

Eric Chitambar: On the Duality of Teleportation and Dense Coding

Tuesday, 13 June 2023 11:00 (60)

In this talk we'll revisit the classic problem of using noisy entanglement for teleportation. The first task will be to show how this problem can be rephrased as a state discrimination problem. In this picture, a quantitative duality between teleportation and dense coding emerges in which every Alice-to-Bob teleportation protocol can be repurposed as a Bob-to-Alice dense coding protocol, and the quality of each protocol can be measured by the success probability in the same state discrimination problem. One of our main results provides a complete characterization of the states that offer no advantage in one-way teleportation protocols over classical states, thereby offering a new and intriguing perspective on the long-standing open problem of identifying such states. Moreover, our established duality between teleportation and dense coding can be used to show that the exact same states are unable to provide a non-classical advantage for dense coding as well. As open an ongoing work, I will discuss the different bilinear optimization problems when studying the problem of noisy teleportation.

This is joint work with Felix Leditzky (arXiv:2302.14798).