

The Stencil Method

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Parallelization of Heat Equation

- Stencil computation for 2D heat diffusion
- MPI --> domain decomposition
- Further optimization with OpenMP

The Problem

- 5 Point Stencil
- Update rule: weighted combination of self and neighbours
- Heat sources periodically inject energy
- Naive solution: double loop over all points N times

Parallelization

- Domain decomposition --> MPI
 - Subdomain for each process
 - Halo cells for neighbours/periodic plane

Results

- dsadsa
- dasdsa

Challenges

- asdasdas
- dasdasdas

Troubleshooting

- asdsadasd

Other possible approaches

- adasd
- sadasd