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Operator structures and conditions for quantum one-way LOCC

We study the physical description of Quantum Local Operations and Classical Communications (LOCC) and its schematics. We restrict ourselves to one-way LOCC (one of the schemes of LOCC) and discuss detailed analysis in quantum information of recently derived operator relations. We indicate how operator structures such as operator systems and operator algebras naturally arise from these settings and make use of these structures to derive new result and new derivations of some established results in one-way LOCC. We compare perfect distinguishability of one-way LOCC versus arbitrary quantum operations and show the equivalence relation for several families of operators that appear jointly in matrix and operator theory and quantum information theory.