Taking advantage of Sherman's march

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ABSTRACT

During the simulation of a mobile telecommunications system, a sequence of systems of linear equations must be solved. In this sequence, the coefficient matrix of the (k+1)th system is of order one greater than that of the kth, and the former is constructed by enlarging the latter with a new column and a new row. All matrices involved are strictly diagonally dominant, but the condition number suffers a heavy worsening as k increases. In this lecture we show that taking advantage of this diagonal dominance property is crucial to be able to obtain as much as a 30% improvement on average in the CPU time to complete the whole process in MATLAB v7.5.

Keywords

LU decomposition, updating, leading principal submatrix, Sherman's march, strictly diagonally dominant.

Observations

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