All-Optical Regenerators

Tech ID: 11239 / UC Case 2003-538-0

ABSTRACT

Reconfigurable multi-channel all-optical regenerators.

FULL DESCRIPTION

Researchers at the University of California, Davis have developed an all-optical regenerator based on a Mach-Zehnder interferometer. The device is a novel solution to the old problem of optical signal strength dissipation over long distances. It resolves this issue by receiving weak signals, analyzing the data, and regenerating a new optical carrier to be further transmitted. The device does not rely on flawed amplification techniques that magnify not only the signal but also the background noise. Furthermore, it's all-optical nature eliminates the need for conversion of the optical signal to electrical and back. This has huge advantages over other optical-electrical regenerators because it can be easily scaled to large networks, and the simplicity of the design allows this technology to be implemented on a single integrated chip.

APPLICATIONS

- Boost optical signal strength
- Send data over longer distances with reduced introduction of noise

FEATURES/BENEFITS

- Low signal to noise ratio
- Highly scalable
- Amenable to Mass production

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	7,099,586	08/29/2006	2003-538

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OTHER INFORMATION

KEYWORDS

optical, regenerator, Mach, Zehnder, interferometer, signal strength, fiber, optic

CATEGORIZED AS

- **Communications**
  - Internet
  - Networking
  - Wireless
- **Computer**
  - Hardware
- **Optics and Photonics**
  - All Optics and Photonics

RELATED CASES

2003-538-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Higher-Speed and More Energy-Efficient Signal Processing Platform for Neural Networks
- Crystal Orientation Optimized Optical Frequency Shifter
- Hyperspectral Compressive Imaging
- Multi-Wavelength, Nanophotonic, Neural Computing System
- Athermal Nanophotonic Lasers
- Ultra-High Resolution Multi-Platform Heterodyne Optical Imaging
- Multi-Wavelength, Laser Array
- Optical Interposers for Embedded Photonics Integration

- Ultrahigh-Bandwidth Low-Latency Reconfigurable Memory Interconnects by Wavelength Routing
- Development of a CMOS-Compatible, Nano-photonic, Laser
- Energy Efficient and Scalable Reconfigurable All-to-All Switching Architecture
- Compressive High-Speed Optical Transceiver
- Tensorized Optical Neural Network Architecture
- Silicon Based Chirped Grating Emitter for Uniform Power Emission
- Energy-Efficient All-Optical Nanophotonic Computing
- 3D Photonic and Electronic Neuromorphic Artificial Intelligence

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