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EDUCATION

Doctor of Philosophy in Electrical Engineering

Columbia University, New York, NY

Thesis Area: Determining and Extending the Reach of WDM optical networks

Master of Philosophy in Electrical Engineering

Columbia University, New York, NY

Master of Science in Electrical Engineering

Columbia University, New York, NY

Bachelor of Science in Electrical Engineering

Columbia University, New York, NY

Academic Honors with Distinction

WORK EXPERIENCE

CURRENT

The City University of New York

College of Staten Island, Staten Island, NY

Engineering Science and Physics Department, Full Professor/Tenured

Research focuses on analysis, modeling and design/engineering in the following areas: WDM optical communication systems and networks for metro, access and avionics applications, integration of wired/wireless networks, resilient telecommunication networks, Reconfigurable Optical Add/Drop Multiplexers (ROADMs), cross-layer integration of communication networks. Research involves developing simulation models, tools and experimental testbeds for telecom applications. Teaches undergraduate and graduate-level courses in Electrical Engineering.

PREVIOUS – INDUSTRIAL/ACADEMIC

Columbia University, Center for Resilient Networks, NY, NY

Visiting Research Associate

Performed individual research in the area of resilient (secure) computer-based networks.

Focused on:

- Understanding the transport layer design guidelines, service level agreements, and performance issues involving today's networks in the New York City metropolitan area.
- Identifying major network areas where more resiliency is needed and how it can be achieved.
- Deriving ideas, designs and specifications for novel communication devices, computer components, protocols and techniques for building these networks that will guarantee network resiliency at the required level in the event of major disasters (like 9/11 etc).
- Contributed in writing research proposals to government funding agencies on the subject of resilient communication networks.

3NE Solutions Inc., NY, NY

Principal Engineer

Worked as a consultant with various client accounts. Most of the accounts involved optical communications start-up companies. Responsibilities included:

- Simulation/Design/Prototyping: Provided support for the design of systems and networks utilizing the company's product technologies in the high density photonic metro and long-haul environment. Product technologies included various amplification, dispersion compensation and power equalization products.
- Product value analysis: Assessed the inherent value and application space of customer technologies and products.
- Road-mapping: Synthesized the breadth of knowledge and know-how to project a road-map for specific telecommunications technologies and their derived products.

Corning Incorporated, Photonics Research and Testing Center, Somerset, NJ

Photonics Technology Division

Project Leader

- Strong interaction with development teams for the design of various Corning products focusing on dispersion compensation products, optical amplifiers(EDFAs), and switches:
 - Used simulation skills and physical effects knowledge to:
 - Evaluate existing or propose new product designs
 - Derive component specs
 - Respond to everyday customer requests (internal/external)
 - Engineer the performance of such products in the customer's systems or networks
- Developed technical proposals for deriving the value added of specific new or existing fiber optic products and presented them to internal/external customers. This involved:
 - Understanding the telecommunications market trends
 - In-depth analysis of existing network architectures (traffic analysis, topological design, geographical constraints, CLEC vs. ILEC dynamics etc)
- Responsible for executing those value added analysis studies for various product technologies that can become the value drivers for next generation fiber optic systems and networks.
- Trained and supervised a research scientist and an engineer.

Individual Contributor

Involved in several research and development activities as part of an optical communications group:

- Designed and engineered cost effective network elements to support present and future traffic demands in high-density metro and LH/ULH photonic systems and networks using existing company technologies based on customer feedback.
- Developed an in-depth understanding through simulation and hands-on experiments of basic optical transport layer phenomena and analyzed their relative magnitudes in relation to network topologies.
- Developed a novel methodology for modeling the performance of high bandwidth WDM metro optical systems and networks.
- Performed detailed device modeling focusing on the performance characteristics of various Corning products by developing new simulation software.
- Verified developed models in the laboratory using the existing WDM optical system testbeds.

- Developed a system-level understanding of the performance of such products in high bandwidth WDM systems and networks according to customer requests.

Bell Communications Research (currently Telcordia), Red Bank, NJ

Visiting Researcher

Optical Networking Group

Involved in research, design, engineering and construction of one of the world's first high bandwidth WDM/SONET computer metro ring lab prototypes in Red Bank, NJ and later on an actual network in the Washington, DC metro area. Work was sponsored by a multi-company government-funded consortium called: Multiwavelength Optical NETWORKING (MONET) consortium. Responsibilities included:

- Studying performance issues of Wavelength Division Multiplexing (WDM) optical networks concentrating on the NJ MONET local exchange testbed and extending to the MONET Washington, D.C field network.
- Modeling the behavior of Erbium Doped Fiber Amplifiers used in the above metro ring networks.
- Deriving the specs for a number of prototype optical components such as optical switches, optical filters, fibers etc.
- Developed an efficient wavelength-domain simulation tool that was used to:
 - Design WDM network elements.
 - Evaluate transmission impairments and end-to-end performance of various network architectures.
 - Provide guidelines for network optimization.
 - Support international standards contributions.
- Extensive studies on optical protection switching, switching times, component redundancy, and optical transient effects.
- Hands-on experience on the construction of the metro laboratory network testbed including optical measurements for model validation and simulation tool calibration.

PROFESSIONAL ACTIVITIES

SOCIETIES – REVIEWER - COMMITTEES

- Member of Optical Fiber Communications (OFC) conference technical committee: Optical Networks (2003-2006)
- Member of Lasers & Electro-Optics (LEOS) Annual Meeting technical committee on Optical Networks and Systems (2001-2004)
- Member of the Institute of Electrical and Electronics Engineers (IEEE)
- Referee for Optical Fiber Communications Conference (OFC)
- Regular reviewer for the IEEE Photonics Technology Letters and IEEE Journal of Lightwave Technology technical journals.

FUNDING AGENCIES PANELIST

1) Served on National Science Foundation (NSF) proposal review panel “NetS Wireless Networking”, held in Arlington, VA, March 29-30, 2005.

2) Served on National Science Foundation (NSF) proposal review panel IT4WON1 held in Arlington, VA, May 3-4, 2004.

PUBLICATIONS

Google Scholar citations: 1143

h-index:18

i10-index:29

PEER-REVIEWED JOURNALS

[1]. T. Panayiotou, G. Ellinas, and N. Antoniadis “p-Cycle-Based Protection of Multicast Connections in Metropolitan Area Optical Networks with Quality-of-Transmission Considerations”, *Optical Switching and Networking, Special Issue on Advances in Availability and Survivability*, 19(2):66-77, January 2016.

[2] T. Panayiotou, G. Ellinas, and N. Antoniadis, "Hybrid Graph-Based Traffic Grooming in Metro Networks with Quality-of-Transmission Considerations", *Photonic Network Communications*, DOI 10.1007/s11107-015-0589-9, December, 2015.

[3] T. Panayiotou, G. Ellinas, N. Antoniadis, and A. Hadjiantonis, “Impairment-Aware Multicast Sessions in Metro Optical networks”, *Computer Networks*, 91(14):675-688, November 2015.

[4]. S.Peiris, N. Madamopoulos, N. Antoniadis, D. Richards, and R. Dorsinville, “Performance Analysis of a Hybrid Raman Optical Parametric Amplifier in the O- and E-Bands for CWDM PONs” *Photonics Mdpi Open Access*, 1(4), 473-487, December 2014

[5]. T. Panayiotou, N. Antoniadis, and G. Ellinas, “On the Impact of Polarization-Dependent Gain/Loss for Optical Multicast Sessions”, *Optical Society of America (OSA), Optics Express*, vol. 22, no. 24, Dec. 2014

[6]. S. Peiris, N. Madamopoulos, N. Antoniadis, D. Richards, M. A. Ummy and R. Dorsinville, «Engineering an Extended Gain Bandwidth Hybrid Raman - Optical Parametric Amplifier for Next Generation CWDM PON”, *IEEE/OSA Journal of Lightwave Technology*, vol. 32, no. 5, pp. 939-946, March 2014

[7]. D. Richards, M.A. Losada, N. Antoniadis, A. Lopez, J. Mateo, X. Jiang, and N. Madamopoulos, “Modeling Methodology for Engineering SI-POF and Connectors in an Avionics System”, *IEEE/OSA Journal of Lightwave Technology*, vol. 31, No. 3, pp. 468-475, Feb.1, 2013

[8]. S. Peiris, N. Madamopoulos, N. Antoniadis, M. A. Ummy, M. Ali, and R. Dorsinville, “Optimization of gain bandwidth and gain ripple of a hybrid Raman/parametric amplifier for access network applications,” *Applied Optics*, Vol. 51, Issue 32, pp. 7834-7841, 2012.

[9]. T. Panayiotou, G. Ellinas, and N. Antoniadis, “Segment-Based Protection of Multicast Connections in Metropolitan Areas Optical Networks with Quality-of-Transmission Considerations”, *IEEE/OSA Journal of Optical Communications and Networking (JOCN)*, vol. 4, no. 9, pp. 692-702, September 2012

[10]. N. Madamopoulos, S. Peiris, N. Antoniadis, D. Richards, G. Ellinas, R. Dorsinville and M. A. Ali, “A Fully distributed 10G EPON-based Converged Fixed-Mobile Networking Transport Infrastructure for Next-Generation Broadband Access”, *IEEE/OSA Journal of Optical Communications and Networking (JOCN)*, vol. 4, no. 5, May 2012

[11]. D. Richards, S. Peires, N. Madamopoulos, N. Antoniadis and X. Jiang, “Improved Linear Crosstalk Tolerance in an Un-Amplified Ring PON”, *Photonic Network Communication*, Springer, vol. 22, no. 2, October 2011, pp. 123-132.

- [12]. B. Pathak, M.A. Ummy, N. Madamopoulos, N. Antoniadis, M.A. Ali, and R. Dorsinville, "Experimental Demonstration of a distributed Ring-based EPON Architecture", *Photonic Network Communication*, Springer, vol. 19, no. 1, January 2010, pp. 55-61.
- [13]. G. Ellinas, N. Antoniadis, T. Panayiotou, A. Hadjiantonis, and A.M. Levine, "Multicasting Routing Algorithms Based on Q-Factor Physical Layer Constraints in Metro", *IEEE/OSA Photonics Technology Letters*, March 15, 2009, vol. 21, no. 6, pp. 365-367.
- [14]. M. Lee, N. Antoniadis, "On the impact of filter dispersion slope on the performance of 40Gbps DWDM systems and networks", *Photonic Network Communication*, Springer, August 2007, vol. 14, no.1, pp. 97-102.
- [15]. I. Roudas, N. Antoniadis, "Performance Outages in CWDM Optical Networks due to the Polarization-Dependent Gain of Semiconductor Optical Amplifiers", *IEEE/OSA Photonics Technology Letters*, January 1, 2007, vol. 19, no. 1, pp. 48-50.
- [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/OSA Photonics Technology Letters*, October 15, 2006, vol. 18, no. 20, pp. 2099-2101.
- [17]. N. Antoniadis, N. Menon, N. Chbouki, G. Ellinas, "Value proposition for amplets as banded amplification solutions in evolving WDM metro network architectures", *OSA Journal of Optical Networking*, March 2005, vol. 4, no. 3, pp. 101-112.
- [18]. N. Antoniadis, I. Roudas, G. Ellinas, and J. Amin, "Transport Metropolitan Optical Networking: Evolving Trends in the Architecture Design and Computer Modeling", *IEEE/OSA Journal of Lightwave Technology*, Special Issue on Metro WDM Optical Networks, November 2004, vol. 22, no. 11, pp. 2653-2670.
- [19]. N. Antoniadis, N. Madamopoulos, I. Roudas, M. D. Vaughn, and R. E. Wagner, "Engineering an 11Tb/s US Metro Network: Design and Transport Performance", *OSA Optical Networks Magazine*, July/August 2003, vol. 4, no. 4, pp. 92-100.
- [20]. F. Farjady, N. Antoniadis, M. J. Yadlosky, "Value of Fiber Overlays in WDM Metro Networks", *IEEE/OSA Photonics Technology Letters*, February 2003, vol.15, no. 2, pp. 329-33.
- [21]. I. Roudas, N. Antoniadis, T. Otani, T. E. Stern, and R. E. Wagner, "Accurate modeling of optical multiplexers/demultiplexers concatenation in multi-wavelength optical networks," *IEEE/OSA Journal of Lightwave Tech.*, June 2002, vol. 20, no. 6, pp. 921-936.
- [22]. M. Lee, N. Antoniadis, and A. Boskovic, "PDL-induced channel power divergence in a metro WDM network", *IEEE/OSAPhotonics Technology Letters*, April 2002, vol. 14, no. 4, pp. 561-563 .
- [23]. I. Tomkos, R. Hesse, N. Madamopoulos, C. Friedman, N. Antoniadis, B. Hallock, R. Vodhanel, A. Boskovic, "Transport Performance of an 80-Gb/s WDM regional area transparent network utilizing directly modulated lasers", *IEEE/OSA Journal of Lightwave Technology*, April 2002, vol. 20, no. 4, pp. 562-573.
- [24]. J. Downie, I. Tomkos, , N. Antoniadis, and A. Boskovic, "Effects of filter concatenation for directly modulated transmission lasers at 2.5 and 10 Gbit/s", *IEEE/OSA Journal of Lightwave Technology*, February, 2002, vol. 20, no. 2, pp. 218-228.
- [25]. N. Antoniadis, A. Boskovic, I. Tomkos, N. Madamopoulos, M. Lee, I. Roudas, D. Pastel, M. Sharma, and M. Yadlowsky, "Performance Engineering and Topological Design of Metro WDM Optical Networks", *IEEE/OSA Journal of Selected Areas in Communications*, Special Issue on WDM Based Optical Networks, January 2002, vol. 20, no. 1, pp.149-165.
- [26]. I. Roudas, N. Antoniadis, T. Otani, T.E. Stern, R. E. Wagner, and D. Chowdhury, "Error probability of transparent optical networks with optical multiplexers/demultiplexers", *IEEE/OSA Photonic Technol. Letters*, November 2001, vol.13, no. 11, pp. 1254-1256.
- [27]. I. Tomkos, R. Hesse, N. Antoniadis, and A. Boskovic, "Impact of filter concatenation effects on the performance of metropolitan area optical networks utilizing directly modulated lasers", *IEEE/OSA Photonics Technology Letters*, Sept. 2001, vol. 13, no. 9, pp. 1023-1025.
- [28]. 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 Communications*, July 2001, Vol. 194, Issue 1-3, pp. 109-129.
- [29]. N. Antoniadis, M. Yadlowsky, and V. L. daSilva, "Computer Simulation of a Metro WDM Ring Network", *IEEE/OSA Photonics Technology Letters*, November 2000, vol. 12, no. 11, pp. 1576-1578.
- [30]. 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 Article in*

IEEE/OSA Journal of Selected Top. Quantum Electronics - Special Issue on Modeling of High Data Rate Optical Fiber Communications Systems, March/April 2000, vol. 6, no. 2, pp.348-362.

[31]. I. Tomkos, N. Antoniadis, D. Syvridis, "Modular and Reconfigurable Parametric Wavelength Interchanging Cross-connect Architectures", *Photonic Network Communications*, Jan-Mar 2000, v.2, n.1, p. 53-59.

[32]. T. Otani, N. Antoniadis, I. Roudas, and T. E. Stern, "Cascadability of Passband- Flattened Arrayed Waveguide-Grating Filters in WDM Optical Networks", *IEEE/OSA Photonics Technology Letters*, November 1999, vol. 11, no. 11, pp. 1414-1416.

[33]. 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 Multi-wavelength Optical Networks", Invited Article in *Optical Fiber Technology*, October 1999, v. 5, pp. 363-389.

[34]. N. Antoniadis, S. J. B. Yoo, K. Bala and G. Ellinas, "An Architecture for a Wavelength-Interchanging-Cross-Connect utilizing Parametric Wavelength Converters", *IEEE/OSA Journal of Lightwave Technology*, July 1999, vol. 17, no. 7, pp. 1113-1125.

[35]. S. J. B. Yoo, K. Bala, N. Antoniadis, G. Ellinas, R. Bhat, C. Caneau, and M.A. Koza, "Parametric Conversion and Cross-connect Architectures for Scalable All-Optical Networks", *Trends in Optics and Photonics (TOPS)*, 1998 series, Optical Society of America, vol. 20, pp. 260-269.

[36]. 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", *Trends in Optics and Photonics (TOPS)*, 1998 series, Optical Society of America, vol. 20, pp. 288-293.

[37]. N. Antoniadis, I. Roudas, R. E. Wagner, S. F. Habiby, "Simulation of ASE noise accumulation in a Wavelength Add-Drop Multiplexer (WADM) cascade", *IEEE/OSA Photonics Technology Letters*, Sept 1997, vol. 9, no. 9, pp.1274-1276.

[38]. N. Antoniadis, K. Bala, S. J. B. Yoo, G. Ellinas, "A Parametric Wavelength Interchanging Cross-Connect (WIXC) Architecture", *IEEE/OSA Photonics Technology Letters*, October 1996, vol. 8, no. 10, pp. 1382-1384.

[39]. S. J. B Yoo, C. Caneau, R. Bhat, M. A. Koza, A. Rajhel and N. Antoniadis, "Wavelength conversion by difference frequency generation in AlGaAs waveguides with periodic domain inversion achieved by wafer bonding", *Applied Physics Letters*, American Optics Society, May 1996, vol. 68, no. 9, pp. 2609-2611.

BOOKS - CHAPTERS IN BOOKS

- [1]. N. Antoniadis, G. Ellinas, and I. Roudas, (Eds.), "WDM Systems and Networks: Modeling, Simulation, Design and Engineering", ISBN 978-1461410928, Published December 2011, Springer Inc.
- [2]. G. Ellinas, A. Hadjiantonis, A. Khalil, N. Antoniadis, and M. Ali, "The Optical Control Plane and a Novel Unified Control Plane Architecture for IP/WDM Networks", Chapter in the book titled Next-Generation Internet Architectures and Protocols, B. Ramamurthy, G. Rouskas, and K. Sivalingam (Eds.), Cambridge University Press, Published January 2011.
- [3]. N. Antoniadis, G. Ellinas, J. Homa and K. Bala, "ROADM architectures and WSS implementation technologies", Chapter 20 of the book entitled "Convergence of Mobile and Stationary Next-Generation Networks" by Kris Iniewski, J. Wiley & Sons Inc., ISBN 9780470543566, Published November 2010.
- [4]. N. Antoniadis, and T.E. Stern, "Enabling Technology", Chapter 4 of the book entitled "Multiwavelength Optical Networks: Architectures, Design, and Control, 2nd Edition", by T.E. Stern, K. Bala and G. Ellinas, ISBN 9780521881395, Cambridge University Press, Published December 2008.
- [5]. N. Antoniadis, and G. Ellinas, "Current Trends in Multiwavelength Optical Networking", Chapter 11 of the book entitled "Multiwavelength Optical Networks: Architectures, Design, and Control, 2nd Edition", by T.E. Stern, K. Bala and G. Ellinas, ISBN 9780521881395, Cambridge University Press, Published December 2008.

REFEREED CONFERENCE PROCEEDINGS

- [1] N. Pujols, M. A. Losada, J. Mateo, A. López, D. Richards, N. Madamopoulos, and N. Antoniadis, "A POF model for short fiber segments in avionics applications", paperTu.P.33, Proc. of IEEE 18th International Conference on Transparent Optical Networks (ICTON), July 2016, Trento, Italy.
- [2] T. Panayiotou, G. Ellinas, and N. Antoniadis, "Q-based Provisioning for Multicast Connections in Translucent Metropolitan Area Networks", *Proc. of IEEE 17th International Conference on Optical Network Design and Modeling (ONDM)*, Stockholm, Sweden, May 2014.
- [3] N. Antoniadis, D. Richards, M.A. Losada, J. Mateo, N. Pujols, X. Jiang, and N. Madamopoulos, "Performance Comparison of SI-POF and Connectors in an Avionics System", *Proc. Of International Conference on Plastic Optical Fiber (ICPOF 2013)*, September 2013, Buzios, Rio de Janeiro, Brazil.
- [4] T. Panayiotou, G. Ellinas, and N. Antoniadis, "Hybrid Multicast Traffic Grooming in Transparent Optical Networks with Physical Layer Impairments", Proc. IEEE International Conference on Computer Communications and Networks (ICCCN), 7th Workshop on Wireless Mesh and Ad Hoc Networks (WIMAN), Nassau, Bahamas, July/August 2013.
- [5] T. Panayiotou, G. Ellinas, and N. Antoniadis, "Protection Algorithms for Groupcast Sessions in Transparent Optical Networks with Mesh Topologies", *Proc. of IEEE 17th International Conference on Optical Network Design and Modeling (ONDM)*, Brest, France, April 2013.
- [6] S. Peiris, N. Madamopoulos, N. Antoniadis, M.A. Ummy, R. Dorsinville, and M. Ali, "Extended gain bandwidth low ripple hybrid Raman-parametric amplifier design for PON applications," *Proc. of IEEE Photonics Conference 2012*, paper No. ME-2, Burlingame, California, 23 - 27 September 2012.
- [7] J. Mateo, M. A. Losada, N. Antoniadis, D. Richards, A. Lopez, and J. Zubia, "Connector Misalignment Matrix Model", *Proc. of 2012 International Conference for Plastic Optical Fiber*, Atlanta, July 17th, 2012.
- [8] T. Panayiotou, G. Ellinas, N. Antoniadis, "p-Cycle-Based Protection of Multicast Connections in Metropolitan Area Optical Networks with Quality-of-Transmission Considerations", *Proc. of RNDM'12 - 4th International Workshop on Reliable Networks Design and Modeling*, October 3-5, St. Petersburg, Russia, 2012
- [9] T. Panayiotou, G. Ellinas, N. Antoniadis, "Hybrid Graph-Based Traffic Grooming for Multicast Connections in Mesh Optical Networks" *Proc. of IEEE International Conference on Communication Systems (ICCS'12)*, November 21-23, 2012, Singapore
- [10] M. A. Losada, J. Mateo, A. Lopez, N. Antoniadis, and D. Richards, "Challenges in the Integration of Plastic Optical Fibre Technology in Aircrafts", *Proc. of IEEE 14th International Conference on Transparent Optical Networks (ICTON)*, Invited paper, July 2012, Coventry, UK.
- [11] D. Richards, N. Antoniadis, and T. K. Truong, "Performance Modeling and Analytical Verification of POF Transmissive Star Couplers for Avionics System Applications", *Proc. of IEEE Avionics Fiber Optics Photonics Technology Conference (AVFOP) 2011*, paper WE3, San Diego, CA, October 2011.
- [12] N. Antoniadis, M. A. Losada, J. Mateo, D. Richards, T.K. Truong, N. Madamopoulos, and X. Jiang, "Modeling and Characterization of SI-POF and Connectors for Use in an Avionics System Environment", *Proc. of International Conference on Plastic Optical Fiber (ICPOF 2011)*, September 2011, Bilbao Spain.
- [13] A. Esteban, M. A. Losada, J. Mateo, N. Antoniadis, A. Lopez, and J. Zubia, "Effects of Connectors in SI-POFs Transmission Properties Studied in a Matrix Propagation Framework", *Proc. of International Conference on Plastic Optical Fiber (ICPOF 2011)*, paper D-2, September 2011, Bilbao Spain.
- [14] T. Panayiotou, G. Ellinas, N. Antoniadis, and A. Hadjiantonis, "A Novel Segment-Based Protection Algorithm for Multicast Sessions in Optical Networks with Mesh Topologies", *Proc. of IEEE/OSA Optical Fiber Communications Conference (OFC 2011)*, March 2011.
- [15] S. Peiris, N. Madamopoulos, D. Richards and N. Antoniadis, "Crosstalk analysis of an extended reach hybrid tree-ring PON architecture", *Photonics East, Proc. of SPIE vol. 7958, 795809*, Boston, MA, January 2011
- [16] T. Panayiotou, G. Ellinas, N. Antoniadis, and A. Hadjiantonis, "Node Architecture Design and Network Engineering Impact on Optical Multicasting Based on Physical Layer Constraints", *Proc. of IEEE 12th International Conference on Transparent Optical Networks (ICTON)*, Invited paper Mo. C3.5., June 2010, Munich, Germany.
- [17] D. Richards, N. Madamopoulos, N. Antoniadis, S. Peiris, and X. Jiang, "On the Effect of Linear Optical Crosstalk on the Performance of an Un-amplified PON Ring Architecture for Supporting

Simultaneous Wired and Wireless Heterogeneous Services”, *Proc. of IEEE Sarnoff Symposium and Conference*, April 2010, Princeton, NJ.

[18]. T. Panayiotou, G. Ellinas, N. Antoniadis, and A. M. Levine, “Designing and Engineering Metropolitan Area Transparent Optical Networks for the Provisioning of Multicast Sessions”, *Proc. of IEEE/OSA Optical Fiber Communications Conference (OFC 2010)*, paper JTHA47, March 2010, San Diego CA.

[19]. N. Madamopoulos, B. Pathak, N. Antoniadis, and M. A. Umy, “PON ring architectures for truly shared LAN capability and dynamic bandwidth allocation for Fiber Wireless (FiWi) applications”, *Proc. of SPIE Photonics West (OPTO 2009)*, paper 7234-7, session S3, San Jose, CA, Jan. 24-29, 2009.

[20]. G. Ellinas, T. Panayiotou, N. Antoniadis, A. Hadjiantonis, and A.M. Levine, “Multicasting with physical-layer constraints in metropolitan area networks”, *Proc. of IEEE/LEOS International Conference on Transparent Optical Networks (ICTON 08)*, vol. 3, pp. 75-78, Athens, Greece, June 2008.

[21]. 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)," *Proc. of SPIE Optics East (OE'06)*, paper 6388-22, Boston, MA, USA, Oct. 2006.

[22]. N. Antoniadis, K. C. Reichmann, P.P. Iannone, and A. M. Levine, “ Engineering Methodology for the Use of SOAs and CWDM Transmission in the Metro Network Environment”, *Proc. of IEEE/OSA Optical Fiber Communications Conference (OFC '06)*, paper TuG6, March 5-10, 2006, Anaheim, CA.

[23]. G. Ellinas, and N. Antoniadis, “Evolving Trends for WDM Metro Network Architectures”, *Proc. of IEEE/LEOS Annual Meeting 2005 Conference*, Sydney, Australia, Nov. 2005.

[24]. N. Antoniadis, N. Menon, and N. Chbouki, " Techno-Economic Value Analysis of the Role of Banded Amplification in Evolving WDM Metro Network Architectures", *Proc. of IEEE/LEOS Annual Meeting 2004*, paper WU2, Rio Grande, PR, Nov. 2004.

[25]. I. Roudas, N. Antoniadis, and J. Amin, "Trends in the architectural design and computer modeling of optical metropolitan area networks", *Proc. of IEEE/OSA Optical Fiber Communications Conference (OFC '04)*, paper WG4, February 22-27, 2004, Los Angeles, CA

[26]. N. Madamopoulos, N. Antoniadis, I. Roudas, M. Vaughn, and R. E. Wagner, "Design, Transport performance study and Engineering of a 11Tb/s US Metro Network", *Proc. of IEEE/OSA Optical Fiber Communications Conference (OFC'02)*, paper ThH6, Mar. 15-21, 2002, Anaheim, CA, pp. 444-445.

[27]. A. Boskovic, M. Sharma, N. Antoniadis, and M. Lee, "Broadcast and Select OADM nodes: Application and performance tradeoffs", *Proc. of IEEE/OSA Optical Fiber Communications Conference (OFC'02)*, paper TuX2, Mar. 15-21, 2002, Anaheim, CA, pp. 158-159.

[28]. N. Antoniadis, M. Lee, J.-K. Rhee, M. Sharma, and A. Boskovic, "Extending the reach of WDM networks by combating high channel resolution power divergence using dynamic power equalization", *Proc. of IEEE/Lasers and Electro-Optics Society (LEOS) Annual Meeting 2001*, La Jola, CA, November 2001, vol. 1, pp. 354 -355.

[29]. F. Farjady, N. Antoniadis, R.E. Wagner, and M. J. Yadlowsky, "Overlays and churn in WDM interconnected-ring metro networks", *Proc. of IEEE/Lasers and Electro-Optics Society (LEOS) Annual Meeting 2001*, La Jola, CA, November 2001, vol. 2, pp. 431 -432.

[30]. I. Roudas, N. 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 fiber", *Proc. of IEEE/Conference on Lasers and Electro-Optics (CLEO) '01*, San. Francisco, CA, Nov 2001, pp. 544 -545.

[31]. I. Tomkos, R. Hesse, C. Friedman, N. Antoniadis, N. Madamopoulos, B. Hallock, R. Vodhanel, and A. Boskovic, "Transport Performance of a transparent WDM regional area network utilizing optimized components/fiber", *Proc. of IEEE/OSA Optical Fiber Communications Conference (OFC '01)*, Post-deadline paper, March 2001, Anaheim, CA.

[32]. I. Tomkos, R. Hesse, N. Antoniadis, and A. Boskovic, "Impact of filter concatenation effects on the performance of metropolitan area optical networks utilizing directly modulated lasers", *Proc. of IEEE/OSA Optical Fiber Communications Conference (OFC '01)*, March 2001, Anaheim, CA, pp. BB4.1-BB4.3

[33]. N. Antoniadis, A. Boskovic, J. Downie, N. Madamopoulos, D. Pastel, J.-K. Rhee, and M. Yadlowsky, "Engineering the Performance of DWDM Metro Networks", *Proc. of IEEE/Telcordia National Fiber Optics Engineers Conference (NFOEC 2000)*, Denver, CO, Aug. 2000, Session B2, pp. 204-211.

[34]. N. Antoniadis, M. Yadlowsky, and V. L. daSilva, “Computer Simulation of a Metro WDM Ring Network”, *Proc. of IEEE/LEOS Summer Topical Meetings*, paper ThC1.4, Miami, FL, July 2000, pp. 19-20.

- [35]. I. Tomkos, N. Antoniadis, and D. Syvrides, "Modular and Reconfigurable Wavelength Interchanging Cross-connect Architectures", *Proc. of IEEE/Lasers and Electro-Optics Society (LEOS) Annual Meeting 1999*, San Francisco, CA, Nov. 1999.
- [36]. I. Roudas, N. Antoniadis, D. H. Richards, J. L. Jackel, and R. E. Wagner, "Wavelength-Domain Simulation: An Efficient Technique for the Study of the Transport Layer in Multiwavelength Optical Networks", Invited article, *Proc. of IEEE Integrated Phot. Research Topical Meeting (IPR'99)*, Santa Barbara, CA, Jul. 1999, paper RTuJ2.
- [37]. D. H. Richards, J. L. Jackel, I. Roudas, W. Xin, N. Antoniadis, and M. Ali, "Method for detecting fiber cuts in a WDM ring with saturated EDFAs", *Proc. of IEEE/OSA Optical Fiber Communications Conference (OFC '99)*, paper FJ4, San Diego, CA Feb 1999, pp. 155-157.
- [38]. I. Roudas, J. L. Jackel, D. H. Richards, N. Antoniadis, and J. E. Baran, "Transient effects in wavelength add-drop multiplexer chains", *Proc. of IEEE/OSA Optical Fiber Communications Conference (OFC '99)*, paper TuR2, San Diego, CA, pp. 249-251.
- [39]. N. Antoniadis, I. Roudas, R. E. Wagner, T. E. Stern, J. Jackel, and D. H. Richards, "Evaluating the Reach of Multiwavelength Optical Networks", *Proc. of IEEE/Lasers and Electro-Optics Society (LEOS) Annual Meeting 1998*, paper WR1, Orlando, FL, Dec. 1998, pp. 284-285.
- [40]. N. Antoniadis, I. Roudas, R. E. Wagner, J. Jackel and T. E. Stern, "Crosstalk Performance of a Wavelength Selective Cross-Connect Mesh Topology", *Proc. of IEEE/OSA Optical Fiber Communications Conference (OFC '98)*, paper TuJ4, San Jose, CA, February 1998, pp. 61-62.
- [41]. I. Roudas, N. Antoniadis, R. E. Wagner, S. F. Habiby and T. E. Stern, "Influence of realistic optical filter characteristics on the performance of multiwavelength optical networks", *Proc. of IEEE/Lasers and Electro-Optics Society (LEOS) Annual Meeting 1997*, paper ThDD2, San Francisco, CA, Nov. 1997, pp. 542-543.
- [42]. I. Roudas, N. Antoniadis, R. E. Wagner, S. F. Habiby and T. E. Stern, "Influence of filtered ASE noise and optical filter shape on the performance of a WADM cascade", *Proc. of IEE European Conference of Optical Communications (ECOC 97)*, Edinburgh, UK, Sept. 1997, page 2.143-2.146.
- [43]. N. Antoniadis, I. Roudas, R. E. Wagner, and S. F. Habiby, "Frequency-domain simulation of a chain of 50 Wavelength Add-Drop Multiplexers", *Proc. of IEEE/Conference on Lasers and Electro-Optics (CLEO) '97*, vol 11, paper CF13, Baltimore, MD, May 1997, pp. 495-496.
- [44]. K. Bala, S. J. B. Yoo, N. Antoniadis, and G. Ellinas, "A Parametric Wavelength Interchanging Cross-Connect (WIXC) Architecture", *Proc. of IEEE/OSA Optical Fiber Communications Conference (OFC '96)*, paper ThN4, San Jose, CA, February 1996, pp. 261-262.
- [45]. K. Bala, G. Ellinas, M. Post, C-C. Shen, J. Wei, and N. Antoniadis, "Towards Hitless Reconfiguration in WDM Optical Networks for ATM Transport", *Proc. of Global Telecommunications Conference (Globecom) 96*, paper ThN4, London, UK, November, 1996, vol.1, pp. 316-320.
- [46]. N. Antoniadis, W. Xin, T. E. Stern, B. Pathak and E. S. Yang, "Use of Subcarrier Multiplexing/Multiple Access for Multipoint Connections in All-Optical Networks", *Proc. of SPIE Conference in All-Optical Communications Systems: Architecture, Control and Network Issues*, Philadelphia, PA, Oct., 1995, vol. 2614, pp. 218-228.
- [47]. W. Xin, N. Antoniadis, T. E. Stern and E. S. Yang, "Heterodyne Optical Beat Interference Limitations on Wavelength Division Multiplexed Networks", *Proc. of IEEE/LEOS Summer Topical Meetings 95*, Keystone, CO, August 1995.

OTHER PUBLICATIONS

ABSTRACTS

- [1]. N. Antoniadis, I. Roudas, R. E. Wagner, S. F. Habiby, "Simulation of Optical Performance in a Cascade of 50 WDM Network Elements in Optical Networking Systems", *International Telecommunication Union, Telecommunication Standardization Sector Meetings Notes Q.25/15, Experts Meeting*, Kyoto, Japan, Nov. 1996, *International Telecommunication Union*.
- [2]. N. Antoniadis, I. Roudas, R. E. Wagner, S. F. Habiby, "Signal Power and Performance Targets for Point-to-Point WDM Systems", *Telecommunication Standardization Sector Meeting Notes Q.25/15, Experts Meeting*, Kyoto, Japan, Nov. 1996, *International Telecommunication Union*.

PATENTS

[1]. A Parametric Wavelength Interchanging Cross-Connect (WIXC) Architecture, U.S patent # 5,825,517.

[2]. Method and System for Detecting Loss of Signal in WDM Systems, U.S patent # 6,115,154.

SELECTED RECENT FUNDING

- 1) **National Science Foundation (NSF)**, “US-Spain Planning Visit: Plastic Optical Fiber (POF) Systems for Avionics Applications”, PI, Total \$30,679
- 2) **National Grid Inc.** “Science Outreach and Student Scholarships”, PI, Total \$105,000, 07/13-06/16
- 3) **National Grid Inc.** “Liberty Partnership Engineering Workshop VI”, PI, Total \$19,600, 07/12-06/13
- 4) **Department of Defense/RSoft Inc.**, “Development of Innovative WDM Networks”, Co-PI, 09/2011-08/2012
- 5) **National Grid Inc.** “Liberty Partnership Engineering Workshop III”, PI, Total \$15,000, 07/11-06/12
- 6) **National Science Foundation (NSF)**, “MRI: Acquisition of equipment for high speed optical communications research and education at The College of Staten Island”, Co-PI, Total \$210,000, 09/2010-08/2013
- 7) **National Grid Inc.** “Liberty Partnership Engineering Workshop II”, PI, Total \$15,000, 07/10-06/11
- 8) **National Grid Inc.** “Liberty Partnership Engineering Workshop I”, PI, Total \$15,000, 03/09-02/10
- 9) **National Science Foundation (NSF)**, “STEM Talent Expansion via Applied Mathematics (STEAM)”, - Co-PI, Total \$991,411, Duration: 09/2007-08/2012
- 10) **NY State Graduate Research Technology Initiative Award**, Co-PI, Total \$50,000, Virtual Laboratory Equipment for Undergraduates, Duration: 4/2007-4/2008.
- 11) **Amtekron Inc.** – “Modeling Next Generation Networks” – PI, Total \$27,000, Duration: 2004-2005

SELECTED LECTURES AND PAPERS PRESENTED

WHILE AT CSI

- [1]. “Performance Comparison of SI-POF and Connectors in an Avionics System”, *International Conference on Plastic Optical Fiber (ICPOF 2013)*, September 2013, Buzios, Rio de Janeiro, Brazil.
- [2]. Talk “Modeling and Characterization of SI-POF and Connectors for Use in an Avionics System Environment”, *International Conference on Plastic Optical Fiber (ICPOF 2011)*, September 2011, Bilbao Spain.
- [3]. Talk at The Boeing Company Inc. “Simulation Modeling in Avionics System and Networks”, January 28, 2010.
- [4]. Talk at CSI, Virtual Classroom Event with Vietnam Posts Telecommunications Technical Institute (PTTI), “Research Experiences in the Metropolitan Optical Network Environment”, December 12, 2009.
- [5]. Talk at NJ Institute of Technology, sponsored by Lasers and Electro-Optics Chapter, IEEE North Jersey Section and NJIT Electronic Imaging Center, “Engineering Optical Networks in Metropolitan Environment”, February 23rd, 2009.
- [6]. Intro Talk on “Fiber Assisted Wireless for Broadband Access Networks”, IEEE/ICST AccessNets 2008 Conference, Las Vegas, NV on October 15-18th, 2008.
- [7]. Talk “Engineering Methodology for the Use of SOAs and CWDM Transmission in the Metro Network Environment”, IEEE/OSA *Optical Fiber Communications Conference OFC '06*, March 5-10, 2006, Anaheim, CA.

- [8]. Talk “Engineering Methodology for the Use of SOAs and CWDM Transmission in the Metro Network Environment”, Telcordia Technologies, June 2007.
- [9]. Talk “Engineering Methodology for the Use of SOAs and CWDM Transmission in the Metro Network Environment. PDG Modeling Approach for SOAs”, AT&T Research Labs, November 2005.
- [10]. Talk " Techno-Economic Value Analysis of the Role of Banded Amplification in Evolving WDM Metro Network Architectures", *IEEE/Lasers and Elector-Optics Society Annual Meeting 2004*, Rio Grande, PR, Nov. 2004.
- [11]. Talk, “Current and Future Directions in Networking Research at CUNY/CSI”, seminar at AT&T Research Labs, June 2nd, 2004.
- [12]. Talk “Transport Layer Modeling Fundamentals”, seminar at Amtekron Inc., June 2004.
- [13]. Intro panel talk on “Resilient Wireless Communication Networks”, Business Application Session, IEEE Wireless Communication and Networking Conference, Atlanta, GA, March 2004.

BEFORE CSI

- [14]. Talk "Design, Transport performance study and Engineering of a 11Tb/s US Metro Network", *Optical Fiber Communications Conference '02*, Anaheim, CA.
- [15]. Talk "Extending the reach of WDM networks by combating high channel resolution power divergence using dynamic power equalization", *Lasers and Electro-Optics Society LEOS Conference*, La Jola, CA, Nov. 2001.
- [16]. Talk "Overlays and churn in WDM interconnected-ring metro networks", *Lasers and Electro-Optics Society LEOS 2001 Conference*, La Jola, CA, Nov. 2001.
- [17]. Talk "Engineering the Performance of DWDM Metro Networks", *National Fiber Optics Engineer Conference (NFOEC) 2000*, Denver, CO, Aug. 2000.
- [18]. Talk "Computer Simulation of a Metro WDM Ring Network", *LEOS/IEEE Summer Topical Meetings*, Miami, FL, Jul. 2000.
- [19]. Invited Talk “Evaluating the Reach of Multi-wavelength Optical Networks”, *LEOS 98 Conference*, Orlando, FL, Dec. 1998.
- [20]. Talk “Crosstalk Performance of a Wavelength Selective Cross-Connect Mesh Topology”, *OFC '98 Conference*, Febr. 22-27, 1998, San Jose, CA.
- [21]. Talk “Influence of filtered ASE noise and optical filter shape on the performance of a WADM cascade”, *European Conference in Optical Communications 97*, Edinburgh, UK, Sept. 1997.
- [22]. Talk “Frequency-domain simulation of a chain of 50 Wavelength Add-Drop Multiplexers”, *CLEO '97 Conference*, Baltimore, MD, May 1997.
- [23]. Talk “Use of Subcarrier Multiplexing/Multiple Access for Multipoint Connections in All-Optical Networks”, *SPIE Conference in All-Optical Communications Systems: Architecture, Control and Network Issues*, Philadelphia, PA, Oct, 1995.

PROFESSIONAL ORGANIZATION OF CONFERENCES AND SYMPOSIA

- 1) Co-organized and chaired a panel on “Fiber Assisted Wireless for Broadband Access Networks” at the IEEE/ICST AccessNets 2008 Conference held in Las Vegas, NV on October 15-18th, 2008.
- 2) Organized and chaired a panel on “Resilient Wireless Communication Networks” at the IEEE Wireless Communications and Networking Conference held in Atlanta, GA, on March 23, 2004.

PhD Student Supervision

- **Advisor to PhD Students that Graduated:**
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- **Advisor to current Ph.D. students:**
 - Bhadresh Pathak, PhD student, Electrical Engineering, City College of CUNY (on leave)
 - Natali Pujols, PhD student, Electrical Engineering, City College of CUNY (active)

Dissertation Committee Member

- 1) CUNY Graduate Center - Thesis Dissertation Committee Member for Dr. S.R. Zaidi, Successfully defended thesis at CCNY in April 2013.
- 2) CUNY Graduate Center - Thesis Dissertation Committee Member for Dr. T. Rahmad, Successfully defended thesis at CCNY in September 2008.
- 3) CUNY Graduate Center - Thesis Dissertation Committee Member for Dr. H. Erkan, Successfully defended thesis at CCNY in February 2008.
- 4) CUNY Graduate Center - Thesis Dissertation Committee Member for Dr. S. R. Sharif, Successfully defended thesis at CCNY in January 2008.
- 5) CUNY Graduate Center - Thesis Dissertation Committee Member for Dr. AMS Delowar Hossain, Successfully defended thesis at CCNY in June 2007.
- 6) CUNY Graduate Center - Thesis Dissertation Committee Member for Dr. Haidar Chamas, Successfully defended thesis at CCNY in December 2005.
- 7) CUNY Graduate Center - Thesis Dissertation Committee Member for Dr. Antonios Hanjiantonis, Successfully defended thesis at CCNY in October 2005.
- 8) CUNY Graduate Center - Thesis Dissertation Committee Member for Dr. Ahmed Khalil, Successfully defended thesis at CCNY in April 2005.