

Some subclasses of H-matrices and how to use them for eigenvalue localization

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Abstract

Well known characterization of H-matrices is given by the fact that the matrix is an H-matrix iff it can be scaled to a strictly diagonally dominant (SDD) matrix by nonsingular diagonal matrix (from the right side, of course). How to find such a scaling matrix is still open question. Because of that, some subclasses of H-matrices are very useful, in particular if they are described by "checkable" conditions, meaning simple functions of matrix elements only.

Several such subclasses will be presented. Some of them will be used for obtaining various Geršgorin-type localization theorems. On the other hand, some of them will help us to obtain more information about the eigenvalues on the boundary of such a Geršgorin-type localization area.

Keywords

H-matrices, Eigenvalue localization.

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