

# Ioannis Roudas

Professor, Gilhousen Telecommunications Chair  
Montana State University, Electrical & Computer Engineering

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## Education

- 1991-1995 **Ecole Nationale Supérieure des Télécommunications**, Paris, France  
*Ph.D. in Optical Communications* (Graduated with highest honors)
- 1990-1991 **Ecole Nationale Supérieure des Télécommunications**, Paris, France  
*M.Sc. in Components and Devices of Optical & Microwave Communications*
- 1988-1990 **University of Athens**, Athens, Greece  
*M.Sc. in Electronics and Radio-engineering*
- 1984-1988 **University of Athens**, Athens, Greece  
*B.Sc. in Physics* (Graduated with highest honors)

## Employment

- 2016-present **Montana State University**, Bozeman, MT  
*Professor, Gilhousen Telecommunications Chair*  
Department of Electrical and Computer Engineering
- 2011-2016 **Corning Inc.**, Corning, NY  
*Research Associate*  
Optical Physics and Transmission Technologies Department
- 2003-2011 **University of Patras**, Patras, Greece  
*Associate Professor of Optical Communications*  
Department of Electrical and Computer Engineering
- 1999-2002 **Corning Inc.**, Somerset, NJ  
*Senior Research Scientist*  
Photonic Modeling and Process Engineering Department
- 1995-1998 **Bell Communications Research (Bellcore)**, Red Bank, NJ  
*Technical Staff Member*  
Optical Networking Research Department

## Visiting Positions

- 7/05-3/11 **Corning Inc.**, Corning, NY  
*Visiting Scholar*  
Optical Physics Department (7/10-9/10, 7/05-9/05, 7/10-3/11)  
Modeling and Simulation Department (7/08-9/08, 7/07-9/07, 7/06-2/07)
- 7/09-9/09 **City University of New York**, College of Staten Island, Staten Island, NY  
*Adjunct Associate Professor*  
Department of Engineering Science and Physics
- 9/09-7/10 **Hellenic Open University**, Patras, Greece  
*Adjunct Associate Professor*  
School of Science and Technology, Computer Science Department
- 1996-1998 **Columbia University**, New York, NY  
*Adjunct Assistant Professor*  
Department of Electrical Engineering

## Current Research Activities

Modeling and simulation of optical communications systems and networks, e.g.,

- Data center optical interconnects
- Spectrally-efficient modulation formats for long-haul transmission
- Digital signal processing algorithms for coherent intradyne receivers
- In-home networking

Computational electromagnetics

- Light scattering from nanostructured waveguides

## Teaching Experience

2003-2011

**University of Patras**, Patras, Greece

*Associate Professor of Optical Communications*

Department of Electrical and Computer Engineering

Undergraduate course EE 22Y601: Electromagnetic fields II (Sp04-09).

Graduate course EE 22A001: Optical communications (Sp04-11).

Graduate course EE 22Γ909: Optoelectronics (Fa04-10, Sp11).

Supervision of 5 Ph.D. theses and over 15 B.Sc. theses

9/09-7/10

**Hellenic Open University**, Patras, Greece

*Adjunct Associate Professor*

School of Science and Technology

Computer Science Department

Undergraduate course PLI 36: Modern Networks and Services

7/09

**City University of New York**, College of Staten Island, Staten Island, NY

*Adjunct Associate Professor*

Department of Engineering Science and Physics

Summer undergraduate course PHY 114: Introduction to Physics

1996-1998

**Columbia University**, New York, NY

*Adjunct Assistant Professor*

Department of Electrical Engineering

Graduate course EE E6413: Lightwave systems (Fa97, 98)

Co-supervision of one Ph.D. thesis (1996-98) & one M.Sc. thesis (1997-98)

1/95-8/95

**University of Athens**, Athens, Greece

*Visiting Researcher*

Department of Informatics

Co-supervision of one M.Sc. thesis.

1991-1994

**Ecole Nationale Supérieure des Télécommunications**, Paris, France

*Teaching Assistant*

Co-supervision of two BS theses, undergraduate projects & lab work.

## Professional Affiliations

- Associate Editor, *IEEE Photonics Journal*, 2013-2016
- TPC Member, Optical Communications Subcommittee, *IEEE Photonics Conference*, 2009-2012.
- TPC Member, Coherent Optical Communication Subcommittee, *SPIE Photonics West*, 2010.
- TPC member, Optical and Broadband Communication Subcommittee, *International Conference on Communications, Circuits and Systems (ICCCAS)*, 2007.
- Reviewer for *IEEE/OSA Journal of Lightwave Technology*, *IEEE Photonics Technology Letters*, *IEEE Journal of Quantum Electronics*, *Optics Express*, *Journal of Modern Optics*, and *Optics Communications*.

## Awards

2011-present	Various monetary awards, Corning Inc.
2005	Corning award for the OSMOSIS project
2001	Corning outstanding paper award
2001	Corning award for the design of a coherent polarimeter
1999	Corning award for the development of the MetroCor™ fiber
1998	Bellcore CEO Award
1998	Bellcore award for the PCAD project
1997	Bellcore award for the MONET project

## Scholarships

1991-1995	Ecole Nationale Supérieure des Télécommunications, Paris, France
1990-1991	North Atlantic Treaty Organization (NATO)/Greek government
1989-1990	State Scholarships Foundation, Greece

## Languages

GREEK :	Native language
ENGLISH :	High standard of spoken and written English
FRENCH :	Fluent (finished French high school and studied for five years in France)
GERMAN :	Basic level (Grundstufe, Goethe Institut)

## Personal

- Dual Greek and U.S. citizenship

## Publications

### **Books**

- [1] N. Antoniadis, G. Ellinas, and I. Roudas, Eds., *WDM systems and networks: Modeling, simulation, design and engineering*, Springer, 2012 (ISBN 978-1-4614-1092-8).

### **Book Chapters**

- [1] I. Roudas, "Coherent optical communications systems," Ch. 10, in *WDM systems and networks: Modeling, simulation, design and engineering*, N. Antoniadis, G. Ellinas, and I. Roudas, Eds., Springer, 2012 (ISBN 978-1-4614-1092-8).

### **Archival Journals**

- [1] J. D. Downie, M. Mlejnek, I. Roudas, W. A. Wood, A. Zakharian, J. Hurley, S. Mishra, F. Yaman, S. Zhang, E. Ip, and Y.-K. Huang, "Quasi-single-mode fiber transmission for optical communications (Invited paper)," *IEEE J. Select. Top. Quantum Elec.*, vol. 23, no. 3, pp. 1–12, May-June 2017.
- [2] S. Makovejs, J. D. Downie, J. E. Hurley, J. S. Clark, I. Roudas, C. C. Roberts, H. B. Matthews, F. Palacios, D. A. Lewis, D. T. Smith, P. G. Diehl, J. J. Johnson, C. R. Towery, and S. Y. Ten, "Towards superior transmission performance in submarine systems: Leveraging ultralow attenuation and large effective area," *IEEE/OSA J. Lightwave Tech.*, vol. 34, no. 1, pp. 114–120, Jan. 2016.
- [3] B. R. S. Makovejs, C. Behrens, R.-P. Braun, S. Ten, C. Towery, I. Roudas, K. Koreshkov, T. Nath, and A. Gladisch, "Impact of adaptive-rate transponders and fiber attributes on the achievable capacity," *J. Opt. Comm. Netw.*, vol. 7, no. 3, pp. 172–175, Mar. 2015.
- [4] M. Mlejnek, I. Roudas, J. D. Downie, N. Kaliteevskiy, and K. Koreshkov, "Coupled-mode theory of multipath interference in quasi-single-mode fibers," *IEEE Phot. J.*, vol. 7, no. 1, pp. 1–16, Feb. 2015.
- [5] J. D. Downie, J. Hurley, I. Roudas, D. Pikula, and J. A. Garza-Alanis, "Unrepeated 256 Gb/s PM-16QAM transmission over up to 304 km with simple system configurations," *Opt. Expr.*, Vol. 22, No. 9, pp. 10256–10261, May 2014.
- [6] F. Karinou, R. Borkowski, D. Zibar, I. Roudas, K. Vlachos, and I. T. Monroy, "Advanced modulation techniques for high performance computing optical interconnects," *IEEE J. Select. Top. Quantum Elec.*, Vol. 19, No. 2, pp. 324–337, Mar. 2013.
- [7] I. Roudas, B. R. Hemenway, R. R. Grzybowski, and F. Karinou, "Optimal wavelength-space crossbar switches for supercomputer optical interconnects," *Opt. Expr.*, Vol. 20, No. 18, pp. 20407–20426, Aug. 2012.
- [8] J. C. Cartledge, J. D. Downie, J. E. Hurley, X. Zhu, and I. Roudas, "Bit error ratio performance of 112 Gb/s PM-QPSK transmission systems," *IEEE/OSA J. Lightwave Tech.*, Vol. 30, No. 10, pp. 1475–1479, May 2012.
- [9] F. Karinou, I. Roudas, K. G. Vlachos, B. R. Hemenway, and R. R. Grzybowski, "Influence of transmission impairments on the OSMOSIS HPC optical interconnect architecture," *IEEE/OSA J. Lightwave Tech.*, Vol. 29, No. 21, pp. 3167–3177, Nov. 2011.
- [10] N. Mantzoukis, C. S. Petrou, A. Vgenis, I. Roudas, T. Kamalakis, and L. Raptis, "Comparison of electronic equalizers for coherent PDM QPSK systems based on outage probability," *IEEE/OSA J. Lightwave Tech.*, Vol. 29, No. 11, pp. 1721–1728, Jun. 2011.
- [11] N. Mantzoukis, C. S. Petrou, A. Vgenis, T. Kamalakis, I. Roudas, and L. Raptis, "Outage probability due to PMD in coherent PDM QPSK systems with electronic equalization," *IEEE Phot. Tech. Lett.*, Vol. 22, No. 16, pp. 1247–1249, Aug. 2010.

- [12] I. Roudas, A. Vgenis, C. S. Petrou, D. Toumpakaris, J. Hurley, M. Sauer, J. Downie, Y. Mauro, and S. Raghavan, "Optimal polarization demultiplexing for coherent optical communications systems," *IEEE/OSA J. Lightwave Tech.*, Vol. 28, No. 7, pp. 1121–1134, Apr. 2010.
- [13] A. Vgenis, C. S. Petrou, C. B. Papadias, I. Roudas, and L. Raptis, "Non-singular constant modulus equalizer for PDM-QPSK coherent optical receivers," *IEEE Phot. Tech. Lett.*, Vol. 22, No. 1, pp. 45–47, Jan. 2010.
- [14] C. S. Petrou, A. Vgenis, I. Roudas, and L. Raptis, "Quadrature imbalance compensation for PDM QPSK coherent optical systems," *IEEE Phot. Tech. Lett.*, Vol. 21, No. 24, pp. 1876 – 1878, Dec. 2009.
- [15] I. Roudas and N. Antoniadis, "Performance outages in CWDM optical networks due to the polarization-dependent gain of semiconductor optical amplifiers," *IEEE Phot. Tech. Lett.*, Vol. 18, No. 1, pp. 48–50, Jan. 2007.
- [16] N. Antoniadis, K. C. Reichmann, P. P. Iannone, N. J. Frigo, A. M. Levine, and I. Roudas, "The impact of polarization-dependent gain on the design of cascaded semiconductor optical amplifier CWDM systems," *IEEE Phot. Tech. Lett.*, Vol. 18, No. 20, pp. 2099–2101, Oct. 2006.
- [17] N. Antoniadis, I. Roudas, G. Ellinas, and J. Amin, "Transport metropolitan optical networking: Evolving trends in the architecture design and computer modeling," *IEEE/OSA J. Lightwave Tech.*, Vol. 22, No. 11, pp. 2653–2670, Nov. 2004.
- [18] I. Roudas, G. Piech, M. Mlejnek, Y. Zhu, D. Q. Chowdhury and M. Vasilyev, "Coherent frequency-selective polarimeter for polarization mode dispersion monitoring," *IEEE/OSA J. Lightwave Tech.*, Vol. 22, No. 4, pp. 953–967, Apr. 2004.
- [19] N. Antoniadis, N. Madamopoulos, I. Roudas, M. D. Vaughn, R. E. Wagner, "Engineering an 11 Tb/s U.S. mesh metro network: Design and transport performance," *Optical Networks Magazine*, Vol. 4, No. 4, pp. 92–100, July/August 2003.
- [20] I. Roudas, N. Antoniadis, T. Otani, T. E. Stern, R. E. Wagner, and D. Q. Chowdhury, "Accurate modeling of optical multiplexers/demultiplexers concatenation in multiwavelength optical networks," *IEEE/OSA J. Lightwave Tech.*, Vol. 20, No. 6, pp. 921–936, Jun. 2002.
- [21] N. Antoniadis, A. Boskovic, I. Tomkos, N. Madamopoulos, M. Lee, I. Roudas, D. Pastel, M. Sharma, and M. J. Yadlowsky, "Performance engineering and topological design of metro WDM optical networks using computer simulation," *IEEE J. Select. Areas Comm.*, Vol. 20, No. 1, pp. 149–165, Jan. 2002.
- [22] I. Roudas, N. Antoniadis, T. Otani, T. E. Stern, R. E. Wagner, and D. Q. Chowdhury, "Error probability of transparent optical networks with optical multiplexers/demultiplexers," *IEEE Phot. Tech. Lett.*, Vol. 13, No. 11, pp. 1254–1256, Nov. 2001.
- [23] I. Tomkos, I. Roudas, R. Hesse, N. Antoniadis, A. Boskovic, and R. Vodhanel, "Extraction of laser rate equations parameters for representative simulations of metropolitan area transmission systems and networks," *Optics Comm.*, Vol. 194, pp. 109–129, Jul. 2001.
- [24] I. Tomkos, B. Hallock, I. Roudas, R. Hesse, A. Boskovic, J. Nakano, and R. Vodhanel, "10-Gb/s transmission of 1.55- $\mu\text{m}$  directly modulated signal over 100 km of negative dispersion fiber," *IEEE Phot. Tech. Lett.*, Vol. 13, No. 7, pp. 735–737, Jul. 2001.
- [25] I. Tomkos, D. Chowdhury, J. Conradi, D. Culverhouse, K. Ennsner, C. Giroux, B. Hallock, T. Kennedy, A. Kruse, S. Kumar, N. Lascar, I. Roudas, M. Sharma, R. S. Vodhanel, and C.-C. Wang, "Demonstration of negative dispersion fibers for DWDM metropolitan area networks," *IEEE J. Select. Top. Quantum Elec.*, Vol. 7, No. 3, pp. 439–460, May/June. 2001.
- [26] X. Jiang and I. Roudas, "Asymmetric probability density function of a signal with interferometric crosstalk," *IEEE Phot. Tech. Lett.*, Vol. 13, No. 2, pp. 160–162, Feb. 2001.
- [27] I. Roudas, N. Antoniadis, D. H. Richards, R. E. Wagner, J. L. Jackel, S. F. Habiby, T. E. Stern, and A. F. Elrefaie, "Wavelength-domain simulation of multiwavelength optical networks (Invited paper)," *IEEE J. Select. Top. Quantum Elec.*, Vol. 6, No. 2, pp. 348–362, Mar. /Apr. 2000.

- [28] T. Otani, N. Antoniadis, I. Roudas, and T. E. Stern, "Cascadability of passband flattened arrayed waveguide grating filters in WDM optical networks," *IEEE Phot. Tech. Lett.*, Vol. 11, No. 11, pp. 1414–1416, Nov. 1999.
- [29] I. Roudas, D. H. Richards, N. Antoniadis, J. L. Jackel, and R. E. Wagner, "An efficient simulation model of the Erbium-doped fiber for the study of multiwavelength optical networks (Invited paper)," *Opt. Fiber Tech.*, Vol. 5, No. 4, pp. 363–389, Oct. 1999.
- [30] N. Antoniadis, I. Roudas, R. E. Wagner, T. E. Stern, J. L. Jackel, and D. H. Richards, "Use of wavelength- and time-domain simulation to study performance degradations due to linear optical crosstalk in WDM networks," *Opt. Networks and Appl. (TOPS)*, Vol. 20, pp. 288–293, 1998.
- [31] N. Antoniadis, I. Roudas, R. E. Wagner and S. F. Habiby, "Simulation of ASE noise accumulation in a wavelength add-drop multiplexer cascade," *IEEE Phot. Tech. Lett.*, Vol. 9, No. 9, pp. 1274–1276, Sept. 1997.
- [32] I. Roudas, Y. Jaouen, J. Prado, R. Vallet, and P. Gallion, "Recursive simulation models of the semiconductor laser modulation characteristics for accurate performance evaluation of coherent optical CPFSK systems," *IEEE/OSA J. Lightwave Tech.*, Vol. 13, pp. 2258–2269, Nov. 1995.
- [33] I. Roudas, Y. Jaouen, J. Prado, R. Vallet, and P. Gallion, "Accurate model of the semiconductor laser nonuniform FM response for the study of coherent optical systems," *IEEE Phot. Tech. Lett.*, Vol. 6, pp. 1389–1391, Nov. 1994.
- [34] Y. Jaouen, I. Roudas, and P. Gallion, "Experimental reduction of phase-noise influence for an optical CPFSK system with I. F. filtering," *Microwave and Opt. Tech. Lett.*, Vol. 6, No. 16, pp. 903–905, Dec. 1993.

### Peer-Reviewed Conference Proceedings

- [1] V. Vgenopoulou, M. S. Erkilinc, R. I. Killely, Y. Jaouen, I. Roudas, and I. Tomkos, "Comparison of multi-channel nonlinear equalization using inverse Volterra series versus digital backpropagation 400 Gb/s coherent superchannel," *IEE European Conference on Optical Communication (ECOC'16)*, Düsseldorf, Germany, Sept. 2016.
- [2] J. D. Downie, M. Mlejnek, W. Wood, J. Hurley, A. Zakharian, I. Roudas, S. Mishra, F. Yaman, S. Zhang, E. Ip, and Y. Huang, "Quasi-single-mode transmission for long-haul and submarine optical communications," *IEEE/OSA Conference on Lasers and Electro-Optics (CLEO'16)*, paper SM4F.6, San Jose, CA, Jun. 2016.
- [3] J. D. Downie, W. A. Wood, J. Hurley, M. Mlejnek, I. Roudas, A. Zakharian, S. Mishra, E. Ip, F. Yaman, and S. Zhang, "Quasi-single-mode fiber transmission for submarine systems," *SubOptic 2016*, Dubai, United Arab Emirates, Apr. 2016.
- [4] X. Chen, J. Hurley, J. Stone, J. Downie, I. Roudas, D. Coleman, and M.-J. Li, "Universal fiber for both short-reach VCSEL transmission at 850 nm and single-mode transmission at 1310 nm," *IEEE/OSA Optical Fiber Communication Conference (OFC'16)*, paper Th4E.4, Anaheim, CA, Mar. 2016.
- [5] J. D. Downie, J. Hurley, I. Roudas, K. Koreshkov, and M. Mlejnek, "Multi-path interference characterization of quasi-single-mode fibers," *IEEE Photonics Conference*, Reston, VA, Oct. 2015.
- [6] M. Song, E. Pincemin, V. Vgenopoulou, I. Roudas, E.-M. Ahmoud, and Y. Jaouen, "Transmission performances of 400 Gbps coherent 16-QAM multi-band OFDM adopting nonlinear mitigation techniques," *Tyrrhenian International Workshop on Digital Communications (TIWDC 2015) - Fiber Nonlinearities in Coherent Optical Communication*, Photonics in Switching, Florence, Italy, Sept. 2015.
- [7] V. Vgenopoulou, A. Amari, M. Song, E. Pincemin, I. Roudas, and Y. Jaouen, "Volterra-based nonlinear compensation in 400 Gb/s WDM multiband coherent optical OFDM systems," *Asia Communications and Photonics Conference (ACP)*, paper AF1E.4, Shanghai, China, Nov. 2014.

- [8] I. Roudas, N. Kaliteevskiy, P. Sterlingov, and W. A. Wood, "Comparison of analytical models for the nonlinear noise in dispersive coherent optical communications systems," *IEEE Photonics Conference*, paper MG3.4, Bellevue, WA, Sept. 2013.
- [9] I. Roudas, B. R. Hemenway, M. S. Whiting, and R. R. Grzybowski, "Differential signaling for low optical energy consumption in datacom optical interconnects," *IEEE Optical Interconnects Conference*, paper WC3, Santa Fe, NM, May 2013.
- [10] W. A. Wood, S. Y. Ten, I. Roudas, P. M. Sterlingov, N. A. Kaliteevskiy, J. D. Downie, and M. Rukosueva, "Relative importance of optical fiber effective area and attenuation in span length optimization of ultra-long 100Gb/s PM-QPSK systems," *SubOptic*, paper Tu1C.3, Paris, France, Apr. 2013.
- [11] F. Karinou, R. Rodes, K. Prince, I. Roudas, and I. T. Monroy, "IM/DD vs. 4-PAM using a 1550-nm VCSEL over short-range SMF/MMF links for optical interconnects," *IEEE/OSA Optical Fiber Communication Conference (OFC'13)*, paper OW4A.2, Anaheim, CA, Mar. 2013.
- [12] F. Karinou, R. Borkowski, D. Zibar, I. Roudas, and I. T. Monroy, "Coherent 40 Gb/s SP-16QAM and 80 Gb/s PDM-16QAM in an optimal supercomputer optical switch fabric," *IEEE/OSA Optical Fiber Communication Conference (OFC'13)*, paper JTh2A.77, Anaheim, CA, Mar. 2013.
- [13] F. Karinou, R. Borkowski, K. Prince, I. Roudas, I. T. Monroy, and K. Vlachos, "Performance evaluation of a SOA-based rack-to-rack switch for optical interconnects exploiting NRZ-DPSK," *IEE European Conference on Optical Communication (ECOC'12)*, paper P3.05, Amsterdam, Netherlands, Sept. 2012.
- [14] G. A. Rodes, J. J. V. Olmos, F. Karinou, I. Roudas, L. Deng, X. Pang, and I. T. Monroy, "Optical switching for dynamic distribution of wireless-over-fiber signals," *Optical Network Design and Modeling (ONDM)*, Colchester, UK, Apr. 2012.
- [15] I. Roudas, "Constrained LMS phase noise estimation algorithm for coherent optical M-QAM intradyne receivers," *IEEE/OSA Optical Fiber Communication Conference (OFC'12)*, paper JW2A.62, Los Angeles, CA, Mar. 2012.
- [16] J. C. Cartledge, J. D. Downie, J. E. Hurley, A. S. Karar, J. H. Ke, I. Roudas, and K. Roberts, "Performance of PM QPSK and PM 16-QAM coherent optical fiber communication systems," *SPIE Photonics West*, Vol. 8284, pp. 82840C–82840C-8, 2012.
- [17] X. Zhu, I. Roudas, and J. C. Cartledge, "Error probability estimation for coherent optical PDM-QPSK communications systems," *Proc. SPIE*, Vol. 8309, p. 830939, Shanghai, China, Nov. 2011.
- [18] F. Karinou, I. Roudas, K. Vlachos, B. R. Hemenway, and R. R. Grzybowski, "Performance assessment of an optimized optical supercomputer interconnect architecture," *IEEE/OSA Optical Fiber Communication Conference (OFC'11)*, paper JWA86, Los Angeles, CA, Mar. 2011.
- [19] N. Mantzoukis, A. Vgenis, C. S. Petrou, I. Roudas, T. Kamalakis, and L. Raptis, "Design guidelines for electronic PMD equalizers used in coherent PDM QPSK systems," *IEE European Conference on Optical Communication (ECOC'10)*, paper P4.16, Torino, Italy, Sept. 2010.
- [20] F. Karinou, I. Roudas, K. Vlachos, C. S. Petrou, A. Vgenis, and B. R. Hemenway, "Wavelength-space permutation switch with coherent PDM QPSK transmission for supercomputer optical interconnects," *IEEE/OSA Optical Fiber Communication Conference (OFC'10)*, paper JWA62, San Diego, CA, Mar. 2010.
- [21] I. Roudas, A. Vgenis, C. S. Petrou, Y. Mauro, S. Raghavan, and L. Raptis, "Constrained polarization demultiplexing for coherent optical receivers," *IEEE/OSA LEOS Annual Meeting (LEOS'09)*, paper WE2, Belek-Antalya, Turkey, Oct. 2009.
- [22] C. S. Petrou, A. Vgenis, I. Roudas, F. Karinou, K. Vlachos, and L. Raptis, "Quadrature imbalance compensation algorithms for coherent PDM QPSK systems," *IEEE/OSA LEOS Annual Meeting (LEOS'09)*, paper ThE3, Belek-Antalya, Turkey, Oct. 2009.
- [23] N. Mantzoukis, C. S. Petrou, A. Vgenis, I. Roudas, and T. Kamalakis, "Electronic equalization of polarization mode dispersion in coherent POL-MUX QPSK systems," *IEE European Conference on Optical Communication (ECOC'09)*, paper P4.15, Vienna, Austria, Sept. 2009.

- [24] N. Mantzoukis, T. Kamalakis, I. Roudas, and L. Raptis, "Evaluation of polarization mode dispersion statistics using the multicanonical Monte Carlo method," *Panhellenic Conference on Electronics and Telecommunications (PACET'09)*, paper 41, Patras, Greece, Mar. 2009.
- [25] C. S. Petrou, A. Vgenis, A. Kiourti, I. Roudas, J. Hurley, M. Sauer, J. Downie, Y. Mauro, and S. Raghavan, "Impact of transmitter and receiver imperfections on the performance of coherent optical QPSK communication systems," *IEEE/OSA LEOS Annual Meeting (LEOS'08)*, paper TuFF3, Newport Beach, CA, Nov. 2008.
- [26] A. Vgenis, C. S. Petrou, I. Roudas, I. Chochliouros, G. Agapiou, and T. Doukoglou, "Adaptive electronic equalization for non-ideal optical coherent receivers," *Symposium on Communication Systems, Networks and Digital Signal Processing (CNDS'08)*, pp. 349–353, Graz, Austria, Jul. 2008.
- [27] V. Vgenopoulou, I. Roudas, K. P. Ho, I. Chochliouros, G. Agapiou, and T. Doukoglou, "Asymptotic approximation of the probability density function of the nonlinear phase noise using the method of steepest descent," *Advanced International Conference on Telecommunications (AICT'08)*, Athens, Greece, Jun. 2008.
- [28] C. S. Petrou, I. Roudas, and L. Raptis, "Impact of receiver imperfections on the performance of coherent intradyne DQPSK receivers," *IEEE/OSA Conference on Lasers and Electro-optics (CLEO'08)*, paper CThJ1, San Jose, CA, May 2008.
- [29] I. Roudas, B. R. Hemenway, and R. R. Grzybowski, "Optimization of a supercomputer optical interconnect architecture," *IEEE/OSA LEOS Annual Meeting (LEOS'07)*, paper ThG3, Orlando, FL, Oct. 2007.
- [30] I. Roudas, M. Sauer, J. Hurley, Y. Mauro, and S. Raghavan, "Compensation of coherent DQPSK receiver imperfections," *IEEE/OSA LEOS Summer Topicals*, paper MA3.4, Portland, OR, Jul. 2007.
- [31] I. Roudas and N. Antoniadis, "Scalability limitations of optical access and metro networks due to the polarization-dependent gain of semiconductor optical amplifiers (Invited paper)," *SPIE Optics East (OE'06)*, paper 6388–22, Boston, MA, Oct. 2006.
- [32] I. Roudas, N. Antoniadis, and J. Amin, "Trends in the architectural design and computer modeling of optical metropolitan area networks (Invited paper)," *IEEE/OSA Optical Fiber Communication Conference (OFC'04)*, paper WG4, Los Angeles, CA, Feb. 2004.
- [33] I. Roudas, G. Piech, M. Mlejnek, Y. Zhu, and D. Q. Chowdhury, "Coherent heterodyne frequency-selective polarimeter for error-signal generation in higher-order PMD compensators," *IEEE/OSA Optical Fiber Communication Conference (OFC'02)*, paper WQ2, Anaheim, CA, Mar. 2002.
- [34] N. Madamopoulos, N. Antoniadis, I. Roudas, M. D. Vaughn, and R. E. Wagner, "Design, transport performance study and engineering of a 11 Tb/s U.S. mesh metro network," *IEEE/OSA Optical Fiber Communication Conference (OFC'02)*, paper ThH6, Anaheim, CA, Mar. 2002.
- [35] I. Roudas, N. M. Lascar, A. E. Kruse, B. S. Hallock, D. Q. Chowdhury, R. S. Vodhanel, N. Antoniadis, I. Tomkos, and M. Sharma, "10 Gb/s uncompensated transmission in transparent optical metropolitan area networks using electroabsorption modulators over negative dispersion NZDSF," *IEEE/OSA Conference on Lasers and Electro-optics (CLEO'01)*, paper CFA3, Baltimore, MD, May 2001.
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