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REVERSED DETERMINANTAL INEQUALITIES FOR ACCRETIVE–DISSIPATIVE MATRICES

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Abstract. A matrix $A \in M_n(\mathbf{C})$ is said to be accretive-dissipative if, in its Toeplitz decomposition $A = B + iC$, $B = B^*$, $C = C^*$, both matrices B and C are positive definite. Let $A = \begin{bmatrix} A_{11} & A_{12} \\ A_{21} & A_{22} \end{bmatrix}$ be an accretive-dissipative matrix, k and l be the orders of A_{11} and A_{22}, respectively, and let $m = \min\{k,l\}$. It is proved

$$|\det A| \geqslant \frac{(4\kappa)^m}{(1+\kappa)^{2m}} |\det A_{11}||\det A_{22}|,$$

where κ is the maximum of the condition numbers of B and C.

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