The noise introduced by the APD in the optical receiver is

Overview

The dark current generates shot noise, which is typically the dominant source of noise in APDs. It arises because the dark current or photocurrent consists of a many discrete. Optical receivers convert incident optical power P in into electric current through a photodiode. The relation Ip = R Pin assumes that such a conversion is noise free. The improvement in the SNR is due to the internal gain that increases the photocurrent by the multiplication factor M.

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Optical receivers with APD generally provide a higher SNR for the same incident optical power. The improvement in the SNR is due to the internal gain that increases the photocurrent by the ...

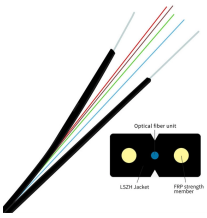
This document discusses noise sources in optical receivers, including shot noise, thermal noise, dark current noise, and 1/f noise. It examines these noise sources in PIN photodiodes and avalanche ...

The sensitivity of APD-based high speed optical receivers is governed by three main competing factors, namely the excess noise, avalanche-buildup time and dark current of the APD. ...

The noise processes such as shot noise, intensity noise, thermal Nyquist noise, and multiplication noise and their influence on the bit-error rate BER are described in detail.

This study presents a comprehensive noise model for PIN and APD-based FSO receivers. PIN receivers are thermal-noise-limited, while APD receivers are shot-noise-limited under ...

Avalanche photodiodes (APDs) produce noise during operation, which affects the device performance. However, the previous research on its noise is mainly theoretical analysis and is only ...



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Fiber-optic communication systems that use optical amplifiers are subject to optical noise, called amplified spontaneous emission (ASE) noise [25–27].

We discuss the dominant noise components for the cases of using a PIN or an APD, and compare their performances at the presence or not of background radiations.

The shot noise and thermal noise are the two fundamental noise mechanisms responsible for current fluctuations in all optical receivers even when the incident optical power P in is constant.

Multiplication noise is inherent to the avalanche multiplication process within the APD. During avalanche multiplication, the generation of secondary carriers (electron-hole pairs) occurs ...

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For more information, pricing, or custom network solutions, please contact us:

Website: https://hashherbcafe.co.za
Email: hello@hashherbcafe.co.za
Phone: +27 63 814 7295
Address: 15 Galaxy Road, Linbro Business Park, Johannesburg, 2065, South Africa

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