Quantum Physics

Proof-of-Concept of Real-World Quantum Key Distribution with Quantum Frames

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We propose and experimentally investigate a fibre-based quantum key distribution system, which employs polarization qubits encoded into faint laser pulses. As a novel feature, it allows sending of classical framing information via sequences of strong laser pulses that precede the quantum data. This allows synchronization, sender and receiver identification, and compensation of time-varying birefringence in the communication channel. In addition, this method also provides a platform to communicate implementation specific information such as encoding and protocol in view of future optical quantum networks. Furthermore, we report on our current effort to develop high-rate error correction.

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