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Quantum channels, and operator system parameters

Levene, Paulsen, Todorov have extended some well-known graph parameters to operator systems associated with quantum channels. In particular, they introduced the quantum complexity as the dimension of the smallest co-domain Hilbert space a quantum channel requires to realize a given operator system as its non-commutative confusability graph. The quantum complexity and a closely related quantum version of orthogonal rank are upper bounds for the Shannon zero-error capacity of a quantum channel. In this talk, we will present some new upper bounds on the complexity of quantum channels and other operator system parameters.

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