



ΓΕΝΙΚΟ ΣΕΜΙΝΑΡΙΟ ΤΜΗΜΑΤΟΣ ΦΥΣΙΚΗΣ

PHYSICS COLLOQUIUM

Thursday, 20 March 2014

17:00 -18:00

3rd Floor Seminar Room

“Quantum cryptography using practical photonic systems”

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Abstract

The ability to distribute secret keys with information-theoretic security is arguably one of the most important achievements of the field of quantum information processing and communications. The rapid progress in this field has enabled quantum key distribution in real world conditions and commercial devices are now available. In this talk, we will first introduce the main ideas behind quantum cryptography and then present recent advances towards long-distance practical photonic implementations of quantum key distribution protocols that use as information carrier the quadratures of the electromagnetic field. We will also discuss current issues related to such implementations, related to potential security loopholes and to their ability to be integrated into the existing telecommunication networks. Finally, we will mention other important quantum cryptographic tasks, involving for instance entangled resources, which will be at the heart of future quantum communication networks.