Teleportation and Broadcasting of continuous variable entanglement ARCHAN S. MAJUMDAR, SATYABRATA ADHIKARI, N. NAYAK, S. N. Bose National Centre for Basic Sciences — We present the first example for broadcasting of the entanglement of a two-mode squeezed state of the electromagnetic field shared by two distant parties into two nonlocal bipartite entangled states. Using the technique of covariance matrices we demonstrate the entanglement between the nonlocal output modes and the separability of the local output modes. We find the range of values for the squeezing parameter and the amplifier phase for which broadcasting of continuous variable entanglement can be implemented for physical states. We next present a scheme for teleporting two-mode entangled states of continuous variables from Alice to Bob. Our protocol is operationalized through the creation of a four-mode entangled state shared by Alice and Bob using linear amplifiers and beam splitters. Teleportation of the entangled state proceeds with local operations and the classical communication of four bits. We compute the fidelity of teleportation and find that it exhibits a trade-off with the magnitude of entanglement of the resultant teleported state. [arXiv:0708.1869; arXiv:0710.2777]

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