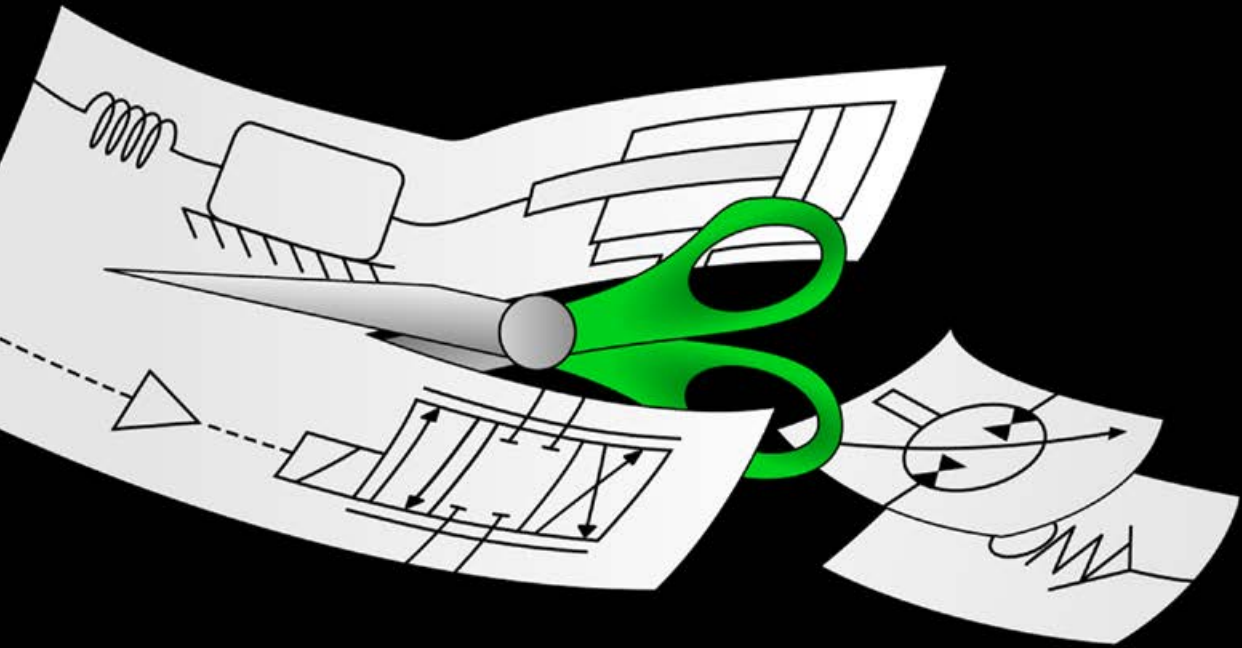


Multi-Threaded Distributed System Simulations

Using Bi-Lateral Delay Lines

Robert Braun



By running simulations in parallel on multi-core processors, simulation time can be significantly decreased. This thesis investigates the possibilities of making simulation models parallel by using independent distributed solvers. Sub-components are separated numerically by transmission line elements. An algorithm for automatically distributing the workload with good load balancing is demonstrated. Synchronization between simulation threads is maintained by a simulation routine using barrier locks. Measurements confirm that almost linear speed-up can be achieved for large models. The method is less useful for smaller models due to overhead costs. Experiments that confirm the feasibility on real-time applications are also presented.



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