

COMPUTATIONAL FLUID DYNAMICS MIDTERM PROJECT

2D-Heat Conduction Using ADI Method

Problem Description

As seen on figure below, 2D steady heat conduction with heat source is going to be modeled on a rectangular domain by FVM using Matlab or Python programming language. Grid size and size of domain and boundary conditions are going to be input to the problem. For example, left side of the domain can be modeled as heat-flux boundary conditions (in or out) and north side may be modeled as constant temperature boundary condition. Right side can be insulated and South side may be assumed heat loss boundary condition defined with a surrounding fluid temperature " T_f " and heat transfer coefficient " h ". Assume also that domain have some amount of heat generation.

Convergence criterion, maximum iteration number and monitoring point should also be given in the code.

Total number of control volumes should be between 1500-10000.

Prepare a report. Plot the temperature contours. Validate the results with boundary conditions and explain.

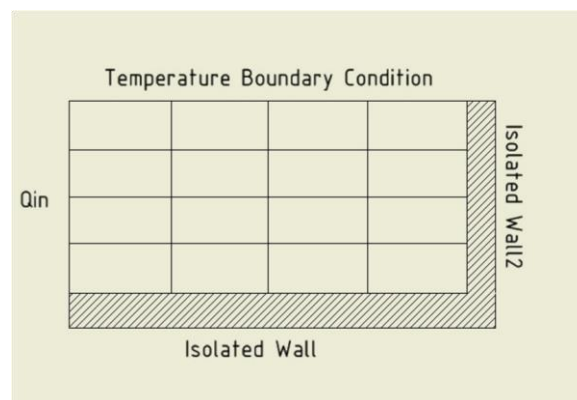


Figure 1 Example Domain