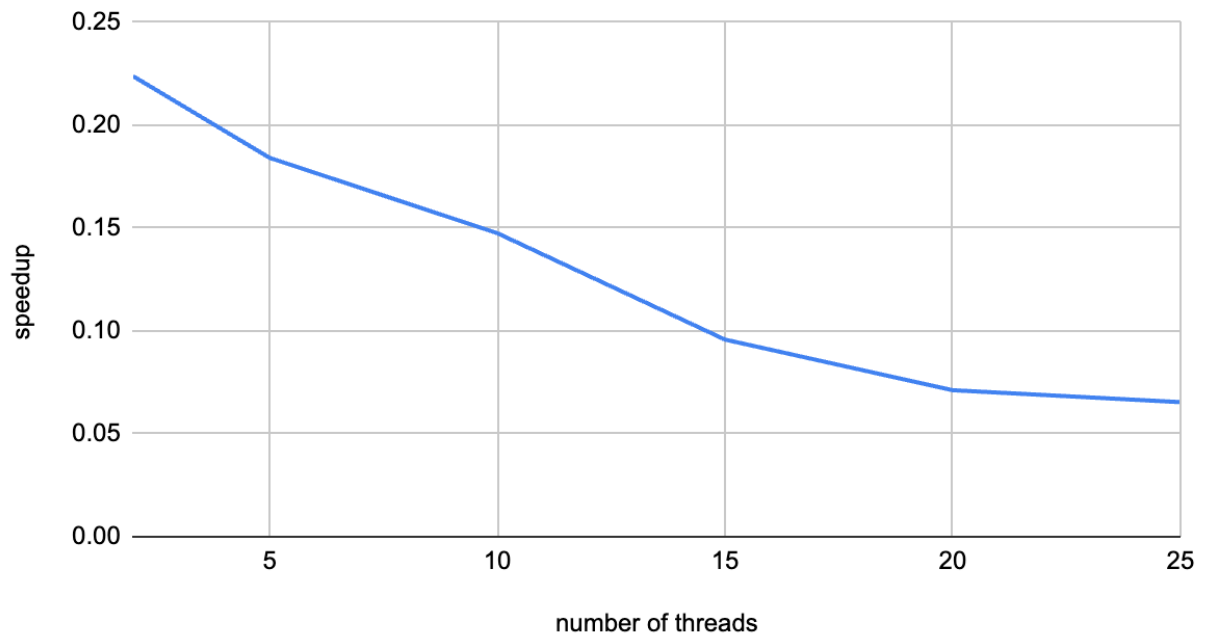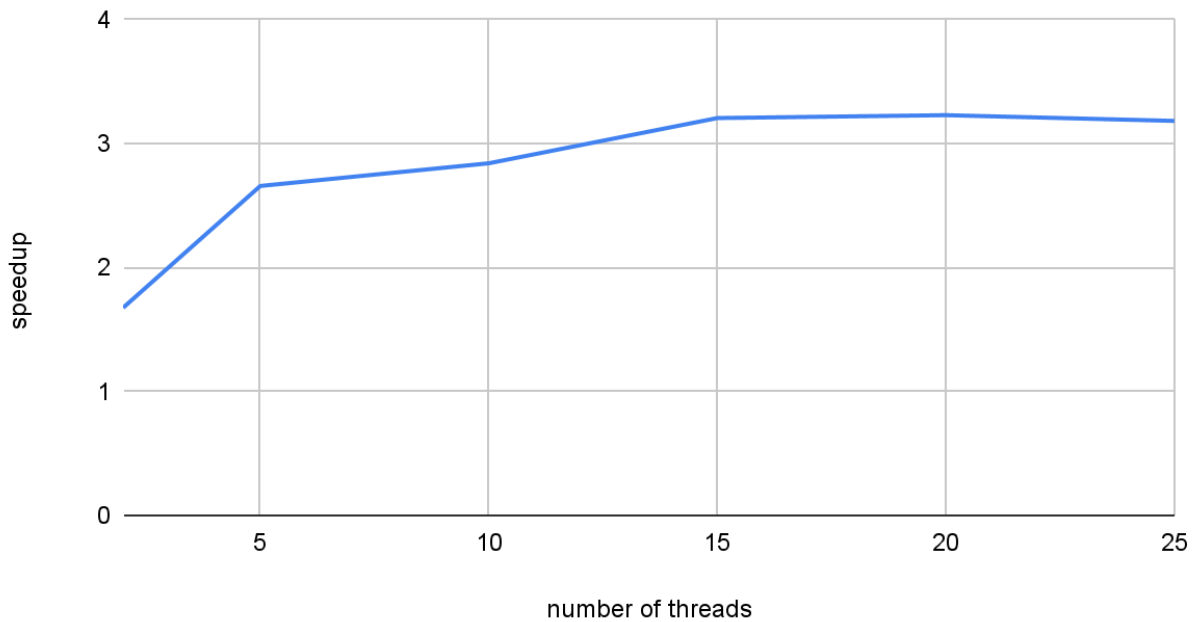(M= 10, N = 5000)

speedup vs. number of threads

The speedup decreases continuously as the number of threads increases. This occurs because thread overhead dominates the computation time when the workload is small.

(M= 10, N = 5000,000)

speedup vs. number of threads

This graph shows a pattern of diminishing returns as the number of threads increases. While speedup increases quickly in the beginning, the rate of speedup improvement slows. This behavior reflects where thread overhead can offset the parallelization benefits.