# ME5470: Introduction to Parallel Scientific Computing

# Homework-5

ME21BTECH11006

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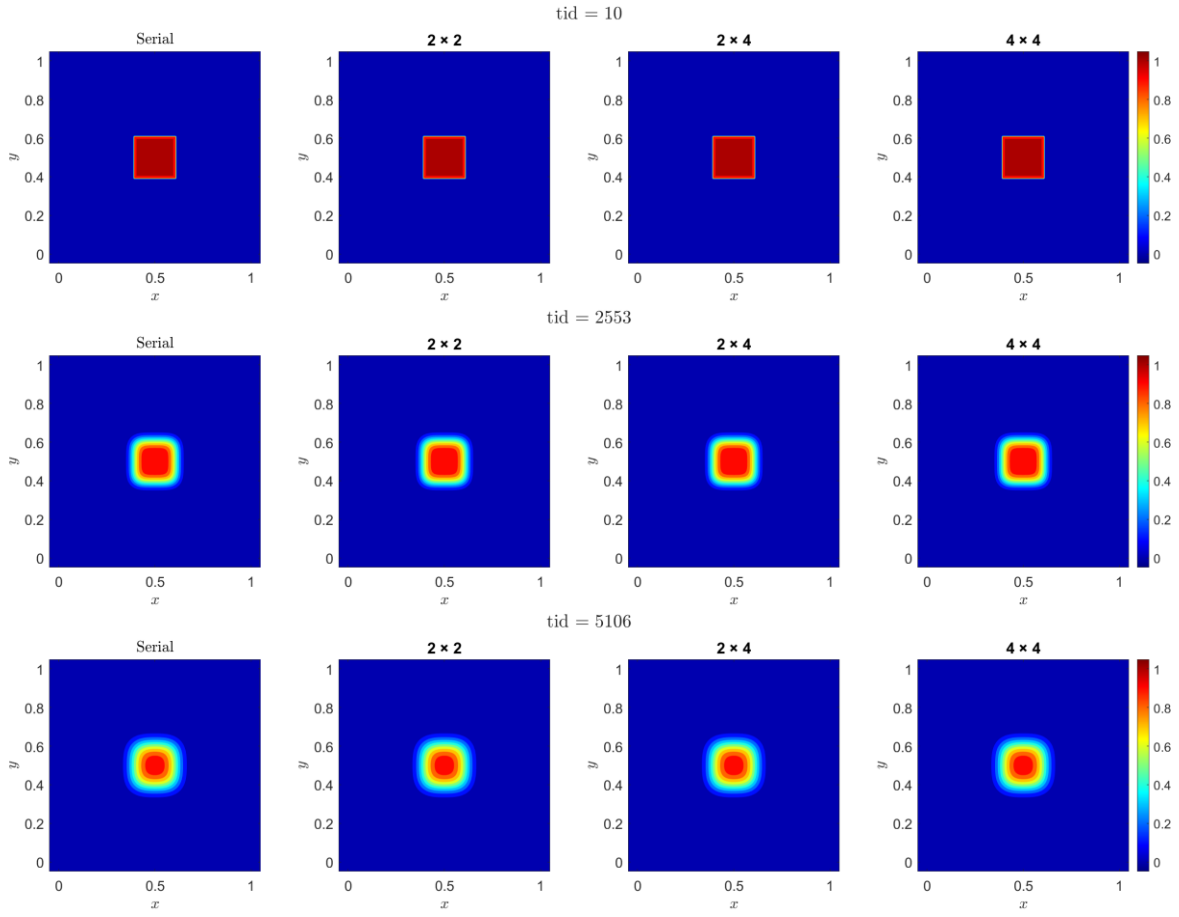
The transient heat conduction problem has been .

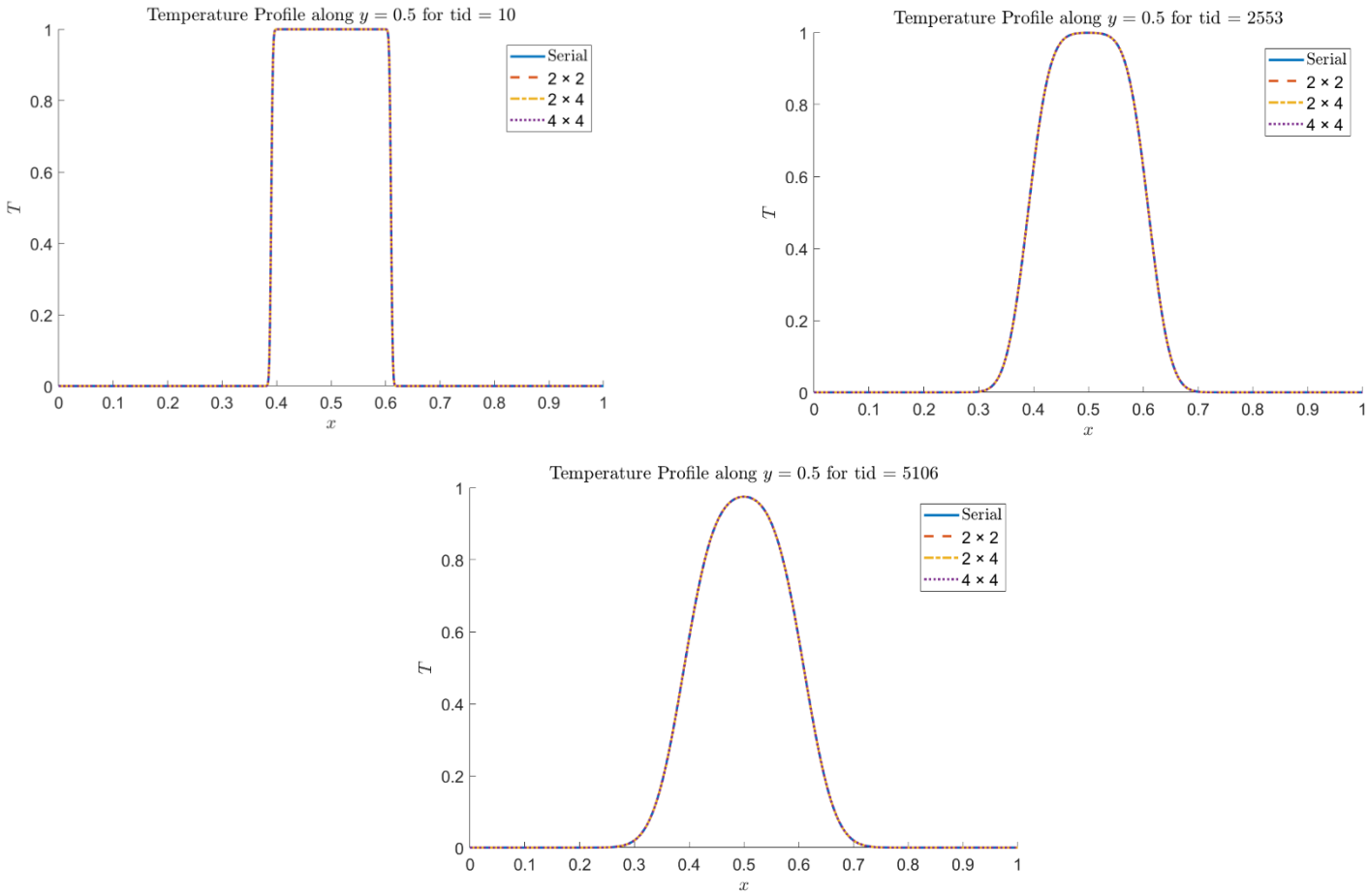
The timesteps used for comparisons are tids = 10, 2553 and 5106. Corresponding to 0.001, 0.4 and 0.8 milliseconds respectively.

(a) Temperature contours and profiles.

Temperature contours at different timesteps



Temperature profiles along y = 0.5 for different configurations.




(b) Differences in the computed temperature with the serial code after 10 timesteps

| 2 × 2 | 2 × 4 | 4 × 4 |
|---|---|---|
| 0.0 | 0.0 | 0.0 |

The difference was 0 (machine precision) for each case, which is also depicted in the temperature profiles above.

(c) Average time taken for each time step (in seconds)

| Serial | 2 × 2 | 2 × 4 | 4 × 4 |
|---|---|---|---|
| 0.008499 | 0.002208 | 0.001195 | 0.000624 |