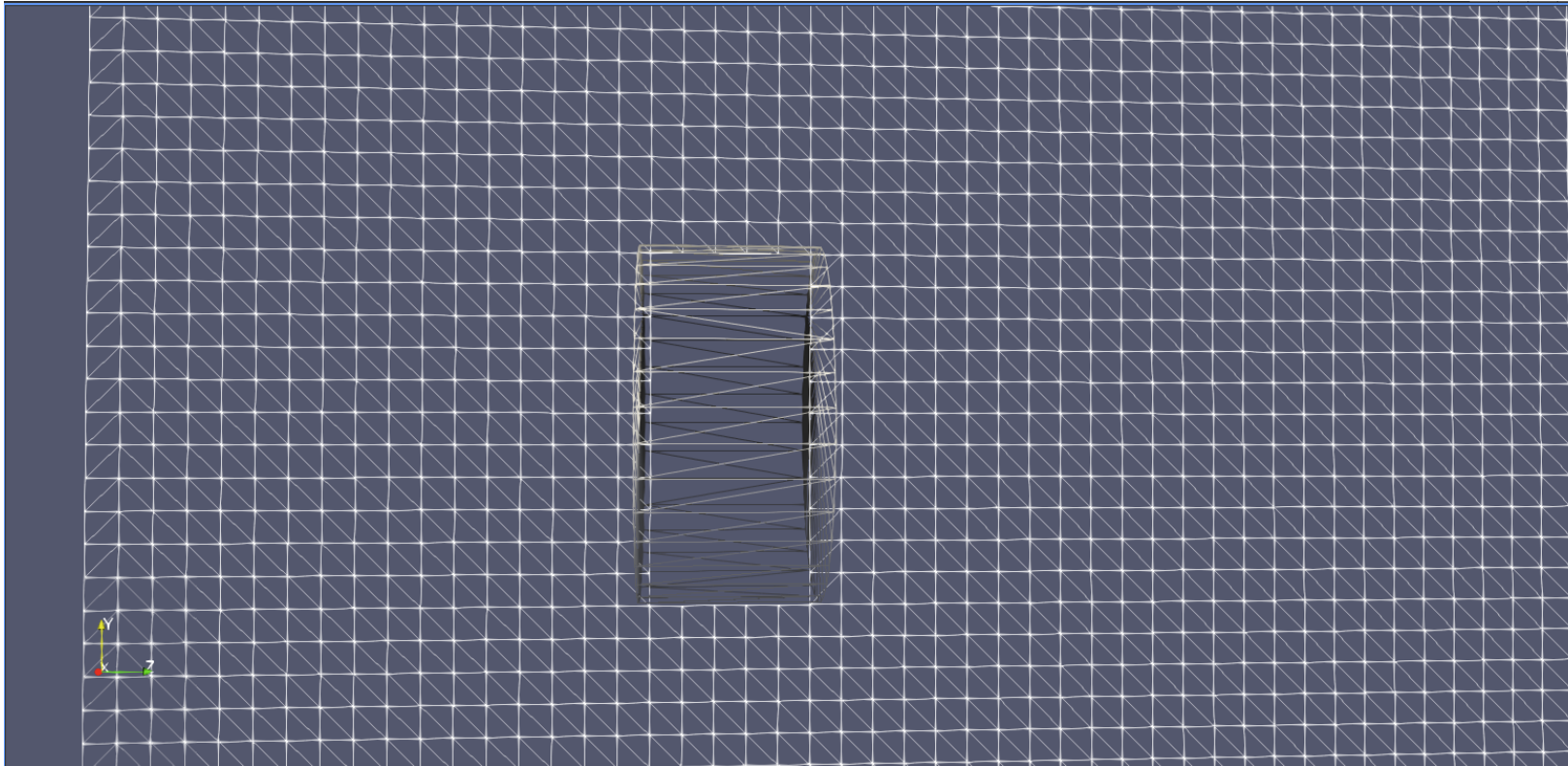- Mr. Dhanush

Overview

- Mesh generation using snappyHexMesh
  - Flow over a cylinder
  - Flow over a sphere
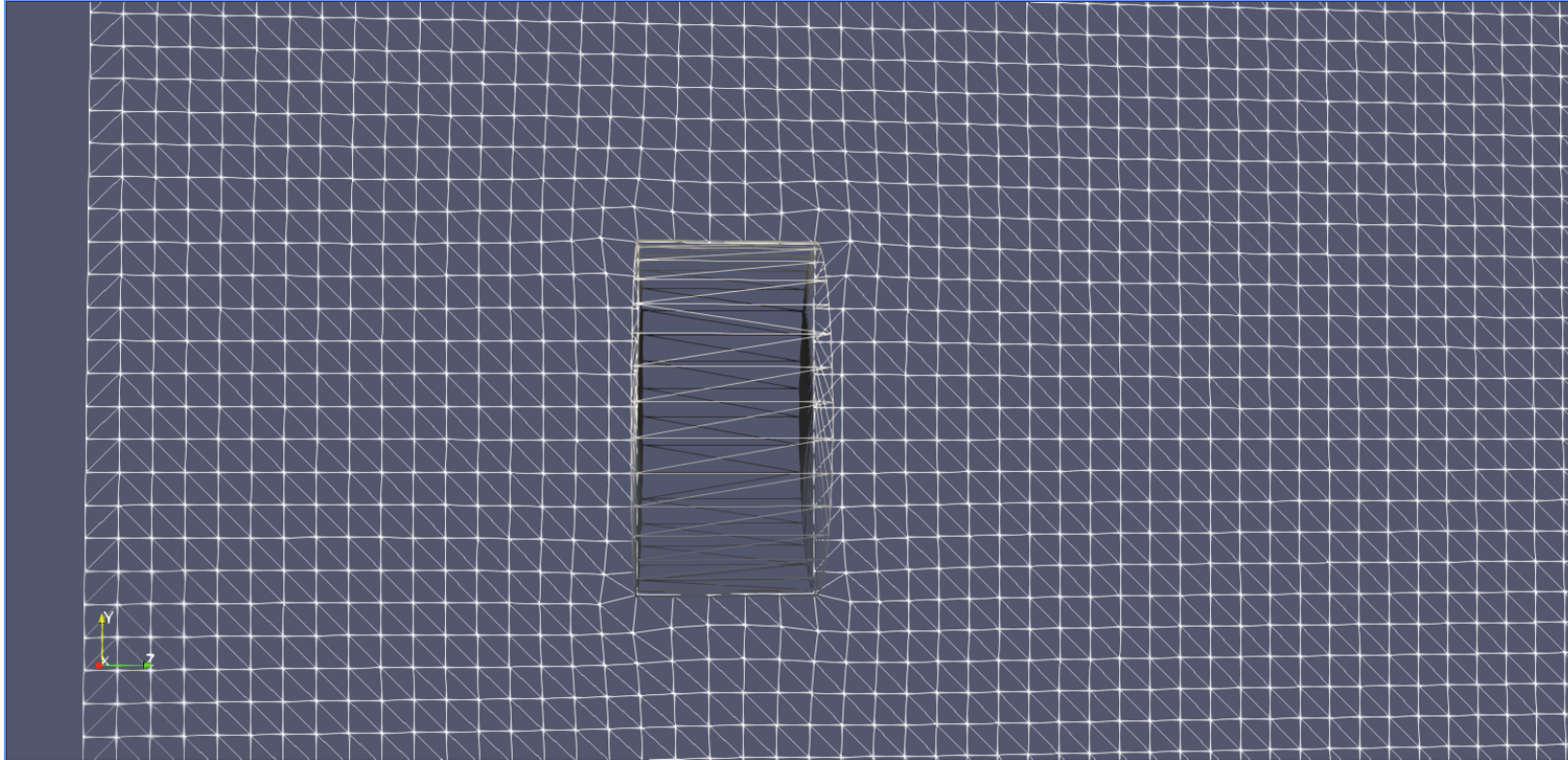 - Case setup common issues

Flow Over a Cylinder

Flow Over a Cylinder

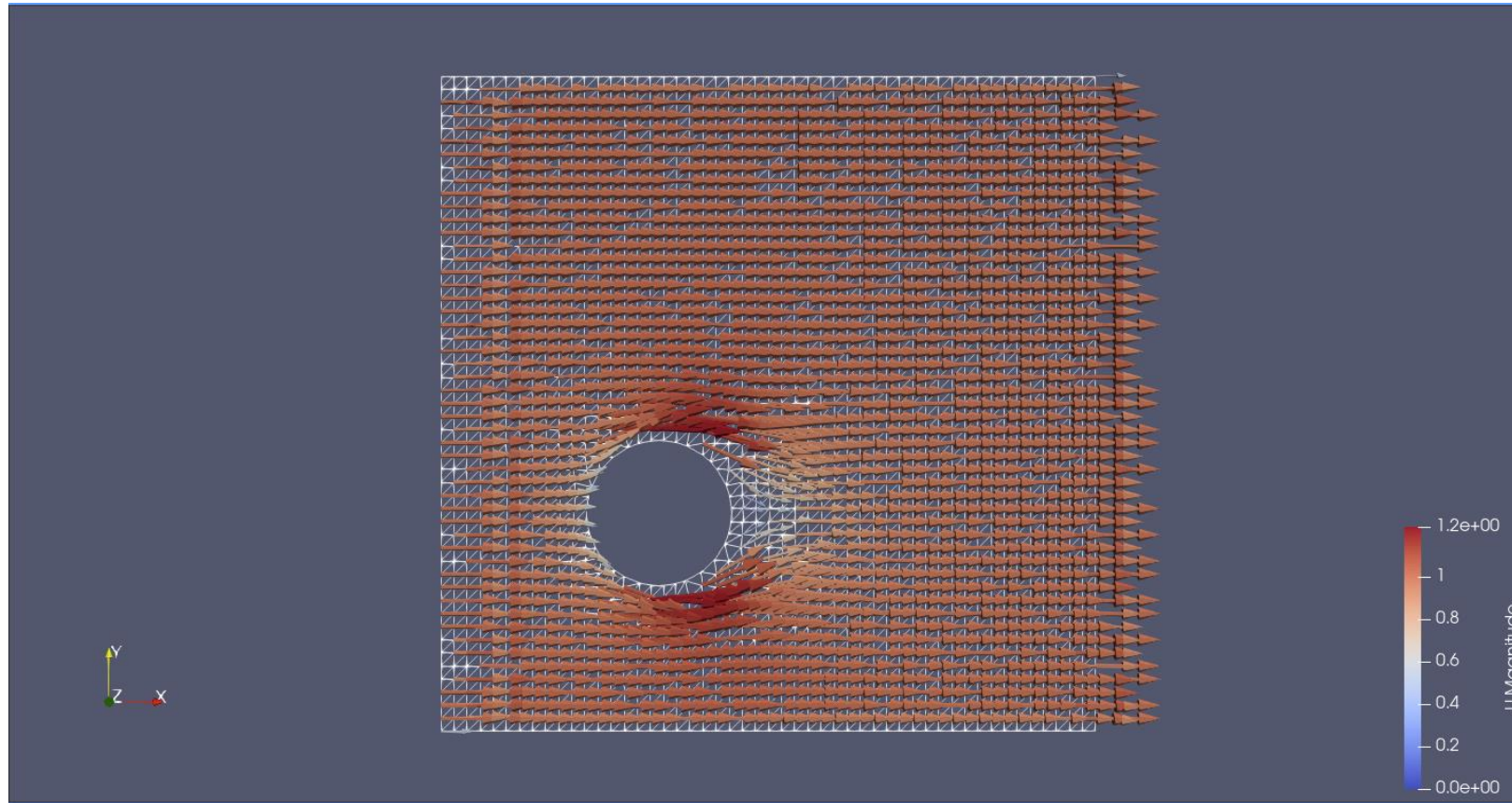# Flow Over a Cylinder

Flow Over a Cylinder

Flow Over a Cylinder

```
17    #includeEtc "caseDicts/mesh/generation/snappyHexMeshDict.cfg"
18
19    castellatedMesh on;
20    snap            on;
21    addLayers       off;
22
23    geometry
24    {
25        cylinder.obj
26        {
27            type closedTriSurfaceMesh;
28            name cylinder;
29        }
30    }
31
32    castellatedMeshControls
33    {
34        maxLocalCells 100000;
35        maxGlobalCells 2000000;
36        minRefinementCells 10;
37        maxLoadUnbalance 0.10;
38        nCellsBetweenLevels 3;
39        refinementSurfaces
40        {
41            cylinder
42            {
43                level (0 0);
44                patchInfo { type wall; }
45            }
46        }
47
48        refinementRegions
49        {
50        }
51
52        locationInMesh (0 0 -0.1);
53        locationOutMesh (0 0 0.05);
54
55        // Explicit feature edge refinement
56        // ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
57
58        // Specifies a level for any cell intersected by its edges.
59        // This is a featureEdgeMesh, read from constant/triSurface for now.
60        features
61        (
62            {
63                file "cylinder.eMesh";
64                level 0;
65            }
```

Flow Over a Cylinder

Exercises-9

- https://github.com/exaslate-learn/applied-cfd-using-openfoam-kct-fall2024/discussions/10