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The use of vector and parallel computers in the solution of large sparse linear equations.

(English) [Zbl 0617.65021](#)

Large scale scientific computing, Proc. Meet., Oberwolfach/FRG 1985, Prog. Sci. Comput. 7, 331-348 (1987).

[For the entire collection see [Zbl 0614.00022](#).]

We discuss three main approaches that are used in the direct solution of sparse unsymmetric linear equations and indicate how they perform on computers with vector or parallel architecture. The principal methods which we consider are general solution schemes, frontal methods, and multifrontal techniques. In each case, we illustrate the approach by reference to a package in the Harwell subroutine library. We consider the implementation of the various approaches on machines with vector architecture (like the CRAY-1) and on parallel architectures, both with shared memory and with local memory and message passing.

MSC:

[65F05](#) Direct numerical methods for linear systems and matrix inversion

[65F30](#) Other matrix algorithms (MSC2010)

[65Y05](#) Parallel numerical computation

Keywords:

[parallel computation](#); [sparse unsymmetric linear equations](#); [frontal methods](#); [multifrontal techniques](#); [Harwell subroutine library](#)

Software:

[MA32](#)