On singular and nonsingular H-matrices

Rafael Bru, Cristina Corral, Isabel Giménez, and José Mas

Universidad Politécnica de Valéncia, Spain

Abstract

Let denote by $\mathcal{M}(A)$ the comparison matrix of a square H-matrix A, that is, $\mathcal{M}(A)$ is an M-matrix. H-matrices such that $\mathcal{M}(A)$ is nonsingular are well studied in the literature. In this work, we study some characterizations of singular and nonsingular H-matrices when $\mathcal{M}(A)$ is singular. The spectral radius of the Jacobi matrix and the generalized diagonal dominance property are used in the characterizations. In particular, we study the case when A is irreducible and then give some insights to the reducible case.

Keywords

H-matrix, Comparison matrix, Equimodular matrices, Generalized diagonally dominant matrices.

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