On the intersection of the classes of doubly diagonally dominant matrices and S-strictly diagonally dominant matrices

Francisco Pedroche[1], Rafael Bru[1]

Institut de Matemàtica Multidisciplinar, Universitat Politècnica de València. Camí de Vera s/n. 46022 València. Spain.

rbru@imm.upv.es, pedroche@imm.upv.es

Ljiljana Cvetković[2], Vladimir Kostić[2]

Department of Mathematics and Informatics, Faculty of Science, University of Novi Sad. Serbia, 21000 Novi Sad.

lilac@ns.sbb.co.yu, vkostic@im.ns.ac.yu

Abstract

We denote by H_0 the subclass of H-matrices consisting of all the matrices that lay simultaneously on the classes of doubly diagonally dominant (DDD) matrices ($A = [a_{ij}] \in \mathbb{C}^{n\times n} : |a_{ii}||a_{jj}| \geq \sum_{k\neq i} |a_{ik}| \sum_{k\neq j} |a_{jk}|, i \neq j$; see [3]) and S-strictly diagonally dominant (S-SDD) matrices; see [1], [2]. Notice that strictly doubly diagonally dominant matrices (also called Ostrowsky matrices) are a subclass of H_0. Strictly diagonally dominant matrices (SDD) are also a subclass of H_0. In this paper we analyze some properties of the class $H_0 = \text{DDD} \cap S\text{-SDD}$.

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References

[1] L. Cvetkovic. H-matrix theory vs. eigenvalue localization *Numerical Algorithms*, 42: 229-245, 2006.

[2] R. S. Varga. *Geršgorin and his circles.* Springer Series in Computational Mathematics, vol. 36. Springer, Berlin, Heidelberg, 2004.

[3] B. Li and M. J. Tsatsomeros. Doubly diagonally dominant matrices. *Linear Algebra and its Applications*, 261:221–235, 1997.

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