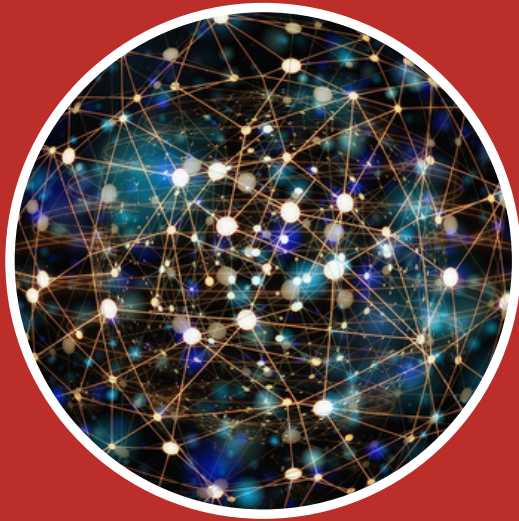


TWO-WAY QUANTUM COMMUNICATION WITH GENERALIZATION OF SUPERDENSE CODING

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A method of two-way communication protocols for transmitting classical bits by using entangled quantum pairs. This protocol caters for provision of entangled pairs, which is assumed to be given in one-way superdense coding. The proposed protocol gives a 50% increase in both data rate and energy

Protection: Denmark, with the possibility to extend internationally

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INVENTION

This method integrates entanglement distribution in the communication protocol itself, meaning that this step also contributes to the data throughput. Two users, communicate bits by sending the qubits of an EPR pair through a quantum channel, in a slotted setting. This quantum transmission occurs each time a "1" appear as information bit to be transmitted. When the last qubit of the pair has to be transmitted, two extra information bit are superdense encoded in the EPR pair. This final burst of information bits provides an improvement compared to the classical scheme.

ADVANTAGES

- Speed of communication increased of 50%
- First step to build a quantum internet

APPLICATIONS

- Using quantum to improve the telecommunication network of what exists
- Building blocks in a network that sends qubits.

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