Physical Layer for Polarization Encoded Qubits

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***Abstract*—The abstract goes here.**

***Index Terms*—Communications Society, IEEE, IEEEtran, journal, LaTeX, paper, template.**

I. Introduction

QUANTUM communications provide the required security for any communication protocol to operate. They enable the generation and distribution of cryptographic keys through a unconditional secure physical layer. Nowaydays, one of the widely used technique to encode quantum information is using polarization. However, in optical fiber networks this polarization can change with time, and so that information can be changed and incorrectly decrypted. In order to enable the large deployment of quantum communications using polarization encoding, an active method to compensate changes in polarization should be applied. However, this method should not consume a large bandwidth, nor use extra hardware and also guarantee a low channel error during data transmission.

In this work, we provide a physical layer able to provide unconditional secure and fast keys to any upper-layer protocol. This physical layer should also provide to an upper-layer the quantum bit error rate of the communication channel, the measurement data to generate the keys, a high transmission data window, and the symbol synchronism. In order to illustrate the feasibility of this method, we will integrate this physical layer in the BB84 quantum cryptographic protocol and assess its performance.

A. Subsection Heading Here

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II. Conclusion

The conclusion goes here.

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Appendix A
Proof of the First Zonklar Equation

Appendix one text goes here.

Appendix B

Appendix two text goes here.

References

[1] H. Kopka and P. W. Daly, *A Guide to LaTeX*, 3rd ed. Harlow, England: Addison-Wesley, 1999.

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