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**Evaluation of sparse factorization and triangular solution
on multicore architectures**

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Multicore processors will be the basic building blocks for computer systems ranging from laptops to supercomputers. New software developments at all levels are needed to fully utilize these systems. We are conducting performance evaluation of different parallel algorithms for sparse LU factorization and triangular solution on representative multicore machines, including an eight-core Intel Clovertown and an eight-core Sun Niagara2 with 64-way threading.

In this study, we include both pthreads and MPI implementations, and both left-looking (implemented in SuperLU_MT) and right-looking (implemented in SuperLU_DIST) algorithm variants. The preliminary results showed that the pthreads implementation consistently delivers nearly linear speedups for most problems, and a left-looking algorithm is usually superior. We will present quantitative assessment of performance with various algorithmic components. We believe our findings are also relevant to the class of preconditioners which are based on incomplete factorizations.