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State convertibility in the von Neumann algebra framework.

Nielsen characterized the convertibility of two finite-dimensional bipartite pure states via local operations and classical communication (LOCC) using majorization. This important result, which has seen many applications in quantum information, describes the LOCC-transfer of entanglement between bipartite pure states. In this talk, we present a version of Nielsen's theorem in the commuting operator framework using a generalized class of LOCC operations and the theory of majorization in von Neumann algebras. As a corollary, we obtain an operational interpretation of maximal entanglement relative to von Neumann factors of type II_1 . This is joint work with David Kribs, Rupert Levene and Ivan Todorov.