

## Quantum Key Distribution Scheme Based on Dense Encoding in Entangled States

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**Abstract:** A quantum key distribution protocol, based on the quantum dense encoding in entangled states, is presented. In this protocol, we introduce an encoding process to encode two classical bits information into one of the four one-qubit unitary operations implemented by Alice and the Bell states measurement implemented by Bob in stead of direct measuring the previously shared Einstein-Podolsky-Rosen pairs by both of the distant parties, Alice and Bob. Considering the practical application we can get the conclusion that our protocol has some advantages. It not only simplifies the measurement which may induce potential errors, but also improves the effectively transmitted rate of the generated qubits by the raw key. Here we also discuss eavesdropping attacks against the scheme and the channel loss.

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