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Qutrit based semi-quantum key distribution protocol

This work provides the unconditional security of a semi quantum key distribution (SQKD) protocol based on 3-dimensional quantum states. By deriving a lower bound for the key rate, in the asymptotic scenario, as a function of the quantum channel's noise, we nd that this protocol has improved secret key rate with much more tolerance for noise compared to the previous 2-dimensional SQKD protocol. Our results highlight that, similar to the fully quantum key distribution protocol, increasing the dimension of the system can increase the noise tolerance in the semi-quantum key distribution, as well.

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