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A Trace Inequality for Positive Definite Matrices

Authors: [Elena-Veronica Belmega](#), [Samson Lasaulce](#),
[M erouane Debbah](#),

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Abstract: In this note we prove that $\text{Tr} \{MN + PQ\} \geq 0$ when the following two conditions are met: (i) the matrices M, N, P, Q are structured as follows
 $M = A - B$, $N = B^{-1} - A^{-1}$, $P = C - D$,
 $Q = (B + D)^{-1} - (A + C)^{-1}$ (ii) A, B are positive definite matrices
and C, D are positive semidefinite matrices.



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