

Abstract Submitted
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Optimal Probabilistic Simulation of Quantum Channels from the Future to the Past DINA GENKINA, University of Maryland, GIULIO CHIRIBELLA, LUCIEN HARDY, Perimeter Institute — We introduce the study of probabilistic protocols that simulate quantum channels transforming input states in the future into output states in the past. The maximum probability for such a simulation is set by causality and, we claim, depends on the amount and type (classical or quantum) of information the given channel can transmit. In particular, we focus on probabilistic teleportation with multiple copies of input and output. We show that as the number of input copies increases, the maximum probability of successful teleportation increases, a feature that is impossible in classical physics. As the number of input copies tends to infinity, the teleportation probability converges to the maximum probability for the simulation of an ideal classical channel from the future to the past.

Dina Genkina
University of Maryland

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