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Matrix inequalities and multiplicativity results

The multiplicativity of the $q \rightarrow p$ norm of a completely positive qubit channel for $q < 2 < p$ follows from some Hanner-type inequalities involving p -norms of positive semidefinite matrices. These inequalities are reviewed, together with their application to the multiplicativity question. Some extensions of the inequalities are described, and some open problems for qubit and higher dimensional channels are also discussed.