Achievements

Work so far has been focused on identifying the major issues on low power, low bandwidth classical communication systems, in order to establish a parallel with the quantum communications paradigm. This knowledge will then be used to establish a starting point and choose the best course of action, relating to hardware and required DSP compensation techniques.

- The main objective is achieving a real-time field implementation of a CV-based QC system, using a QPSK implementation;
- The experimental setup will be simplified as much as possible, minimizing complexity and noise sources;
- Ultimately, the goal is to achieve improved distance, cost, rate and energy efficiency.

Current approaches capable of long distances rely on the transmission of the local oscillator (LO) with the signal (self-homodyne);
- Transmitting the LO which creates potential security problems;
- Using a Locally Generated Local Oscillator (LLO) would avoid this, but would be more susceptible to phase/frequency offsets;
- This could be dealt with resorting to Digital Signal Processing (DSP) techniques adapted for CV-based QC usage.

![Diagram of QPSK for Continuous-Variable QKD](QPSK_diagram.png)