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Bell Nonlocality and Retrospective Error Correction for Noisy Channels

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Using a channel similar to one side of a Bell inequality experiment, we show how the auxiliary resources of shared sender:receiver entanglement and classical back communication, neither of which increases the forward capacity of any classical channel, can greatly increase both the quantum and classical capacities of some quantum channels. Joint work with Igor Devetak, Peter Shor, and John Smolin.