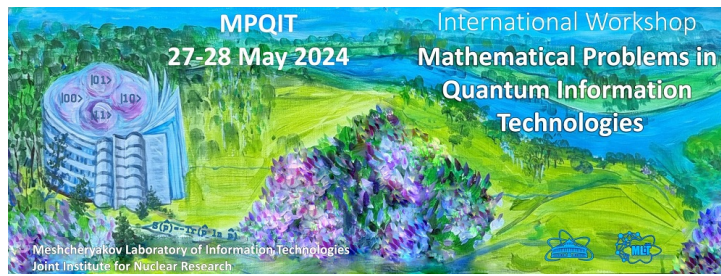


Mathematical Problems in Quantum Information Technologies



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Measure of entanglement production by quantum operations

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A measure of entanglement production by quantum operations is introduced. The suggested measure is general, being valid for operations over pure states as well as over mixed states, for equilibrium as well as for nonequilibrium processes. The measure of entanglement production satisfies all properties typical of such a characteristic. Systems of arbitrary nature can be treated, described by field operators, spin operators, or any other operators, which is realized by defining generalized correlation matrices. The interplay between entanglement production and order indices in quantum systems is analyzed. Particular cases of entanglement production are discussed.

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