Solve 2d time-dependent heat-conduction equation with source using method of images with v-cycle multigrid and w-cycle multigrid

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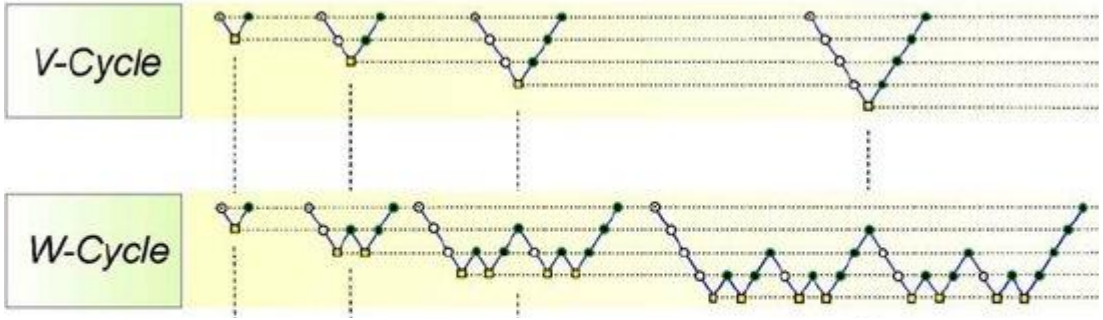
Equation Description

$$\frac{\partial u}{\partial t} - \frac{\partial^2 u}{\partial x^2} - \frac{\partial^2 u}{\partial y^2} = f(t, x, y)$$

- Boundary condition = 0, method of images
- Time dependent. Source term varies with time
- u = 0 at t = 0
- Show how the function u varies with time

Method Description



- We’ll be using 2 types of multigrid method, v cycle and w cycle, as shown above
- Use Jacobi method in relaxation, so we can parallelize it
- Compare the two methods and analyze why one is faster than the other