

HOW GOOD IS QUANTUM COMMUNICATION?



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*Everyone is invited to
attend*

ABSTRACT

Despite having infinite pure preparations quantum communication can not overpower its classical counterpart, in question of input-independent decoding at receiver's end. This result was first established by A. S. Holevo, considering mutual information as a quantifier of communication utility. Here, exploring a general quantification for the (input-independent) communication scenario, we will introduce a task which can be accomplished perfectly by communicating a two-level quantum system. However, a perfect classical bit, even with infinite dimensional shared randomness is unable to do so. Further, considering the presence of noise in the communication line, we establish that a quantum channel can not always be replaced by a classical channel of identical communication capacity.

