SAIP2019



Contribution ID: 88

Type: Poster Presentation

Development and testing of a single photon detector for Quantum optics experiments

Quantum communications and computing rely heavily on the use of single photons. Thus there is a need for generating single photons and detecting single photons. In this research we focus on the detection of single photons. We employ avalanche photo detectors (APD) for this purpose. APDs are basically special electrical diodes that are operated in reverse bias beyond the breakdown voltage in the Geiger mode. In the Geiger mode the device is still non-conducting. Upon receiving a single photon an avalanche breakdown occurs resulting in a large current. The device then needs to be quenched before it can detect another photon. In the Geiger mode a high reverse bias voltage needs to be applied and rapidly switched off once a photon is detected. This can be done by means of passive or active quenching methods. In this presentation we provide details of external circuit design of such a single photon detector. Some numerical simulation results are provided together with some experimental results.

Apply to be
 considered for a student
 award (Yes / No)?

no

Level for award
 (Hons, MSc,
 PhD, N/A)?

N/A

Primary author: Mr PENTZ, Rory (Cape Peninsula University of Technology)
Co-author: Dr GOVENDER, Kessie (Cape Peninsula University of Technology)
Presenter: Mr PENTZ, Rory (Cape Peninsula University of Technology)
Session Classification: Poster Session 1

Track Classification: Track F - Applied Physics