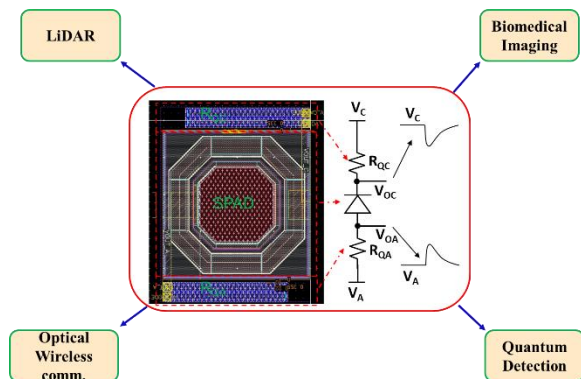


Enhanced Photodiodes for Sensing & Communication



Differential Single photon avalanche diodes (SPADs).

Abstract

Single photon avalanche diodes (SPADs) are capable of detecting very weak light with good timing performance characteristics. These features make SPADs attractive for a number of imaging and range finding applications. The technology developed at McMaster has taken the sensor to a new level. The enhancements to the current design dramatically improve noise rejection, dead time, count rate, after-pulsing, and timing jitter of SPAD based photon-detecting systems. These improved performance characteristics are critical in uses such as biomedical imaging (fluorescence lifetime imaging microscopy, positron emission tomography, diffuse optical imaging, near-infrared spectroscopy), light detection and ranging, optical wireless communication and quantum optical detectors.

Applications

- Sensing and communications - quantum optical detectors
- Light detection and ranging applications (LIDAR)
- Nuclear imaging, fluorescence lifetime imaging, Raman spectroscopy, near infrared spectroscopy
- Optical wireless communication for free space optics and visible light communication

Advantages

- Low cost
- Compact size
- High sensitivity
- Decreased dead time of up to 50%
- Improved noise performance
- Fully compatible with standard process

Tech ID

21-033

Inventors

J. Deen & W. Jiang

Patent Status

US provisional filed

Stage of Research

Proof of principle data available

Contact

Paul Grunthal

Business Development Manager

905-525-9140 ext. 26548

grunth@mcmaster.ca

<http://milo.mcmaster.ca>