

COMBINATORIAL INDICES AND MATRIX POSITIVITY

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There is a number of important combinatorial matrix classes such as indecomposable matrices, primitive matrices, scrambling matrices, chainable matrices, etc., which are related with the notion of matrix positivity. The central approach to study positivity in these classes is via their numerical invariants. To list a few of them, we mention matrix exponent, scrambling index and solidarity index. These invariants are useful both in fundamental investigations and in applications.

In the talk we give a short exposition of these notions, their applications, and methods to deal with positive matrices on the base of the mentioned notions.

We illustrate the importance of this approach by presenting several recent results on matrix positivity related to the extensions of classical Frobenius and Wielandt theorems.

This is a joint work with Yu. A. Alpin, A. M. Maksaev, E. R. Shafeev.