ELA

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OPERATOR NORMS OF WORDS FORMED FROM
POSITIVE-DEFINITE MATRICES[*]

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Abstract. Let $\alpha_1, \alpha_2, \ldots, \alpha_n, \beta_1, \beta_2, \ldots, \beta_n$ be strictly positive reals with $\alpha_1 + \alpha_2 + \cdots + \alpha_n = \beta_1 + \beta_2 + \cdots + \beta_n = s$. In this paper, the inequality

$$\||A^{\alpha_1} B^{\beta_1} A^{\alpha_2} \cdots A^{\alpha_n} B^{\beta_n}\|| \leq \||AB\||^s$$

when A and B are positive-definite matrices is studied. Related questions are also studied.

Key words. Positive-definite matrix, Matrix power, Operator norm, Matrix words.

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