Complexity Measures for Parallel Computation

Problem parameters:

- n   index of problem size

- p   number of processors

Algorithm parameters:

- t_p running time on p processors

- t_1 time on 1 processor = sequential time = "work"

- t_∞ time on unlimited procs = critical path length = "span"

- v   total communication volume

Performance measures

- speedup $s = t_1 / t_p$

- efficiency $e = t_1 / (p*t_p) = s / p$

- (potential) parallelism $pp = t_1 / t_\infty$