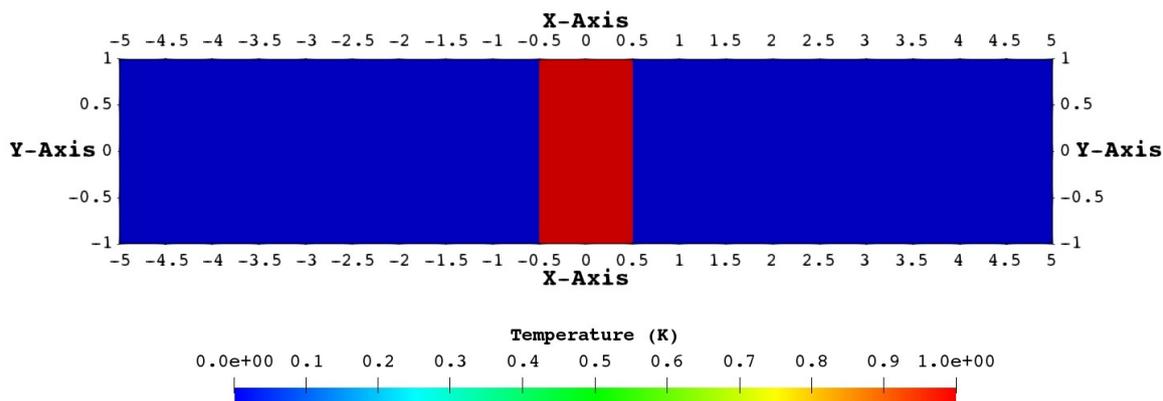


Different discretization schemes in OpenFOAM

Abstract - In this study, the correlation of results due to different discretization in divSchemes in fvSchemes are explained. Selection of discretization in our solver is as important as meshing and deltaT. In this paper results of few different discretizations in divergence schemes are compared in the scalartransportFoam solver. Changes to be done in divSchemes inside fvSchemes with Cubic, upwind, limitedCubic, limitedLimitedLinear, limitedLinear, vanLeer, limitedVanLeer, linear, linearUpwind, QUICK, SFCD, UMIST. Oscillation effects and result accuracy are described.

Problem Statement

To see the effect of different discretization schemes in openfoam, a 1D mesh is created with blockMeshDict having 1m length. 1000 strips divided in 10 m length. A Temperature scalar set with setFieldsDict of 1 m length having 1K Temperature. Results discussed with (0 1) and (-0.01 0.01) Temperature scale in paraview.



Schemes to Discuss in Report:

1. Cubic
2. linearUpwind
3. limitedCubic
4. QUICK
5. limitedLimitedLinear
6. SFCD
7. limitedLinear
8. UMIST
9. limitedVanLeer
10. upwind
11. linear
12. vanLeer