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Lossy quantum data compression

Schumacher's theorem establishes that the limit of lossless data compression for a memoryless quantum information source is given by its von Neumann entropy. The requirement of the data compression scheme to be lossless (i.e., for the original data to be recovered with asymptotically vanishing error) is often too stringent a condition. This is especially true in the case of insufficient storage or for continuous variable quantum information sources. It is, therefore, reasonable to allow for a finite distortion in the recovered data. The resulting theory of lossy quantum data compression deals with the trade-off between the rate of data compression and the allowed distortion. In this talk I will present some recent results on this topic.

This is joint work with Mark Wilde, Min-Hsiu Hsieh and Andreas Winter.