H-matrix theory and applications

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Abstract

The theory of M- and H-matrices has become one of the basic tools in applied linear algebra and it has contributed to different areas of mathematical research and applications. Many results in numerical analysis, eigenvalue localization problems, analysis of iterative methods for solving systems of linear equations came from H-matrix theory. Also, many results in engineering rely on mathematical foundation that is, explicitly or implicitly, formulated in terms of H-matrices.
In this talk, different matrix properties that guarantee nonsingularity of matrices and define different subclasses of H-matrices will be presented together with related results concerning Schur complement matrices, eigenvalue localization and bounds of the max-norm of the inverse matrix.

Keywords

$H-$ matrix, Eigenvalues, Schur complement, Max-norm of the inverse matrix.

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