Quantum key distribution in a telecom network

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In this talk we present the current status of our experiment on a quantum key distribution (QKD) system.

First, we briefly review the key elements of our QKD system based on time-bin entanglement. The entangled photons are provided by spontaneous parametric down-conversion of a 775-nm pulsed source consisting of frequency doubled and fibre amplified radiation from a DFB laser operating at 1550 nm.

After characterizing our source of entangled photons in terms of count rate as well as spectrum, we describe our setup using the time-bin entanglement to exchange a key between Alice and Bob employing Franson interferometers. First tests of this source in a telecom environment provided by the Deutsche Telekom will be discussed.

The future goal of this experiment is the extension of the system towards a small quantum hub where any two of four parties can exchange a key using WDM equipment.