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Quantum Encryption Protocol Based on Continuous Variable EPR Correlations

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Abstract: A quantum encryption protocol based on Gaussian-modulated continuous variable EPR correlations is proposed. The security is guaranteed by continuous variable EPR entanglement correlations produced by nondegenerate optical parametric amplifier (NOPA). For general beam splitter eavesdropping strategy, the mutual information $I(\alpha,\varepsilon)$ between Alice and Eve is calculated by employing Shannon information theory. Finally the security analysis is presented.

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Key words: quantum cryptography, quantum encryption, EPR correlations, NOPA

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