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Wavelength reuse in the WDM optical interface of **a** millimeter-wave fiber-wireless antenna base station

A Nirmalathas, D Novak, C Lim… - IEEE Transactions on …, 2001 - ieeexplore.ieee.org
A novel technique for wavelength reuse has been proposed to simplify the upstream optical interface of an antenna base station in a millimeter-wave fiber-wireless system incorporating wavelength division multiplexing. This technique is based on recovering the optical carrier …
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Intermodulation distortion improvement for fiber–radio applications incorporating OSSB+ C modulation in **an** optical integrated-access environment

C Lim, AT **Nirmalathas**, KL Lee, D Novak… - Journal of lightwave …, 2007 - osapublishing.org
In this paper, we investigate the reduction of intermodulation distortion (IMD) in fiber–radio systems incorporating a dispersion-tolerant optical single sideband with carrier modulation. We present a systematic analysis and quantification of the third-order IMD generated due to …
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Hybrid multiplexing of multiband optical access technologies towards **an** integrated DWDM network

M Bakaul, **A Nirmalathas**, C Lim… - IEEE photonics …, 2006 - ieeexplore.ieee.org
A hybrid multiplexing scheme with the capability to multiplex optical millimeter-wave, baseband, and intermediate frequency signals is proposed and demonstrated. The proposed scheme enables the convergence of" last mile" wireless and wireline …
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Experimental demonstration of **a** full-duplex indoor optical wireless communication system

K Wang, **A Nirmalathas**, C Lim… - IEEE Photonics …, 2011 - ieeexplore.ieee.org
In this letter, a high-speed full-duplex indoor optical wireless communication system for both down-link and up-link is experimentally demonstrated. The feasibility of simultaneous error-free (bit-error-rate or BER<; 10-9) operation of both a 10-Gbps down-link and a 500-Mbps up …
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5G C-RAN with optical fronthaul: **An** analysis from **a** deployment perspective

C Ranaweera, E Wong, **A Nirmalathas**… - Journal of Lightwave …, 2017 - ieeexplore.ieee.org
The fifth generation (5G) wireless technology is designed to provide significantly faster Internet access, with lower latency, and ubiquitous mobile coverage compared to its predecessors. However, as there will be hundreds and thousands of wireless cells deployed …
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Fiber-wireless networks and subsystem technologies

C Lim, **A Nirmalathas**, M Bakaul… - Journal of Lightwave …, 2009 - ieeexplore.ieee.org
Hybrid fiber-wireless networks incorporating WDM technology for fixed wireless access operating in the sub-millimeter-wave and millimeter-wave (mm-wave) frequency regions are being actively pursued to provide untethered connectivity for ultrahigh bandwidth …
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Subharmonic synchronous mode-locking of **a** monolithic semiconductor laser operating at millimeter-wave frequencies

A Nirmalathas, HF Liu, Z Ahmed… - IEEE Journal of …, 1997 - ieeexplore.ieee.org
Optical pulse trains at millimeter-wave frequencies are generated by subharmonic synchronous mode-locking of a monolithic distributed Bragg reflector semiconductor laser, by which an initially passively mode-locked semiconductor laser is stabilized by injecting …
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A novel local area network emulation technique on passive optical networks

…, M Attygalle, **A Nirmalathas**… - IEEE photonics …, 2005 - ieeexplore.ieee.org

An optical layer solution for intercommunication between customers in a passive optical network by placing a narrow-band fiber Bragg grating close to the star coupler in the feeder fiber is proposed. The local area network (LAN) emulation technique is experimentally …

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The merging of **a** WDM fiber-radio backbone with **a** 25 GHz WDM ring network

C Lim, **A Nirmalathas**, M Attygalle… - IEEE MTT-S …, 2003 - ieeexplore.ieee.org

We propose the merging of millimeter-wave broadband fiber-radio systems with WDM access networks at 25 GHz channel spacing. We investigate the performance characteristics of such fiber-radio systems experimentally and via simulation. The overall performance …

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RZ/CSRZ-DPSK and chirped NRZ signal generation using **a** single-stage dual-electrode Mach-Zehnder modulator

YJ Wen, **A Nirmalathas**, DS Lee - IEEE photonics technology …, 2004 - ieeexplore.ieee.org

This letter presents a novel configuration for return-to-zero (RZ) differential phase-shift keyed (DPSK), carrier-suppressed (CS) RZ DPSK, and chirped nonreturn-to-zero (CNRZ) signal generation, which only requires a single-stage dual-electrode Mach-Zehnder modulator (DE …

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5G C-RAN architecture: **A** comparison of multiple optical fronthaul networks

C Ranaweera, E Wong, **A Nirmalathas**… - … on Optical Network …, 2017 - ieeexplore.ieee.org
The development of the fifth generation (5G) wireless technology is in progress to address the increasing demands for high capacity, low latency, and ubiquitous mobile access instigated by next-generation mobile and machine-centric applications. The …
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An exact analytical model for dispersive transmission in microwave fiber-optic links using Mach-Zehnder external modulator

L Cheng, S Aditya, **A Nirmalathas** - IEEE Photonics Technology …, 2005 - ieeexplore.ieee.org
A new exact analytical model is presented to analyze the dispersive transmission in microwave fiber-optic links using a dual-drive Mach-Zehnder external modulator (DD-MZM). The model is very general and can be applied to almost all operating conditions of DD-MZM …
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Optical clock recovery at line rates via injection locking of **a** long cavity Fabry-Pe/spl acute/rot laser diode

Y Yang, YJ Wen, **A Nirmalathas**… - IEEE Photonics …, 2004 - ieeexplore.ieee.org
We present a new scheme for realizing optical clock recovery by injection locking a long cavity Fabry-Pe/spl acute/rot laser diode. A 32.48-GHz optical clock with low level of timing jitter (0.38 ps) and high extinction ratio (23 dB) was recovered from a 32.48-Gb/s return-to …
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Experimental demonstration of **a** novel indoor optical wireless localization system for high-speed personal area networks

K Wang, **A Nirmalathas**, C Lim, E Skafidas - Optics letters, 2015 - osapublishing.org
In this Letter, we propose a novel indoor localization system based on optical wireless technology. By using the same architecture as the high-speed full-duplex indoor optical wireless communication system, the “search and scan” process, and the added transmission …
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Transmission improvement in fiber wireless links using fiber Bragg gratings

…, C Lim, GJ Pendock, **A Nirmalathas**… - IEEE photonics …, 2004 - ieeexplore.ieee.org
We demonstrate a simple, passive technique for significant improvement of transmission performance in fiber wireless links through the application of a narrow-band fiber Bragg grating. The grating is used to optimize the optical modulation depth in the transmitted signal …
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Analysis of optical carrier-to-sideband ratio for improving transmission performance in fiber-radio links

C Lim, M Attygalle, **A Nirmalathas**… - IEEE Transactions …, 2006 - ieeexplore.ieee.org
In this paper, we investigate the optimum carrier-to-sideband ratio (CSR) for maximizing the transmission performance of an optically modulated millimeter-wave signal in a fiber-wireless system via experiment, theory, and simulation. We present a simple analytical …
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Efficient multiplexing scheme for wavelength-interleaved DWDM millimeter-wave fiber-radio systems

M Bakaul, **A Nirmalathas**, C Lim… - IEEE Photonics …, 2005 - ieeexplore.ieee.org
A simple multiplexing scheme is proposed and demonstrated with the capability to interleave optically modulated 37.5-GHz radio channels in a dense-wavelength-division-multiplexed fiber-radio system with 25-GHz wavelength spacing, and also enable a carrier …
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Millimeter-wave broad-band fiber-wireless system incorporating baseband data transmission over fiber and remote LO delivery

C Lim, **A Nirmalathas**, D Novak… - Journal of lightwave …, 2000 - osapublishing.org
We present the first demonstration of a millimeter-wave (mm-wave) broadband fiber-wireless system which incorporates baseband data transmission in both the downstream (622 Mb/s) and upstream (155 Mb/s) directions. The local oscillator (LO) required at the remote antenna …
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Techniques for multichannel data transmission using **a** multisection laser in millimeter-wave fiber-radio systems

C Lim, **A Nirmalathas**, D Novak - IEEE transactions on …, 1999 - ieeexplore.ieee.org

We present two techniques for the transmission of multiple modulated millimeter-wave (MM-wave) frequencies using a multisection laser and demonstrate both methods in the upstream path of a MM-wave fiber-radio system. In these modulation schemes, the laser is stabilized …

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High-speed optical wireless communication system for indoor applications

K Wang, **A Nirmalathas**, C Lim… - IEEE Photonics …, 2011 - ieeexplore.ieee.org

A novel high-speed optical wireless communication system for indoor personal area networking applications is proposed and studied. A proof-of-concept experiment at 12.5-Gb/s wireless transmission has been successfully demonstrated with limited mobility. When …

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Radio-over-fiber technologies for emerging wireless systems

…, RB Waterhouse, **A Nirmalathas**… - IEEE Journal of …, 2015 - ieeexplore.ieee.org
Radio-over-fiber transmission has extensively been studied as a means to realizing a fiber optic wireless distribution network that enables seamless integration of the optical and wireless network infrastructures. Emerging wireless communication networks that support …
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Simplified generation, transport, and data recovery of millimeter-wave signal in **a** full-duplex bidirectional fiber-wireless system

AHMR Islam, M Bakaul, **A Nirmalathas**… - IEEE Photonics …, 2012 - ieeexplore.ieee.org
A millimeter-wave (mm-wave) full-duplex bidirectional fiber-wireless (Fi-Wi) system employing a combination of uncorrelated optical heterodyning and radio frequency (RF) self-homodyning is proposed and demonstrated. The proposed system significantly simplifies …
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Digitized radio-over-fiber technologies for converged optical wireless access network

A Nirmalathas, PA Gamage, C Lim… - Journal of Lightwave …, 2010 - osapublishing.org
With the rapid deployment of optical access networks and the growing availability of mature and cost-effective opto-electronic system technologies, a unified optical feeder network could provide seamless integration of both broadband optical and wireless access networks …
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The impact of grating dispersion on transmission performance in **a** millimeter-wave fiber-radio system

C Marra, **A Nirmalathas**, D Novak, C Lim… - IEEE Photonics …, 2002 - ieeexplore.ieee.org
The authors investigate the impact of fiber Bragg grating (FBG) dispersion when used as an optical filter to generate optical single sideband with carrier (OSSB+ C) modulation to mitigate fiber chromatic dispersion effects in a millimeter-wave fiber-wireless system …
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Digitized RF-over-fiber technique as **an** efficient solution for wideband wireless OFDM delivery

Y Yang, C Lim, **A Nirmalathas** - OFC/NFOEC, 2012 - ieeexplore.ieee.org
1. Introduction Orthogonal frequency-division multiplexing (OFDM), with its inherent advantages of spectral efficient, dispersion tolerance, immunity to multi-path fading, and ease of channel equalization, has been studied as **a** popular and leading modulation scheme for wideband wireless …
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Design and analysis of digitized RF-over-fiber links

PA Gamage, **A Nirmalathas**, C Lim… - Journal of lightwave …, 2009 - osapublishing.org
In this paper, we present a performance analysis of microwave signal transmission by deploying digitized RF transport over a standard optical fiber link. The bandpass sampling technique is used to digitize the RF signal. An analytical model, which is transparent to any …
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Hybrid fiber-wireless network: **An** optimization framework for survivable deployment

…, C Lim, L Guo, Y Liu, **A Nirmalathas**… - Journal of Optical …, 2017 - osapublishing.org
Hybrid fiber-wireless (FiWi) networks, which benefit from high bandwidth and ubiquitous access of optical and wireless networks, have been identified as a promising technology candidate for next-generation broadband access. As various component/fiber failures may …
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Dispersion-tolerant multiple WDM channel millimeter-wave signal generation using **a** single monolithic mode-locked semiconductor laser

M Attygalle, C Lim, **A Nirmalathas** - Journal of lightwave …, 2005 - osapublishing.org
This paper presents a scheme by which multiple wavelength-division-multiplexed millimeter-wave (mm-wave) signals in the range of 30 GHz can be generated from a single monolithic semiconductor laser for applications in optically fed mm-wave networks or fiber radio …
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Technique for increasing optical spectral efficiency in millimetre-wave WDM fibre-radio

C Lim, **A Nirmalathas**, D Novak, RS Tucker… - Electronics …, 2001 - ieeexplore.ieee.org

A novel technique for increasing the spectral efficiency of millimetre-wave fibre-radio systems by employing wavelength interleaving in conjunction with optical single sideband modulation, is proposed and demonstrated. The technique has been demonstrated …

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Performance analysis of optimized millimeter-wave fiber radio links

T Kurniawan, **A Nirmalathas**, C Lim… - IEEE transactions on …, 2006 - ieeexplore.ieee.org

We present a comprehensive performance analysis of several optimized fiber radio distribution schemes for millimeter-wave radio services. The analysis includes the noise and nonlinear characteristics of the transmitter (Tx)-receiver (Rx) pair integrated with the analog …

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