

COLLOQUIUM

Sarah Plosker
Brandon University

The Majorization and Trumping Orders in Quantum Information



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Abstract: Majorization has been used for over a hundred years in mathematics and economics and is now considered a basic tool in matrix theory. In 1999, Nielsen linked majorization with quantum operations described by local operations and classical communication (LOCC), thus giving majorization an important role in the theory of entanglement transforms. We first introduce the definition and major theorems relating to majorization, and then focus on the connections with quantum information theory (QIT), including Nielsen's theorem and the notion of trumping, a useful generalization of majorization.