Simulations Among Concurrent-Write PRAMs
Computation

Faith Fich
Prabhakar Ragde
Avi Wigderson

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.