

On Extensions of Ostrowski's Theorem

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After an extension of Ostrowski's Theorem for complex square irreducible matrices is briefly presented [1], classes of irreducible matrices are determined for which the classical statement:

“If for a matrix $A = [a_{ij}] \in \mathbb{C}^{n \times n}$, $n \geq 2$, relations

$$|a_{ii}| > \left(\sum_{j=1, j \neq i}^n |a_{ij}| \right)^\alpha \left(\sum_{j=1, j \neq i}^n |a_{ji}| \right)^{1-\alpha} \quad (1)$$

are satisfied for all $i \in \{1, 2, \dots, n\}$ and for some $\alpha \in [0, 1]$, then, A is nonsingular”

[2], can hold even if all the inequalities in it turn out to be equalities. To succeed in distinguishing the nonsingular matrices from possible singular ones use of weighted directed graphs is made. Moreover, other issues related to the main result of our work are also presented.

References

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