

Project 5

- **Now that you have “completed” Projects 1-3 and nearly finished with Project - 4(hopefully), you are ready to parallelize a multi-block code using MPI**
- **Take your multi-block code that was developed under Project 3 and parallelize it using MPI across the node/CPU partitions created in Project 4**

Project 5

- **Due Thursday, December 3 (Start on this NOW!)**
 - Overall description of heat conduction problem including governing equations, discretization scheme (recursion formulas), domain decomposition, processor mapping, parallel processing strategy, etc.
 - Demonstration that the parallel heat conduction code works on hpc1 with:
 - For 501x501 grid using 10x10 decomposition with 4 processors, figures of
 - Grid
 - Converged solution
 - Convergence history (log(residual) vs iteration) comparison with single-block and multi-block serial codes. Plot the 3 histories on the same plot.
 - Plots of computational speed-up and efficiency vs number of processors for up to 8 processors for 501x501 grid using 10x10 decomposition
 - Show comparison with ideal (linear) and optimal (based on your load balance numbers in Project 4)
 - Listing of your parallel heat conduction code