

# On the approximate solution of sparse triangular systems for massively parallel machines

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Parallel solution of sparse triangular linear systems is indeed a challenging task due to its inherently sequential nature. Many classical techniques are based on level scheduling rows that are independent [1], but depending on the sparsity pattern there may be a very large number of levels with a small amount of work to efficiently use massively-parallel architectures like GPUs. For the case of a Krylov subspace method coupled with a LU-type preconditioner, an approximate solution is sufficient and an iterative approach can be adopted [2]. In particular, we introduce a hybrid direct/iterative two steps method and we present a numerical application to a CFD model problem [3] that shows performance gains of this approach over cuSPARSE direct solver.

## References

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