

An out-of-core extension of a parallel sparse multifrontal solver

Emmanuel Agullo (presenter)

Abstract

We describe an out-of-core extension of a parallel sparse multifrontal solver, MUMPS. In a first implementation factors are written to disk as soon as computed whereas the stack memory remains in-core. We then overlap disk accesses with computation and allow some factors to stay in-core after factorization, thus enhancing the performance of both the factorization and solution steps. Finally we analyze the potential of a fully out-of-core multifrontal model and discuss how a distributed approach must take into account results of the most recent studies showing intrinsic memory limits of sequential multifrontal methods. Results on large real-life problems illustrate our discussion.