Finite Element Domain Decomposition

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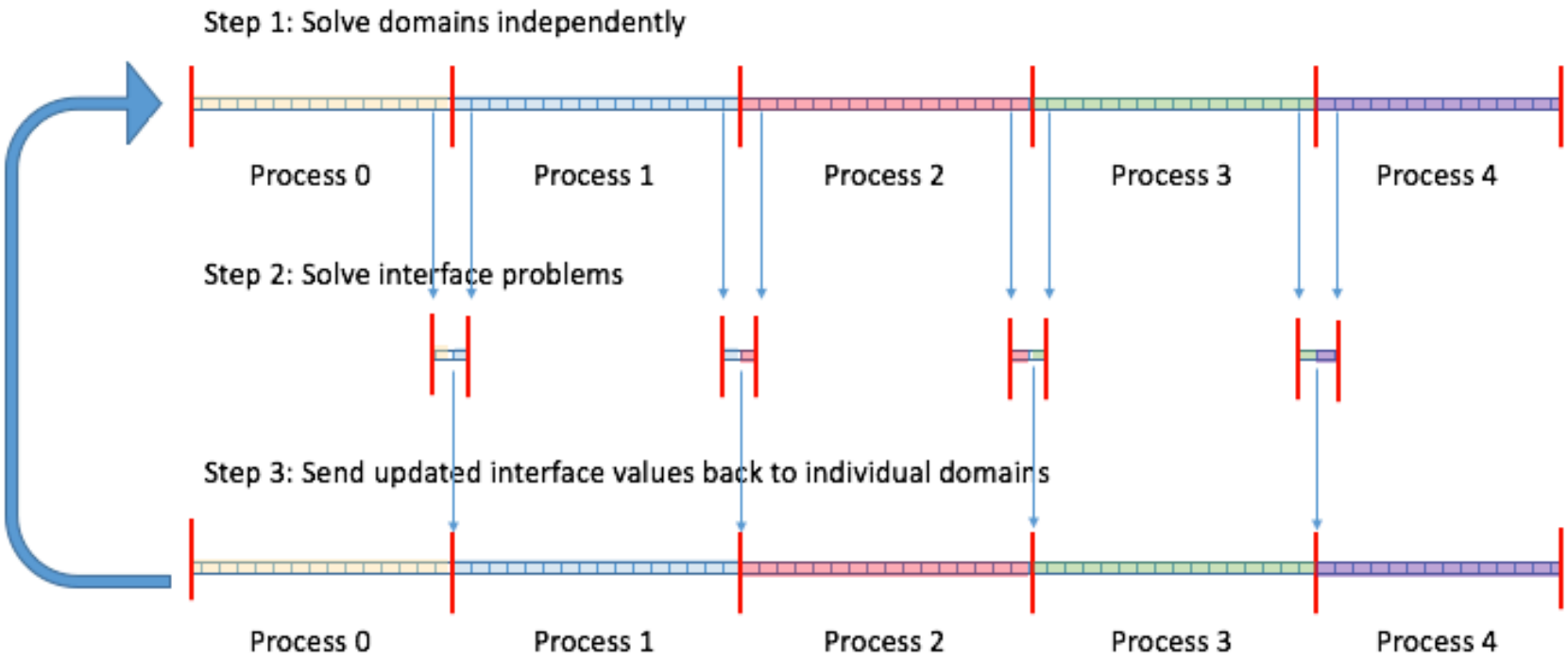
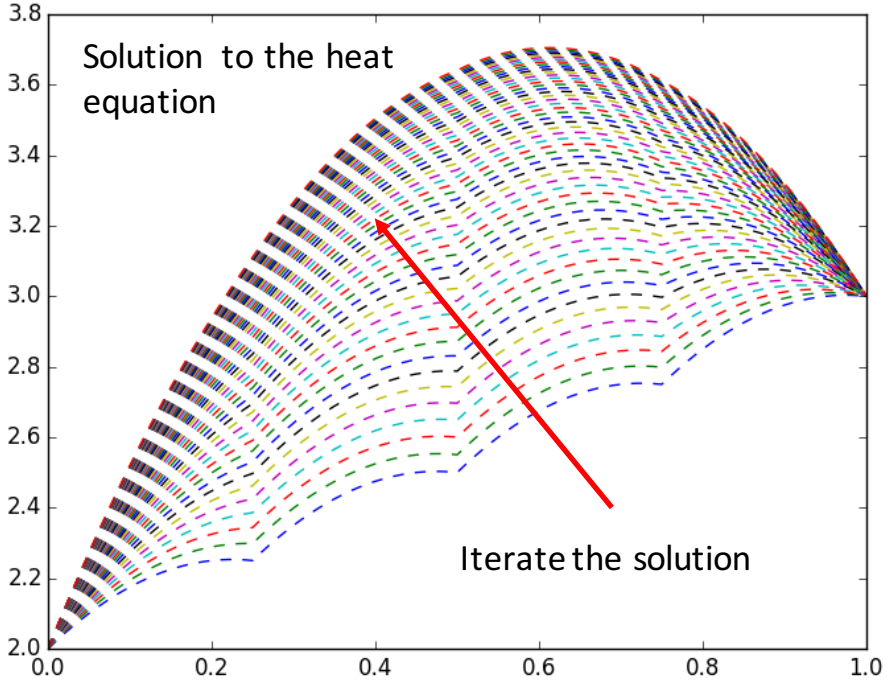
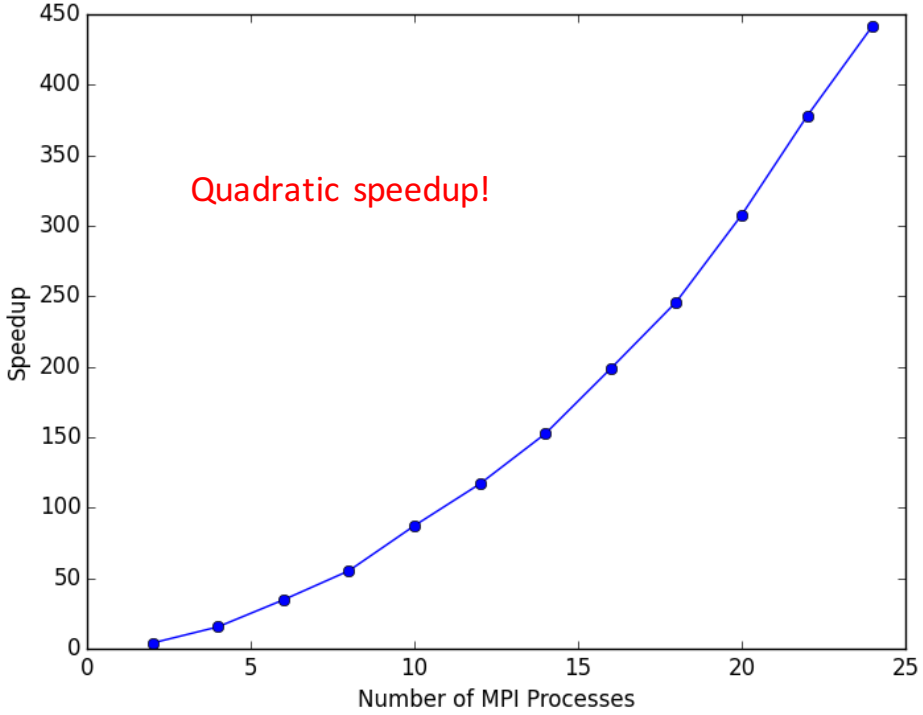
- MPI for overall domain decomposition algorithm
- OpenMP for fine-grained parallelism







$$\text{Speedup} = \frac{N^2}{I\left(\frac{N}{p}\right)^2} = \frac{p^2}{I}$$

N = size of matrix system
p = number of MPI processes
I = number of domain decomposition iterations

Punchline: Better than linear speedup due to *algorithm*, but you have to be careful with *iterative* parallel methods