

Photon Counting Method Extends Linear Dynamic Range

Track Code: 65678

Categories:

- Electrical Engineering
- Micro & Nanotechnologies

Keywords:

- Electrical Engineering
- Micro & Nanotechnologies
- Microscopy
- Photons
- Spectrometry

Photon counting is a well-established method for detecting low intensity light. However, conventional approaches for photon counting suffer from nonlinearities at high count rates. Several strategies have been adopted for improving the linear dynamic range, but suffer from issues, such as long analysis times and sensitivity differences between instruments.

Researchers at Purdue University have developed a simple photon counting method that provides seven orders of magnitude in linear dynamic range for a single photomultiplier tube detector. This method acquires data by using discriminator-based event counting electronics to measure the count output of a detector. In addition, it bridges an existing gap in maintaining quantitation over measurements with high contrast and has potential application in microscopy and spectroscopy.

Advantages:

- High contrast
- Seven orders of magnitude

Potential Applications:

- Microscopy
- Spectroscopy

People:

- Simpson, Garth J (Project leader)
- Kissick, David Joseph
- Muir, Ryan Douglas

Intellectual Property:

Application Date: September 11, 2014
Type: CIP-Patent
Country of Filing: United States
Patent Number: 10,416,068
Issue Date: September 17, 2019

Application Date: September 19, 2017
Type: DIV-Patent
Country of Filing: United States
Patent Number: 10,162,942
Issue Date: December 25, 2018

Application Date: June 20, 2013
Type: NATL-Patent
Country of Filing: United States
Patent Number: 9,767,258
Issue Date: September 19, 2017

Application Date: September 27, 2011
Type: PCT-Patent
Country of Filing: WO
Patent Number: (None)
Issue Date: (None)

Application Date: September 27, 2011
Type: NATL-Patent
Country of Filing: European Patent
Patent Number: (None)
Issue Date: (None)

Application Date: July 14, 2011
Type: Provisional-Patent
Country of Filing: United States
Patent Number: (None)
Issue Date: (None)

Application Date: September 27, 2010
Type: Provisional-Patent
Country of Filing: United States
Patent Number: (None)
Issue Date: (None)

Contact OTC:

Purdue Office of Technology Commercialization
The Convergence Center
101 Foundry Drive, Suite 2500
West Lafayette, IN 47906

Phone: (765) 588-3475
Fax: (765) 463-3486
Email: otcip@prf.org