THE CHINESE UNIVERSITY OF HONG KONG

Department of Physics

COLLOQUIUM

Quantum Communications: Overcoming Practical Challenges

by

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ALL INTERESTED ARE WELCOME
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Abstract

Quantum key distribution (QKD) offers information-theoretic security [1]. Nonetheless, existing QKD networks are often based on trusted relay nodes and is thus highly vulnerable to quantum hacking. Building a QKD network with untrusted relay nodes could substantially improve its security and performance. Here, I will discuss about the motivation and progresses in the design and experimental construction of measurement-device-independent (MDI) QKD networks and its more recent cousin, “twin-field” (TF) QKD networks [2]. The concept of all photonics quantum repeaters and its experimental progress will also be briefly discussed.

[1] F. Xu, X. Ma, Q. Zhang, H.-K. Lo, and J.-W.Pan, Rev. Mod. Phys. 92, 025002 (2020).

[2] X. Zhong, W. Wang, R. Mandil, H-K. Lo and L. Qian, https://arxiv.org/abs/2106.07768 and references cited therein.

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