

Characterization of the trace by young's inequality

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Abstract

Let φ be a positive linear functional on the algebra of $n \times n$ complex matrices and p, q be positive numbers such that $1/p + 1/q = 1$. We prove that if for any pair A, B of positive semi-definite $n \times n$ matrices the inequality $\varphi(|AB|) \leq \varphi(A^p)/p + \varphi(B^q)/q$ holds, then φ is a positive scalar multiple of the trace. © 2005 Victoria University. All rights reserved.

Keywords

Characterization of the trace, Matrix Young's inequality