Applied Computational Fluid Dynamics using OpenFOAM

Mr. Kishore Rangarajan

KCT

Dr. Lakshman Anumolu

Dr. Kumaresh Selvakumar

Mr. Shyam Sundar J (TA)

ExaSlate

Mon & Thu : 5 PM to 7 PM

Course co-ordinators

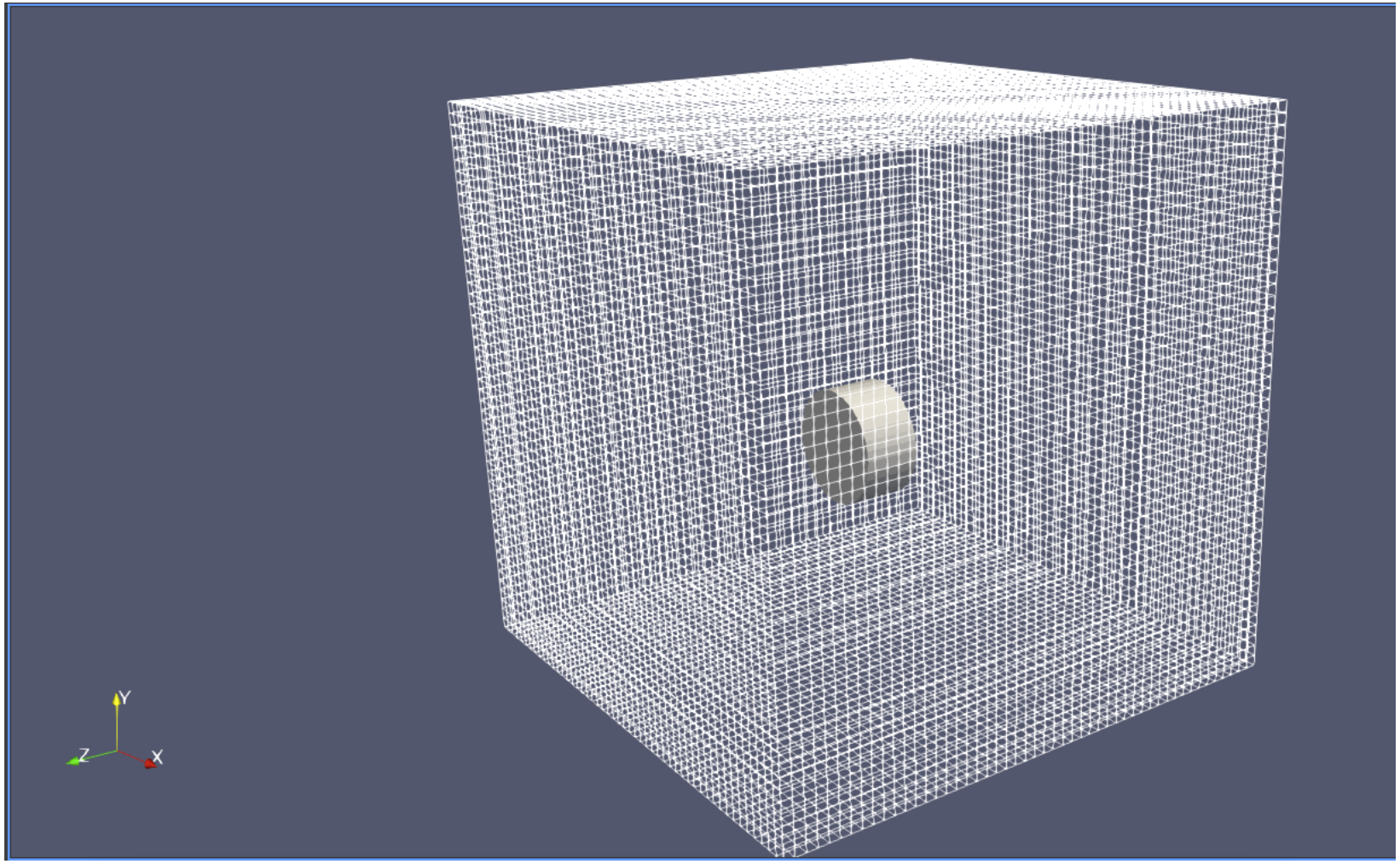
- Mr. Blesscin
- Mr. Dhanush

Overview

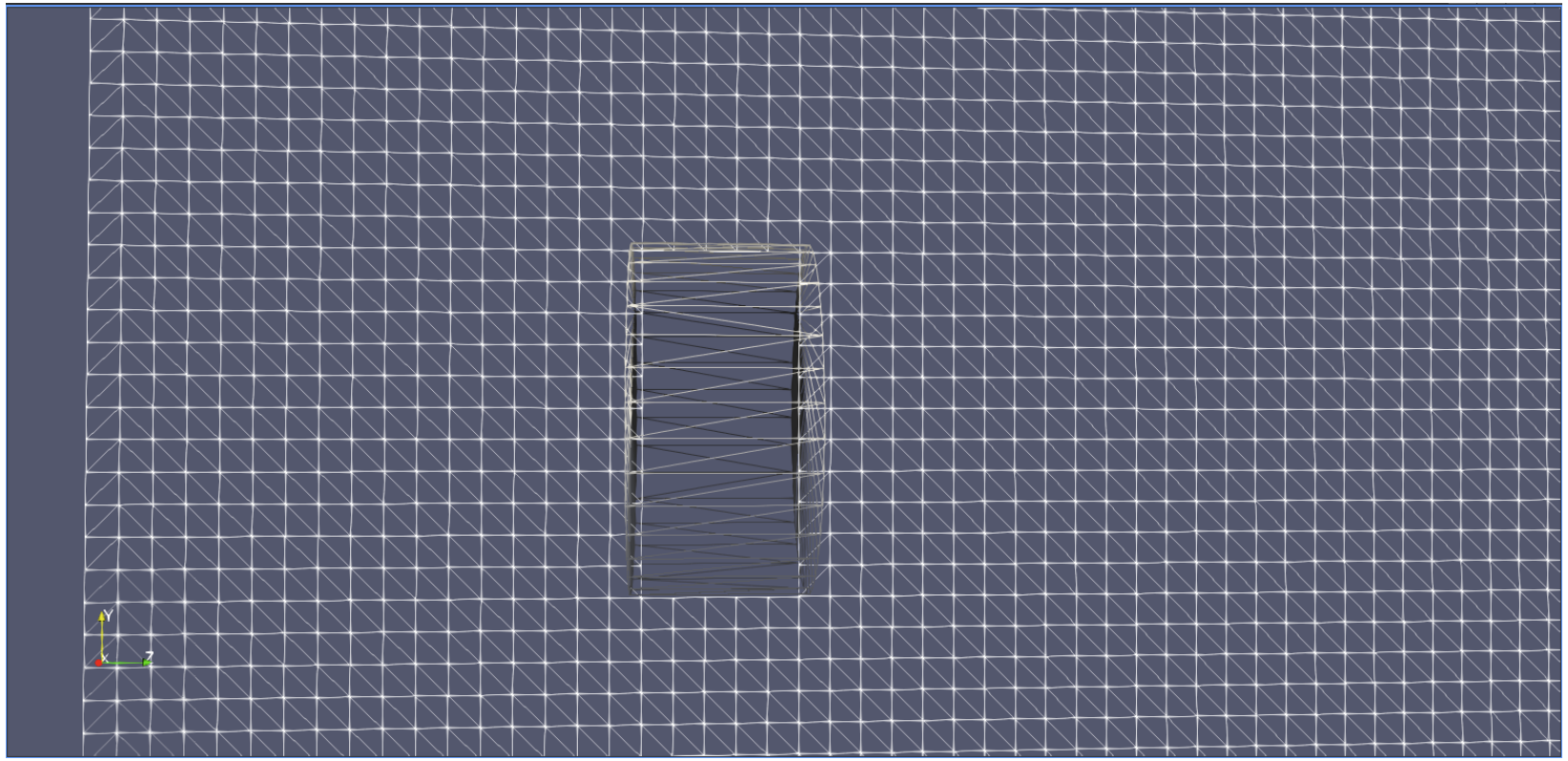
- Boundary fitted mesh generation using snappyHexMesh
  - Flow over a cylinder
  - Case setup common issues

Flow Over a Cylinder

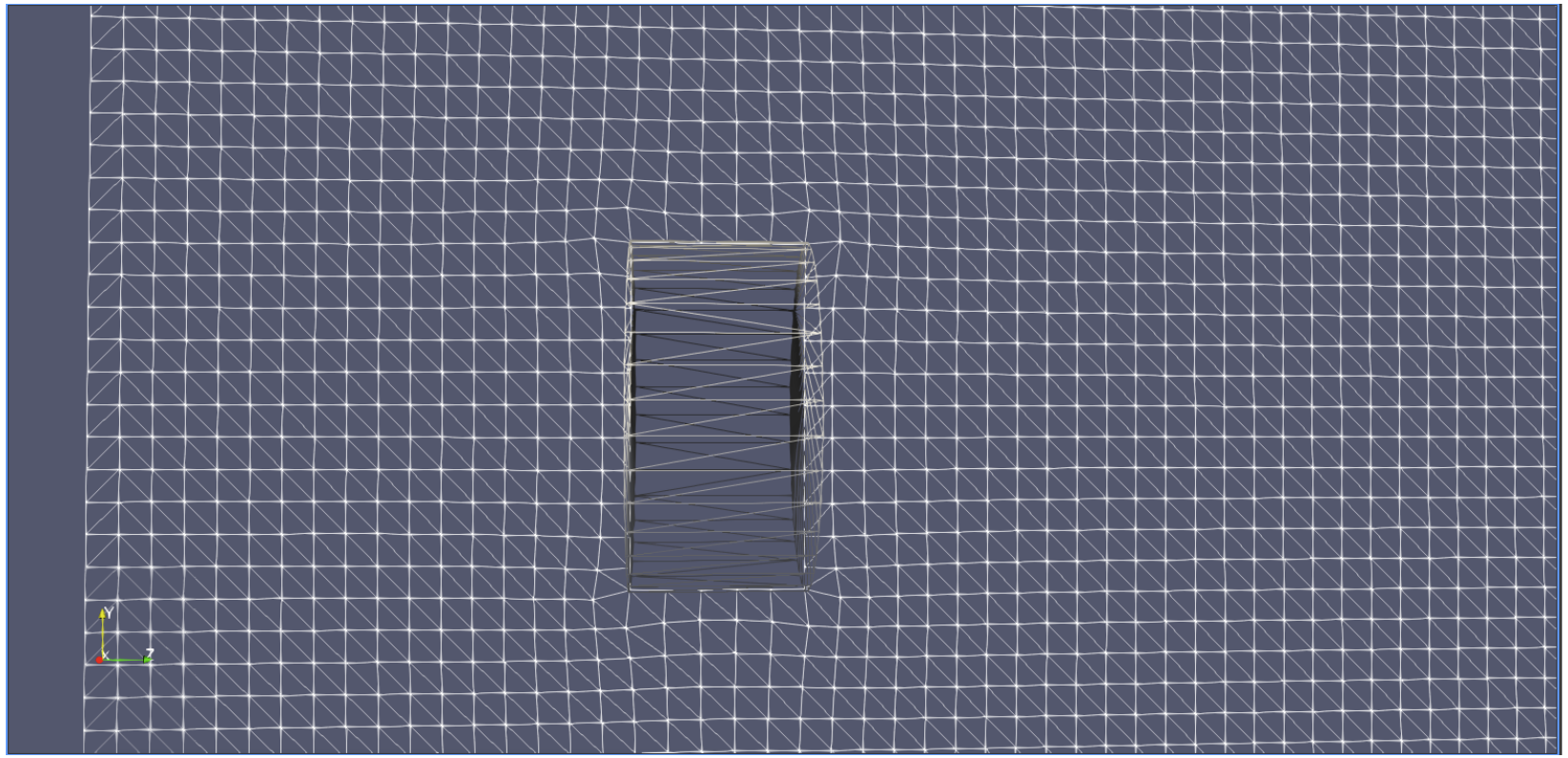
Flow Over a Cylinder



Flow Over a Cylinder



Flow Over a Cylinder



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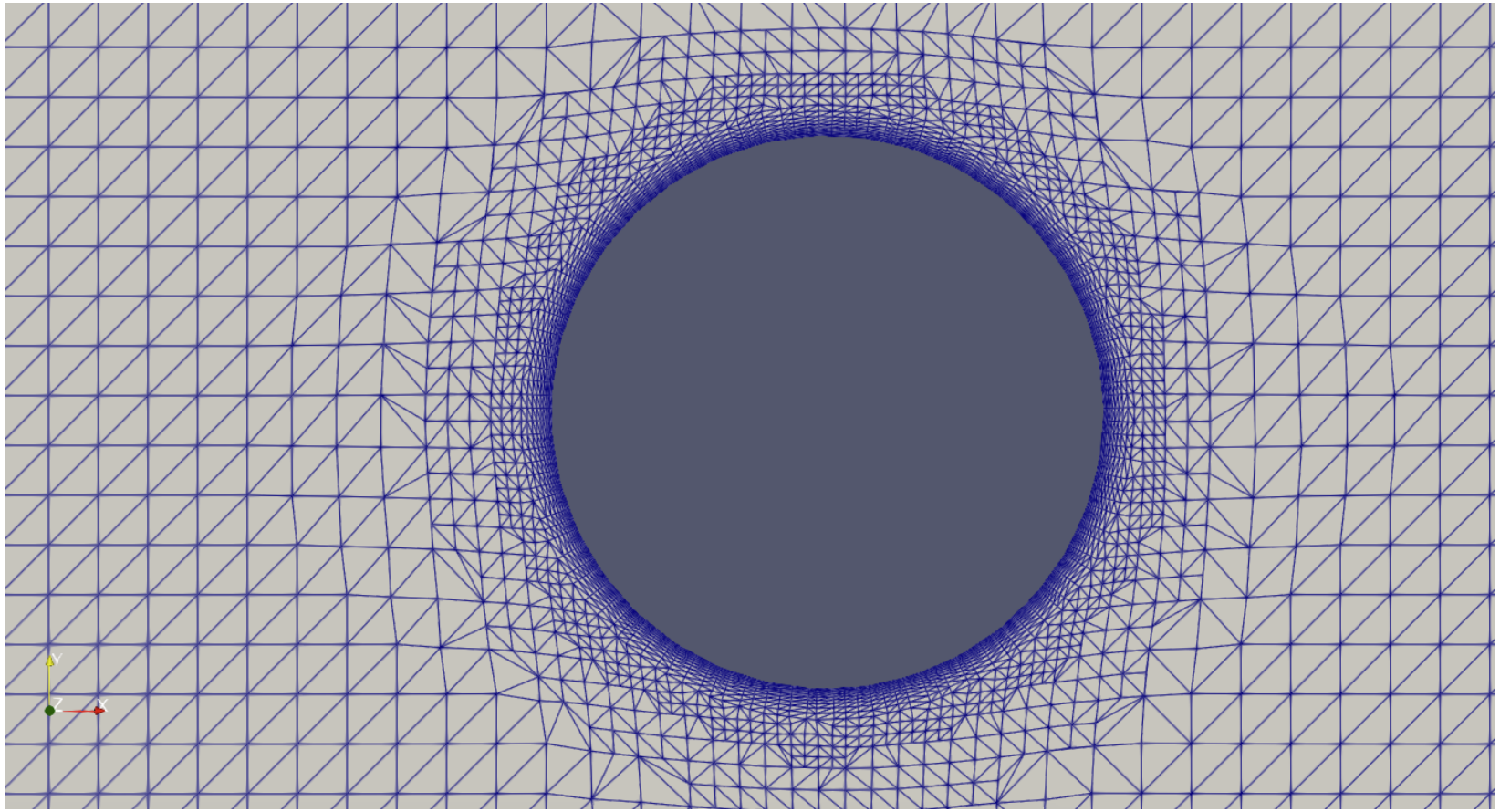
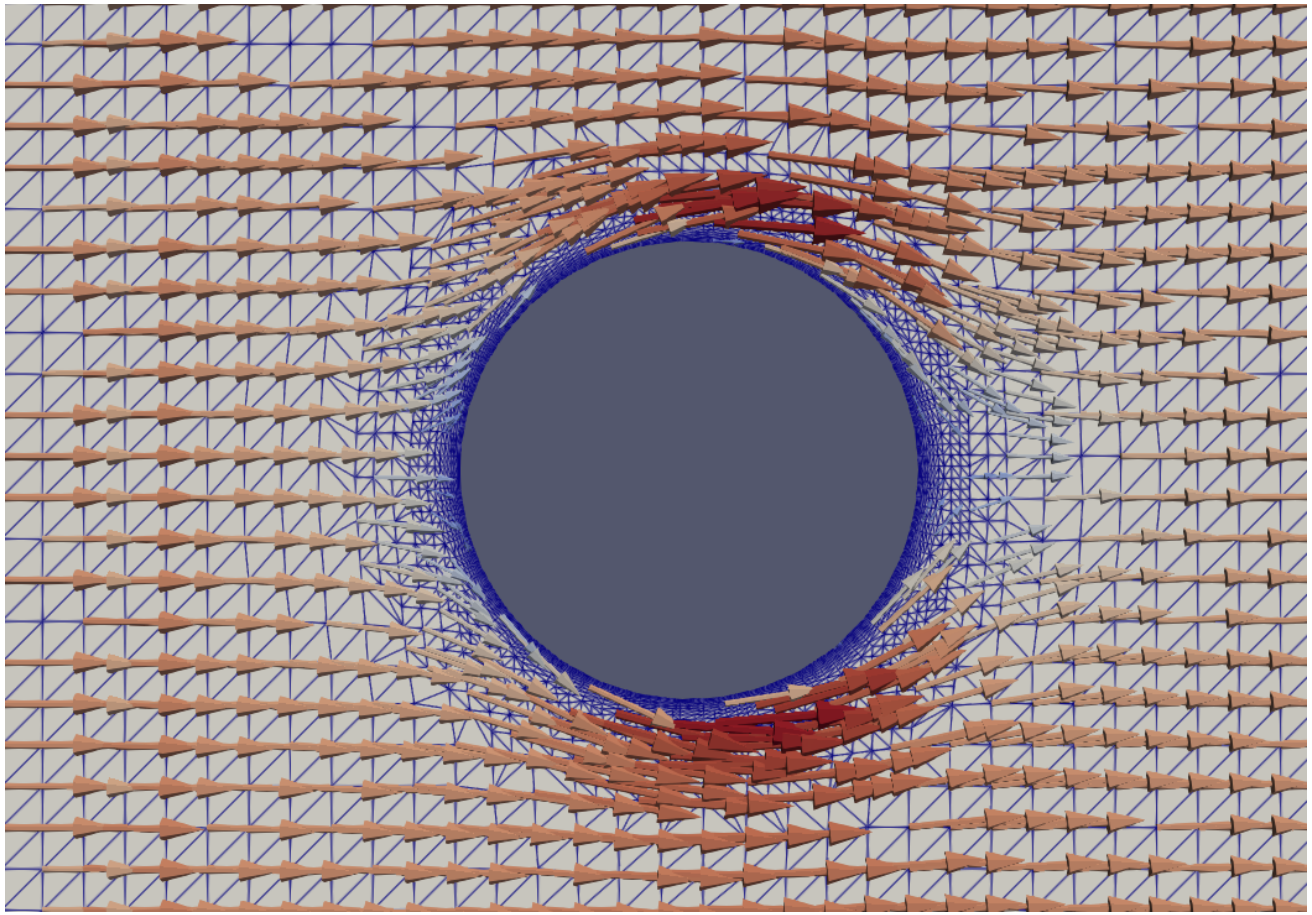


Flow Over a Cylinder

```
#includeEtc "caseDicts/mesh/generation/snappyHexMeshDict.cfg"

castellatedMesh on;
snap            on;
addLayers       off;

geometry
{
    cylinder.obj
    {
        type closedTriSurfaceMesh;
        name cylinder;
    }
}

castellatedMeshControls
{
    maxLocalCells 100000;
    maxGlobalCells 2000000;
    minRefinementCells 10;
    maxLoadUnbalance 0.10;
    nCellsBetweenLevels 3;
    refinementSurfaces
    {
        cylinder
        {
            level (0 0);
            patchInfo { type wall; }
        }
    }

    refinementRegions
    {
    }

    locationInMesh (0 0 -0.1);
    locationOutMesh (0 0 0.05);

    // Explicit feature edge refinement
    // ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

    // Specifies a level for any cell intersected by its edges.
    // This is a featureEdgeMesh, read from constant/triSurface for now.
    features
    (
        {
            file "cylinder.eMesh";
            level 0;
        }
```

Flow Over a Cylinder



Exercises-10

- https://github.com/exaslate-learn/applied-cfd-using-openfoam-kct-fall2024/discussions/11