GPS-free geolocation using LoRa in low-power WANs

Internet of Things (IoT) has been growing over the last few years in multiple applications and due to the high need for geolocation and tracking capabilities, an innovative opportunity arises. Whereas geolocation is traditionally based on GPS units this paper reports on a design and implementation of a LoRaWAN tracking system which is capable exploiting transmitted packages to calculate the current position without the use of GPS or GSM. This is done using the low power technology LoRa where the geolocation is calculated applying a multilateration algorithm on the gateways timestamps from received packages. The whole system consisted of an end-node, four gateways, a server and a java application to store the obtained data in a MySQL database.

General information
State: Published
Organisations: Department of Photonics Engineering, Networks Technology and Service Platforms, Technical University of Denmark
Authors: Petersen, M. N. (Intern), Fargas, B. C. (Ekstern)
Number of pages: 6
Publication date: 2017
Investigation of Alien Wavelength Quality in Live Multi-Domain, Multi-Vendor Link Using Advanced Simulation Tool

This article presents an advanced optical model for simulation of alien wavelengths in multi-domain and multi-vendor dense wavelength-division multiplexing networks. The model aids optical network planners with a better understanding of the non-linear effects present in dense wavelength-division multiplexing systems and better utilization of alien wavelengths in future applications. The limiting physical effects for alien wavelengths are investigated in relation to power levels, channel spacing, and other factors. The simulation results are verified through experimental setup in live multi-domain dense wavelength-division multiplexing systems between two national research networks: SURFnet in Holland and NORDUnet in Denmark.

General information
State: Published
Organisations: Department of Photonics Engineering, Networks Technology and Service Platforms, SURFnet, NORDUnet A/S
Authors: Petersen, M. N. (Intern), Nuijts, R. (Ekstern), Bjorn, L. L. (Ekstern)
Pages: 224-231
Publication date: 2014
Main Research Area: Technical/natural sciences
Publication information
Journal: Fiber and Integrated Optics
Volume: 33
SONEP: A Software-Defined Optical Network Emulation Platform

Network emulation has been one of the tools of choice for conducting experiments on commodity hardware. In the absence of an easy to use optical network test-bed, researchers can significantly benefit from the availability of a flexible/programmable optical network emulation platform. Exploiting the lightweight system virtualization, which is recently supported in modern operating systems, in this work we present the architecture of a Software-Defined Network (SDN) emulation platform for transport optical networks and investigate its usage in a use-case scenario. To the best of our knowledge, this is for the first time that an SDN-based emulation platform is proposed for modeling and performance evaluation of optical networks. Coupled with recent trend of extension of SDN towards transport (optical) networks, the presented tool can facilitate the evaluation of innovative idea before actual implementations and deployments. In addition...
to the architecture of SONEP, a use-case scenario to evaluate the quality of transmission (QoT) of alien wavelengths in transport optical networks, along with performance results are reported in this piece of work. © 2014 IFIP.

**General information**
- **State:** Published
- **Organisations:** Department of Photonics Engineering, Networks Technology and Service Platforms, Gesellschaft für Wissenschaftliche Datenverarbeitung GmbH
- **Authors:** Azodolmolky, S. (Intern), Petersen, M. N. (Intern), Fagertun, A. M. (Intern), Wieder, P. (Ekstern), Ruepp, S. R. (Intern), Yahyapour, R. (Ekstern)
- **Pages:** 216-221
- **Publication date:** 2014

**Host publication information**
- **Title of host publication:** Proceedings of the 18th International Conference on Optical Network Design and Modeling – ONDM 2014
- **Publisher:** IEEE
- **ISBN (Print):** 9783901882609
- **BFI conference series:** International Conference on Optical Networking Design and Modeling (5010182)
- **Main Research Area:** Technical/natural sciences
- **Conference:** 18th International Conference on Optical Network Design and Modeling (ONDM 2014), Stockholm, Sweden, 19/05/2014 - 19/05/2014
- **Source:** PublicationPreSubmission
- **Source-ID:** 91412987
- **Publication:** Research - peer-review › Article in proceedings – Annual report year: 2014

**Field Trial of 40 Gb/s Optical Transport Network using Open WDM Interfaces**
An experimental field-trial deployment of a 40Gb/s open WDM interface in an operational network is presented, in cross-carrier interconnection scenario. Practical challenges of integration and performance measures for both native and alien channels are outlined.

**General information**
- **State:** Published
- **Organisations:** Department of Photonics Engineering, Networks Technology and Service Platforms, TDC A/S
- **Authors:** Fagertun, A. M. (Intern), Ruepp, S. R. (Intern), Petersen, M. N. (Intern), Skjoldstrup, B. (Ekstern)
- **Number of pages:** 2
- **Publication date:** 2013

**Host publication information**
- **Title of host publication:** 18th OptoElectronics and Communications Conference held jointly with 2013 International Conference on Photonics in Switching (OECC/PS)
- **Publisher:** IEEE
- **Main Research Area:** Technical/natural sciences
- **Conference:** 18th OptoElectronics and Communications Conference (OECC 2013), Kyoto, Japan, 30/06/2013 - 30/06/2013
- **Electronic versions:** Field_Trial_of_40_Gb_s_Optical_Transport.pdf

**Relations**
- **Projects:**
  - Field Trial of 40 Gb/s Optical Transport Network using Open WDM Interfaces
- **Source:** dtu
- **Source-ID:** u::8210
- **Publication:** Research - peer-review › Article in proceedings – Annual report year: 2013

**In-Building Wireless Distribution in legacy Multimode Fiber with an improved RoMMF system**
A radio over multimode fiber (RoMMF) system for in-building wireless distribution employing a directly modulated Fabry-Perot (FP) transmitter and the central launch technique is presented. The worst-case spurious free dynamic range (SFDR) exceeds 105 dBiHz2/3 up to 525 m of OM2 multimode fiber (MMF). Experimental and theoretical results are reported showing that this scheme outperforms a RoMMF system employing a distributed feedback (DFB) laser diode (LD) and/or a mode scrambler to achieve overfilled launch (OFL). Long Term Evolution (LTE) signal transmission is achieved with high quality in terms of Adjacent Channel Leakage Ratio (ACLR) and Error Vector Magnitude (EVM).

**General information**
- **State:** Published
- **Organisations:** Department of Photonics Engineering, Networks Technology and Service Platforms, Università di Bologna, SPINNER consortium, CommScope Italy S.r.l.
Design and OAM&P aspects of a DWDM system equipped with a 40Gb/s PM-QPSK alien wavelength and adjacent 10Gb/s channels

We present theoretical and experimental investigations of the interaction, in terms of BER performance, between a 40Gb/s PM-QPSK alien wavelength and adjacent (50GHz spacing) 10Gb/s NRZ-OOK channels. Experiments were conducted on the Hamburg-Copenhagen section of the Amsterdam-Copenhagen CBF (Cross Border Fiber) connection between SURFnet and NORDUnet. Furthermore, we investigated the OAM&P (Operation, Administration, Maintenance and Provisioning) of an alien wavelength in CBF transmission systems.

General information
State: Published
Organisations: Networks Technology and Service Platforms, Department of Photonics Engineering, SURFnet, NORDUnet A/S
Authors: Nuijts, R. (Ekstern), Bjørn, L. L. (Ekstern), Petersen, M. N. (Intern), Manolova, A. V. (Intern)
Number of pages: 8
Publication date: 2011

Host publication information
Title of host publication: Proceedings of the TERENA Networking Conference
ISBN (Print): 978-90-77559-00-0
Main Research Area: Technical/natural sciences
Conference: The TERENA Networking Conference, Prague, Czech Republic, 01/01/2011
NREN, PM-QPSK, OAM&P, DWDM, Alien wavelength
Electronic versions:
TNC2011_slides_Terena_2011Alien_1.0.pdf
Links:
https://tnc2011.terena.org/
Source: orbit
Source-ID: 277362
Publication: Research - peer-review › Article in proceedings – Annual report year: 2011

Influence of transmitter chirp and receiver imperfections on RF gain in short-range ROMMF systems

Two important effects that can lead to extensive detrimental effects on short-range radio-over-multimode-fiber systems are presented. The work experimentally shows how transmitter chirp and receiver imperfections determine the degree of both small signal RF variations as well as optical power variations. Both theoretical and experimental results conclude that without taking proper precautions in designing even short-range links, the potential power variations can reach more than 5 dB over just 150m multimode-fiber.

General information
State: Published
Organisations: Networks Technology and Service Platforms, Department of Photonics Engineering, Università di Bologna, Andrew Wireless Systems S.r.l.
Authors: Petersen, M. N. (Intern), Tartarini, G. (Ekstern), Visani, D. (Ekstern), Faccin, P. (Ekstern), Tarlazzi, L. (Ekstern)
Pages: 822-824
Publication date: 2011
Main Research Area: Technical/natural sciences

Publication information
Journal: Microwave & Optical Technology Letters
Volume: 53
Issue number: 4
ISSN (Print): 0895-2477
Ratings:
BFI (2017): BFI-level 1
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 0.87 SJR 0.299 SNIP 0.568
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.337 SNIP 0.52 CiteScore 0.72
BFI (2014): BFI-level 1
Accounting for PMD temporal correlation during lightpath set up in GMPLS-controlled optical networks

General information
State: Published
Organisations: Networks Technology and Service Platforms, Department of Photonics Engineering, Scuola Superiore Sant'Anna
Authors: Sampo, N. (Ekstern), Secondini, M. (Ekstern), Andriolli, N. (Ekstern), Petersen, M. N. (Intern), Castoldi, P. (Ekstern)
Pages: OMU2
Publication date: 2010

Host publication information
Title of host publication: proceedings OFC/NFOEC
Accounting for PMD Temporal Correlation During Lightpath Set Up in Transparent Optical Networks

In transparent optical networks, the signal transmission is degraded by optical layer physical impairments. Therefore, lightpaths may be blocked due to unacceptable quality of transmission (QoT). Among physical impairments, polarization mode dispersion (PMD) is a detrimental effect which has stochastic characteristics. Moreover, PMD depends on time-variant factors, such as the temperature and the fiber stress. When implementing a dynamic GMPLS-controlled transparent optical network, the GMPLS protocol suite must take into account physical impairment information in order to establish lightpaths while guaranteeing the required QoT. In the literature, solutions for QoT-aware GMPLS control plane commonly consider that the effects of PMD on QoT are not detrimental when the average differential group delay (DGD) does not exceed a threshold. However, even with a high average DGD, it may happen that the instantaneous DGD is not detrimental. Additionally, given PMD temporal correlation properties, once that the instantaneous DGD is not detrimental, it continues to be not detrimental within considerable time ranges. Therefore, more accurate models can be implemented in the GMPLS control plane to account for PMD. In this paper we propose a novel lightpath provisioning scheme based on a PMD prediction model which accounts for PMD temporal correlation properties. The proposed PMD-temporal-correlation (PTC) based lightpath provisioning scheme is compared with a scheme based on a classical PMD model. Simulation results show that PTC scheme significantly reduces the lightpath blocking probability with respect to the classical scheme. Moreover, PTC demonstrates that, by considering PMD temporal correlation, the transparency domain size can be increased, since paths that would be rejected by a classical model can be actually accepted within specific time ranges.

General information
State: Published
Organisations: Networks Technology and Service Platforms, Department of Photonics Engineering
Authors: Sambo, N. (Ekstern), Secondini, M. (Ekstern), Andriolli, N. (Ekstern), Petersen, M. N. (Intern), Castoldi, P. (Ekstern)
Pages: 3307-3313
Publication date: 2010
Main Research Area: Technical/natural sciences

Publication information
Journal: Journal of Lightwave Technology
Volume: 28
Issue number: 22
ISSN (Print): 0733-8724
Ratings:
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.87 SJR 1.233 SNIP 1.881
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.689 SNIP 1.955 CiteScore 4.15
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.801 SNIP 2.423 CiteScore 4.23
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.533 SNIP 2.341 CiteScore 4.03
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.711 SNIP 2.335 CiteScore 3.21
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Effects of laser frequency chirp on modal noise in short-range radio over multimode fiber links

An important effect of the frequency chirp of the optical transmitter in radio over multimode fiber links is put into evidence experimentally and modeled theoretically for the first time, to our knowledge. This effect can have an important impact in short-range connections, where, although intermodal dispersion does not generally cause unacceptable limitations to the transmittable bandwidth, the presence of modal noise must be accurately kept under control, since it determines undesired real-time fluctuations of the link.

General information
State: Published
Organisations: Networks Technology and Service Platforms, Department of Photonics Engineering, Università di Bologna, Andrew Wireless Systems S.r.l.
Authors: Visani, D. (Ekstern), Tartarini, G. (Ekstern), Petersen, M. N. (Intern), Faccin, P. (Ekstern), Tarlazzi, L. (Ekstern)
Pages: 1032-1040
Publication date: 2010
Main Research Area: Technical/natural sciences

Publication information
Journal: Applied Optics
Volume: 49
Issue number: 6
ISSN (Print): 1559-128X
Ratings:
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.61 SJR 0.633 SNIP 1.095
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.826 SNIP 1.225 CiteScore 1.66
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.066 SNIP 1.534 CiteScore 2.04
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.991 SNIP 1.616 CiteScore 1.98
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.046 SNIP 1.496 CiteScore 1.79
ISI indexed (2012): ISI indexed no
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.044 SNIP 1.777 CiteScore 1.92
ISI indexed (2011): ISI indexed no
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 1.082 SNIP 1.636
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.222 SNIP 1.71
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.334 SNIP 1.711
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.216 SNIP 1.613
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 1.135 SNIP 1.748
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 1.192 SNIP 1.767
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 1.053 SNIP 1.889
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 1.236 SNIP 1.679
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 1.221 SNIP 1.922
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 1.424 SNIP 1.724
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 1.102 SNIP 1.04
Scopus rating (1999): SJR 2.032 SNIP 0.99
Original language: English
Electronic versions:
59BABd01.pdf
DOIs:
10.1364/AO.49.001032
Referring to short-range radio over multimode fiber links, we find out important guidelines for the realization of cost-effective intensity modulated directly detected systems. Since the quality of today's connectors is considerably higher than in the past, we demonstrate that two important parameters of the system are the finite detecting area of the photodiode and the laser frequency chirp. Furthermore, we show that the use of the central launch technique inherently determines a lower impact of modal noise fluctuations with respect to the offset launch one. This makes CL more convenient for short-range applications, where the transmittable bandwidth does not constitute the main limitation.
Reducing Modal Noise in Short-Range Radio over Multimode Fibre Links

Reducing gain fluctuations in Short Range Radio over Multimode Fiber Links requires Central Launch. Furthermore, the quality of today's optical connectors gives importance to the combined effect of finite detecting area and Laser frequency chirp.

General information
State: Published
Organisations: Networks Technology and Service Platforms, Department of Photonics Engineering, University of Bologna, Andrew Wireless Systems S.r.l.
Authors: Visani, D. (Ekstern), Tartarini, G. (Ekstern), Petersen, M. N. (Intern), Tarlazzi, L. (Ekstern), Faccin, P. (Ekstern)
Pages: JWA56
Publication date: 2010

Host publication information
Title of host publication: Proceedings of OFC/NFOEC
Publisher: Optical Society of America
Main Research Area: Technical/natural sciences
Photonics in switching: enabling technologies and subsystem design

This paper describes recent research activities and results in the area of photonic switching carried out within the framework of the EU-funded e-Photon/ONe+ network of excellence, Virtual Department on Optical Switching. Technology aspects of photonics in switching and, in particular, recent advances in wavelength conversion, ring resonators, and packet switching and processing subsystems are presented as the building blocks for the implementation of a high-performance router for the next-generation Internet.

General information
State: Published
Organisations: Networks Technology and Service Platforms, Department of Photonics Engineering
Pages: 404-428
Publication date: 2009
Main Research Area: Technical/natural sciences

Publication information
Volume: 8
Issue number: 5
ISSN (Print): 1943-0620
Ratings:
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): SJR 0.621 SNIP 1.325 CiteScore 3.06
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.883 SNIP 1.736 CiteScore 3.39
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.861 SNIP 1.857 CiteScore 3.24
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.605 SNIP 1.693 CiteScore 2.51
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.839 SNIP 1.918 CiteScore 2.71
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.897 SNIP 3.962 CiteScore 2.99
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.705 SNIP 2.38
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.713 SNIP 1.04
PMD Monitoring using Optical Sideband Filtering

This paper presents a simple PMD monitoring technique based on optical sideband filtering, which requires no change to the transmitter. The method is numerically and experimentally verified and tested in a real-time PMD monitoring experiment.

Noise filtering in a multi-channel system using a tunable liquid crystal photonic bandgap fiber

This paper reports on the first application of a liquid crystal infiltrated photonic bandgap fiber used as a tunable filter in an optical transmission system. The device allows low-cost amplified spontaneous emission (ASE) noise filtering and gain equalization with low insertion loss and broad tunability. System experiments show that the use of this filter increases for times the distance over which the optical signal-to-noise ratio (OSNR) is sufficient for error-free transmission with respect to the case in which no filtering is used.
Dispersion monitoring in all-optical networks using wavelength conversion based on FWM

The first demonstration of chromatic dispersion monitoring in optical networks having employed all-optical wavelength conversion is described. Experimental results confirm that dispersion monitoring based on an in-band subcarrier tone combined with wavelength conversion based on four-wave mixing (FWM) render dispersion monitoring possible in an optical network utilising wavelength conversion.

General information
State: Published
Organisations: Networks Technology and Service Platforms, Department of Photonics Engineering
Authors: Petersen, M. N. (Intern)
Pages: 582-584
Publication date: 2007
Main Research Area: Technical/natural sciences

Publication information
Journal: Electronics Letters
Volume: 43
Issue number: 10
ISSN (Print): 0013-5194
Ratings:
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): SJR 0.442 SNIP 0.882 CiteScore 1.35
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.497 SNIP 1.011 CiteScore 1.31
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.522 SNIP 1.061 CiteScore 1.31
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.59 SNIP 1.155 CiteScore 1.45
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.631 SNIP 1.161 CiteScore 1.45
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.634 SNIP 1.098 CiteScore 1.44
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.637 SNIP 1.011
Novel OSNR Monitoring Technique in Dense WDM Systems using Inherently Generated CW Monitoring Channels

We present a simple, yet effective OSNR monitoring technique based on an inherent effect in the optical modulator. Highly accurate OSNR monitoring is demonstrated in a 40 Gb/s dense WDM system with 50 GHz channel spacing.

General information
State: Published
Organisations: Networks, Department of Photonics Engineering
Authors: Petersen, M. N. (Intern)
Pages: OMM4
Publication date: 2007

Host publication information
Publisher: IEEE
ISBN (Print): 1-55752-831-4
Main Research Area: Technical/natural sciences
Electronic versions:
Petersen.pdf
DOIs:
10.1109/OFC.2007.4348599
Source: orbit
Source-ID: 208961
Publication: Research - peer-review › Article in proceedings – Annual report year: 2007
Optimisation of 40 Gb/s wavelength converters based on four-wave mixing in a semiconductor optical amplifier

The optimum operating powers and wavelengths for a 40 Gb/s wavelength converter based on four-wave mixing in a semiconductor optical amplifier are inferred from experimental results. From these measurements, some general rules of thumb are derived for this kind of devices. Generally, the optimum signal power should be 10 dB lower than the pump power (~16 dB conversion efficiency) whereas the wavelength separation between the signal and the pump carrier should not be lower than about four times the signal bitrate (1.3 nm for 40 Gb/s RZ signals).

General information
State: Published
Organisations: Networks Technology and Service Platforms, Department of Photonics Engineering
Authors: Schulze, K. (Ekstern), Petersen, M. N. (Intern), Herrera, J. (Ekstern), Ramos, F. (Ekstern), Marti, J. (Ekstern)
Pages: 158-160
Publication date: 2007
Main Research Area: Technical/natural sciences

Publication information
Journal: Optics Communications
Volume: 276
Issue number: 1
ISSN (Print): 0030-4018
Ratings:
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): SJR 0.633 SNIP 0.924 CiteScore 1.65
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 0.711 SNIP 0.987 CiteScore 1.62
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 0.719 SNIP 1.058 CiteScore 1.62
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 0.746 SNIP 1.175 CiteScore 1.78
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 0.813 SNIP 1.151 CiteScore 1.63
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 0.814 SNIP 1.21 CiteScore 1.62
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 0.935 SNIP 1.18
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.047 SNIP 1.218
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.139 SNIP 1.24
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.069 SNIP 1.069
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 1.065 SNIP 1.214
Web of Science (2006): Indexed yes
Signal Quality Monitoring of 40 Gb/s Optical Signal Using a Low Bit-Rate Reference Channel

General information
State: Published
Organisations: Department of Photonics Engineering, Networks Technology and Service Platforms
Authors: Petersen, M. N. (Intern)
Publication date: 2007

Host publication information
Title of host publication: Proc. of OECC/IOOC
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 208964
Publication: Research - peer-review » Article in proceedings – Annual report year: 2007

Signal quality monitoring of 40 Gb/s optical signal using a low bit-rate reference channel

General information
State: Published
Organisations: Networks Technology and Service Platforms, Department of Photonics Engineering
Authors: Petersen, M. N. (Intern), Tokle, T. (Intern)
Publication date: 2007

Host publication information
Title of host publication: Proceedings of OECC
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 228395
Publication: Research - peer-review » Article in proceedings – Annual report year: 2007

Optical Performance Monitoring and Signal Optimization in Optical Networks
The thesis studies performance monitoring for the next generation optical networks. The focus is on all-optical networks with bit-rates of 10 Gb/s or above. Next generation all-optical networks offer large challenges as the optical transmitted distance increases and the occurrence of electrical-optical-electrical regeneration points decreases. This thesis evaluates the impact of signal degrading effects that are becoming of increasing concern in all-optical high-speed networks due to all-optical switching and higher bit-rates. Especially group-velocity-dispersion (GVD) and a number of nonlinear effects will require enhanced attention to avoid signal degradations. The requirements for optical performance monitoring features are discussed, and the thesis evaluates the advantages and necessity of increasing the level of performance monitoring parameters in the physical layer. In particular, methods for optical-signal-to-noise-ratio (OSNR) monitoring, GVD monitoring, all-optical bit parity calculations, and signal quality optimization are proposed.
Accurate OSNR Monitoring and Nonlinear Analysis of Signals in Dense WDM Systems Utilizing Polarization Interleaving of Adjacent Channels.

A method for accurate OSNR monitoring and identification of nonlinear effects is experimentally demonstrated in dense WDM systems utilizing polarization interleaving of odd and even channels.

Accurate OSNR Monitoring in Dense WDM Systems Utilizing Polarization Interleaving of Adjacent Channels,

Accurate OSNR Monitoring in Dense WDM Systems Utilizing Polarization Interleaving of Adjacent Channels,
Performance Monitoring in the Next Generation of Optical Networks

General information
State: Published
Organisations: Networks, Department of Photonics Engineering
Authors: Petersen, M. N. (Intern)
Pages: 1-3
Publication date: 2006

Host publication information
Title of host publication: International Conference on Photonics in Switching, 2006. PS ’06.
Publisher: Proc. Photonics in Switching Conference 2006
ISBN (Print): 978-0-7803-9790-3
Main Research Area: Technical/natural sciences
Electronic versions:
Petersen2.pdf
Source: orbit
Source-ID: 191215
Publication: Research - peer-review › Article in proceedings – Annual report year: 2006

10 Gb/s Non-Regenerated Pure Ethernet Field Trials Dark Fibers

General information
State: Published
Organisations: Networks, Department of Photonics Engineering, Automation, Department of Electrical Engineering
Authors: Petersen, M. N. (Intern), Olsen, M. H. (Intern), Berger, M. S. (Intern)
Pages: 49-54
Publication date: 2005

Host publication information
Title of host publication: Proc. of Optical Network Design & Modelling Conference 2005
Main Research Area: Technical/natural sciences
Conference: ONDM 2005, Milan, Italy, 01/01/2005
Source: orbit
Source-ID: 178101
Publication: Research - peer-review › Article in proceedings – Annual report year: 2005

Experimental and Theoretical Demonstration of Launch Power Optimization using a Subcarrier Fibre Non-linearity Monitor

A simple method for optimising the launch power to a single or multispans optical transmission system using a new fibre nonlinearity monitor is described. Inserting a subcarrier into the data-band, it was possible to correlate the BER performance of the 10 Gbit/s signal to the power of the subcarrier.

General information
State: Published
Organisations: Department of Photonics Engineering
Authors: Petersen, M. N. (Intern), Nielsen, M. L. (Intern)
Pages: 268-269
Publication date: 2005
Main Research Area: Technical/natural sciences

Publication information
Journal: Electronics Letters
Volume: 5
Issue number: 41
ISSN (Print): 0013-5194
Ratings:
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): SJR 0.442 SNIP 0.882 CiteScore 1.35
This paper presents a 500-km field-trial demonstration of power optimization in a four span transmission link. A new non-linearity monitor method based on an in-band subcarrier was used to supervise the signal quality.
Signal Quality Monitoring of 40 Gb/s Dispersion Degraded RZ and NRZ Data

10 Gb/s Non-Regenerated Ethernet Field Trial over 525-km Dark Fiber

40 Gbit/s standard-mode wavelength conversion in all-active MZI with very fast response
Compact All-optical Parity calculator based on a single all-active Mach-Zehnder Interferometer with an all-SOA amplified feedback
An all-optical signal processing circuit capable of parity calculations is demonstrated using a single integrated all-active SOA-based MZI, exploiting the integrated SOAs for feedback amplification.

SOA-based functional devises for future optical networks

Online chromatic dispersion monitoring and compensation using a single inband subcarrier tone
In this letter, we demonstrate a simple technique for dispersion monitoring by adding a single inband subcarrier tone to the transmitted data signal. A measurable dispersion of up to 1200 ps/nm is demonstrated in a 10-Gb/s channel using a 7-9 GHz subcarrier and the addition of the subcarrier induced a power penalty of
Projects:

Network management, control and operation of future optical access networks using SDN
Department of Photonics Engineering
Period: 15/04/2015 → 14/04/2018
Number of participants: 7
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Financing sources
Source: Internal funding (public)
Name of research programme: Science Without Borders, Brasi
Project: PhD

Håndtering og Overvågning af Signalkvalitet i Transparente Optiske Netværk
Department of Photonics Engineering
Period: 01/02/2002 → 10/10/2006
Number of participants: 6
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Financing sources
Source: Internal funding (public)
Name of research programme: Anden EU-finansiering
Project: PhD