**Current Challenges of Communications in the Quantum World**

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In this talk, we firstly present our projections of the future development of communication technology and the associated challenges – how to design transmitters/receivers and how to control the incurred errors. Secondly, we discuss a fundamental task in the Noisy Intermediate-Scale Quantum era – asymptotic local discrimination between a pair of orthogonal quantum states. That is, we aim to decide which of the two states is true by performing local measurements such as local operations and classical communication (LOCC) on multiple identical copies of the states. We further analyze the asymptotic behavior of the average error probability of discrimination, and demonstrate an exponential separation between the positive-partial-transpose (PPT) operations and separable (SEP) operations in the scenarios of many copies.