

**Algorithms $\mathbb{A}\mathbb{H}$ and $\mathbb{A}\mathbb{H}2$:
On the identification of an H-matrix**

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Key words: H-matrices, strictly diagonally dominant matrices

A matrix $A \in \mathbb{C}^{n,n}$ is considered to be an H -matrix if and only if there exists a positive diagonal matrix $D \in \mathbb{R}^{n,n}$ so that AD is (row-wise) strictly diagonally dominant, that is

$$|a_{ii}|d_i > \sum_{j=1, j \neq i}^n |a_{ij}|d_j, \quad i = 1(1)n.$$

The class of H -matrices is of great importance for the numerical solution of linear systems of algebraic equations arising in various applications, for instance, in the Linear Complementarity Problem (LPC) in Optimization Theory, in the Free Boundary Value Problems in Fluid Analysis, etc. This lead to wide study and proposals of criteria, the majority of which are iterative ones, for the identification of the H-matrix character of a given matrix $A \in \mathbb{C}^{n,n}$. In that direction, the present authors proposed two criteria, Algorithm $\mathbb{A}\mathbb{H}$ and its extension, Algorithm $\mathbb{A}\mathbb{H}2$, to completely identify the H-matrix property of both, an *irreducible* and *reducible* matrix.

References

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