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A Minkowski-Type Inequality for the Schatten Norm

Abstract:

Let F be a Schatten p-operator and R, S positive operators. We show that

the inequality $\left| F\left(R+S\right)^{\frac{1}{c}} \right|_p^c \leq \left| FR^{\frac{1}{c}} \right|_p^c + \left| FS^{\frac{1}{c}} \right|_p^c$ for the Schatten p-

norm $\left| \cdot \right|_p$ is true for $p \geq c = 1$ and for $p \geq c = 2$, conjecture it to be

true for $p \geq c \in [1, 2]$, give counterexamples for the other cases, and

present a numerical study for 2×2 matrices. Furthermore, we have a look

at a generalisation of the inequality which involves an additional factor
$\sigma(c, p)$.

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