Entanglement Assisted Communication of Continuous Information
and
Estimation of Unitary Operations

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We will present a procedure inspired by dense coding, which enables a highly efficient transmission of information of a continuous nature. The procedure requires the sender and the recipient to share a maximally entangled state. We will deal with the concrete problem of aligning reference frames or trihedra by means of a quantum system. We will obtain the optimal covariant measurement and compute the corresponding average error, which has a remarkably simple close form. The connection of this procedure with that of estimating unitary transformations on qubits will be also discussed.

The talk would be a variation on the work "Entanglement assisted alignment of reference frames using a dense covariant coding " in quant-ph/0303019, with some emphasis on the estimation of unitary transformations on quibits, rather than on the alignment of reference frames.