

Simulations Among Concurrent-Write PRAMs Computation

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Abstract

This paper is concerned with the relative power of the two most popular concurrent-write models of parallel computation, the PRIORITY PRAM [G], and the COMMON PRAM [K]. Improving the trivial and seemingly optimal $O(\log n)$ simulation, we show that one step of a PRIORITY machine can be simulated by $O(\log n / (\log \log n))$ steps of a COMMON machine with the same number of processors (and more memory). We further prove that this is optimal, if processor communication is restricted in a natural way.