



Contribution ID: 470

Type: **Poster presentation**

Single photon source driver designed in ASIC

Tuesday 12 June 2018 15:55 (15 minutes)

Single photon source is an important part of quantum key distribution (QKD) system. In current, single photon source in QKD system is large in size and complex in structure. And the miniaturization of source is the development trend of QKD system. We integrate laser driver electronic module into one single ASIC chip, which can be used to drive the laser and we can greatly reduce the volume of the single photon source.

We present the design and simulation of our laser driver chip in the paper. The chip is fabricated in a 130 nm CMOS process. The main components of the chip are a pulse generator and a current driver module. The pulse generator is used to provide a pulse-width-adjustable drive signal by a delay line. The current driver module is used to produce an amplitude-adjustable current signal. The chip can produce a current signal with adjustable pulse width and amplitude. The range of pulse width is from 400ps to 4ns, and the range of amplitude is from 20mA to 120mA. The pulse width and amplitude of current signal is configured by a SPI bus.

The chip with a very small size can generate a current pulse signal of which the amplitude is up to 120mA and the pulse width is from 400ps to 4ns. It can meet the needs of the laser we used. Meanwhile, the design of the laser driver chip provides a direction for miniaturization of the whole QKD system.

Minioral

Yes

Description

single photon

Speaker

Bo Feng

Institute

USTC

Country

China

Author: Mr FENG, Bo (University of Science and Technology of China)

Co-authors: Dr LIANG, Futian (University of Science and Technology of China); Mr WANG, Xinzhe (University of Science and Technology of China); Ms ZHU, Chenxi (University of Science and Technology of China); Mr

ZHU, Yulong (University of Science and Technology of China); Prof. JIN, Ge (Univ. of Science & Tech. of China (CN))

Presenter: Mr FENG, Bo (University of Science and Technology of China)

Session Classification: Poster 1

Track Classification: Upgrades