



Here are the graphics of the calculate pi using mpi program. To calculate Speedup, I just use the serial program's running time T_s . For this 100 runs program, I simply use $T_s \times 100$ as serial running time. From the figure we can see the running time reduces quickly when adding the processor number. However, the running time reducing rate slows down. For Speedup, even in the 4 processors program, it is still more than 2. And Speedup is nearly going linear with the processor increase. For Efficiency, it didn't change a lot, which is good, means this program can still be faster when using more processors.