

Weighted symmetry and hermitancy of matrices

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Abstract

Symmetry properties of matrices (operators) play important role in presentation of many characteristics of matrices (operators). There is used non homogenous terminology for some of properties {compare Horn and Johnson [1] and Sadun [2]}. We propose to use a notation of weighted symmetry (\mathbf{W}_L - \mathbf{W}_R -symmetry) and weighted hermitancy (\mathbf{W}_L - \mathbf{W}_R -hermitancy). For some matrices $\mathbf{W}_L, \mathbf{W}_R \in \mathcal{C}_{n,n}$ we say that

$\mathbf{A} \in \mathcal{C}_{n,n}$ is \mathbf{W}_L - \mathbf{W}_R -symmetric iff $\mathbf{W}_L \mathbf{A} \mathbf{W}_R = \mathbf{A}$

and we say that

$\mathbf{A} \in \mathcal{C}_{n,n}$ is \mathbf{W}_L - \mathbf{W}_R -hermitian iff $\mathbf{W}_L \mathbf{A} \mathbf{W}_R = \mathbf{A}^*$.

In similar way we define other symmetry properties investigated by Pressman [3] and Trench [4,5]. In the presentation we generalize results presented in papers [3], [4], and [5]

Keywords

Weighted symmetry of matrices, Weighted hermitancy matrices.

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