



## Name

**MIGUEL A. MURIEL**

## Current Professional Situation

Employer: UNIVERSIDAD POLITÉCNICA DE MADRID (UPM)  
Faculty /Institute: ETSI TELECOMUNICACIÓN  
Academic Department: TECNOLOGIA FOTONICA Y BIOINGENIERIA  
Postal Address: Avenida Complutense nº 30, 28040-Madrid, Spain  
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Position: Full Professor in Photonics

## Brief CV

He received the *Telecommunication Engineer degree* (five years engineering program) and the *Ph.D. degree in Telecommunication Engineering* with "Summa Cum Laude" from the Universidad Politécnica de Madrid (UPM), Spain, in 1977 and 1980, respectively.

Since 1979 he has been with E.T.S. Ingenieros de Telecomunicación, as Assistant Professor in 1980, Associate Professor in 1983, and Full Professor since 1989. He was the Head of the Photonic Technology Department from 1989 to 1997.

He has 6 (maximum) six-year research periods recognized, and 6 (maximum) five-year teach periods recognized.

He has a Hirsch h-index of 25, with 109 international journal publications and 75 conference contributions published, totalling 184 international publications, in the fields of liquid crystals, optical bistability, optical chaos, pulse propagation in fibers and optical structures, optical signal processing, integrated optics, fiber-optic structures for signal processing, linear and nonlinear resonators, fiber-optics sensors, fiber Bragg gratings, time-frequency analysis, time-space duality, temporal Fourier and Talbot effects, and spectral analysis.

He is responsible for the Photonic Signal Group of the Universidad Politécnica de Madrid (GSF-UPM). He has led 16 Research Engineering Projects, some of them with Spanish and European industries. He has taught courses on Optical Electronics, Optical Communications, Fourier optics, Radio-Optics and Optical Signal Processing. He has also acted as a technical reviewer for several international journals in the field of photonics and signal processing.

He has supervised 14 Ph.D. (9 Full Professors, and 3 Researchers). His professional interest covers periodic structures, spectral analysis, time-frequency representations, Time-Space duality and in general signal processing applied to photonics and quantum engineering.

Prof. Muriel is a member of IEEE (Institute of Electrical and Electronic Engineers, Member´1984 and Senior Member´1998), and OSA (Optical Society of America, Member´1982 and Senior Member´2011). He has received prizes to the Best Doctoral dissertation, from the Universidad Menendez y Pelayo, Universidad Politécnica de Madrid and Colegio de Ingenieros de Telecomunicación.

Also, he has received the Junior Research Prize of the Universidad Politécnica de Madrid in 1989, and the Senior Research Prize of the Universidad Politécnica de Madrid in 1998.

**Academic Titles**

<b>DEGREE</b>	<b>CENTRE</b>	<b>YEAR</b>
TELECOMMUNICATIONS ENGINEER (EQUIVALENT TO MASTER DEGREE)	E.T.S.I. TELECOMUNICACION. UNIVERSIDAD POLITECNICA DE MADRID	1977
Ph.D. IN TELECOMMUNICATIONS ENGINEERING	E.T.S.I. TELECOMUNICACION. UNIVERSIDAD POLITECNICA DE MADRID	1980

**Professional Activity**

<b>Academic Position</b>	<b>Management Position</b>	<b>Institution</b>	<b>Period</b>
Assistant Professor in Optical Communications		UNIVERSIDAD POLITECNICA DE MADRID ETSI Telecomunicación	1980/08-1982/02
Associate Professor in Optical Communications		UNIVERSIDAD POLITECNICA DE MADRID ETSI Telecomunicación	1982/02-1989/07
Full Professor in Photonics	Deputy Head of Department	UNIVERSIDAD POLITECNICA DE MADRID ETSI Telecomunicación	1989/07-1989/09
Full Professor in Photonics	Head of Department	UNIVERSIDAD POLITECNICA DE MADRID ETSI Telecomunicación	1989/09-1997/10
Full Professor in Photonics	Responsible for the Photonic Signal Group	UNIVERSIDAD POLITECNICA DE MADRID ETSI Telecomunicación	1997/10-present

**Awards and Recognitions**

- 1978** Spanish Ministerio de Educación y Ciencia Scholarship.
- 1980** Extraordinary Ph.D. Doctorate Prize, (Universidad Politécnica de Madrid).
- 1980** Prize to the best Ph.D. Doctoral dissertation, (Universidad Menendez y Pelayo).
- 1980** Prize to the best Ph.D. Doctoral dissertation, (Spanish Colegio Ingenieros de Telecomunicación)
- 1983** French Republic Scholarship.
- 1984** United Kingdom Scholarship.
- 1985** USA, NATO Scholarship.
- 1989** Junior Research Prize (Universidad Politécnica de Madrid).
- 1998** Senior Research Prize (Universidad Politécnica de Madrid).
- 2001** Selected among 100 Spanish Scientists by the Spanish Crown (25 anniversary of the Reign).
- 2008** Universidad Politécnica de Madrid Medal.
- 2008** Universidad Politécnica de Madrid Scholarship.
- 2012** Fundación Caja Madrid Scholarship.
- 2018** Salvador de Madariaga Scholarship.

**Pioneer Works**

Photonic signal processing based on Fiber Bragg Gratings (Time-Space Duality, Real-Time Fourier Transform, Temporal Talbot effect, Layer peeling synthesis).

### Activity in Funded Research Projects

- 19** Research Projects funded by the Spanish Government (**12 as Principal Researcher**)
- 9** Research Projects and Actions funded by the European Commission
  - 1 European Project FP7
  - 1..European Project H2020
  - 2 ESPRIT Projects (ESPRIT BRA Foundations of Optoelectronic CompUterS, ESPRIT BRA Computers and Optics StudY. (COSTY)) (**Principal Researcher**)
  - 2 6th Framework IST Networks of excellence
    - IST EPHOTON/ONE
    - IST EPHOTON/ONE+
  - 3 European Project funded COST Actions
- 3** Research projects under direct contract with private companies (**2 as Principal Researcher**)

### Publications Summary

Google Scholar Citations: <https://scholar.google.com/citations?user=kYB5FMwAAAAJ&hl=en>

ISI Hirsch **h-index: 25**

Citations=3259

#### 184 International Publications

- 104 ISI-JCR Journal publications (IEEE, OSA, IEE, etc..)
- 75 Conference publications (ECOC, OFC, LEOS, CLEO, etc..)
- 5 Non-ISI-JCR Journal publications

### Patents

- 1) **P9802483**: "Fourier transformer of optical signals in the time domain, based on fiber gratings ". Registered in the Spanish Patent and Trademark Office on November 26, 1998.
- 2) **P9900390**: " Design method of fiber gratings by varying the Bragg period for use as optical filter ". Registered in the Spanish Patent and Trademark Office on February 25, 1999.
- 3) **P201030114**: " Method and system for transmission of optical pulses through dispersive media ". Registered in the Spanish Patent and Trademark Office on January 29, 2010.

### Activities in Professional Bodies

**Senior Member** of the Optical Society of America (**OSA**), 2011 (Member, 1982).

**Senior Member** of the Institute of Electrical and Electronics Engineers (**IEEE**), 1998 (Member, 1984).

Member of the Spanish Colegio de Ingenieros de Telecomunicación, 1978.

### Participation in Committees of International Conferences

European Conference on Optical Communications (ECOC)

Optical Fiber Communications conference (OFC)

### Referee for SCI Journals

Optics Express, Optics Letters, Applied Optics, Optics Communications, IEEE Journal of Lightwave Technology, IEEE Journal of Quantum Electronics, IEEE Journal of Selected Topics on Quantum Electronics, IEEE Photonics Technology Letters, IEE Electronics Letters

### Research Stays

**1983** Université Paris-Sud, Orsay, Institute d'Electronique Fondamentale (France) (3 months).

**1984** Heriot-Watt Edinburgh University (U.K.) (3 months).

**1986** Optical Sciences Center, University of Arizona, Tucson (U.S.A.) (3 months).

**1987** Laboratorium voor Elektromagnetisme en Acustica, Ghent University (Belgium) (2 months).

**1999** Department of Electrical and Computer Engineering, Toronto University (Canada) (1 month).

**2008** Department of Electronic Engineering, Tsinghua University (Beijing, China) (1 month).

**2012** Department of Electrical & Computer Engineering, McGill University, Montreal (Canada) (3 months).

### Ph. D. Supervised

(All presented at Universidad Politecnica de Madrid, with maximum marks).

(Those marked with an asterisk have received the Extraordinary Prize for the Best Doctoral Thesis)

- 1) " Signal Processing in Optical Communications, with integrated electrooptical switches ".  
**J. M. López-Higuera**, July 1989 \*. (*Full Professor at Universidad de Cantabria*).
- 2) " Integrated electrooptical filters in Optical Networks ".  
**M. López-Amo**, December 1989 \*. (*Full Professor at Universidad Pública de Navarra*).
- 3) " Modal analysis applied to photonic switches based on nonlinear optics ".  
**F. J. Fraile-Pelaez**, September 1990. (*Full Professor at Universidad de Vigo*).
- 4) " Photonic processing using fiber optic structures ".  
**J. Capmany**, February 1991 \*. (*Full Professor at Universidad Politécnica de Valencia*).
- 5) " All-fiber based filters in optical networks ".  
**P. Rodríguez Horche**, September 1991. (*Full Professor at Universidad Politécnica de Madrid*).
- 6) " Photonic signal self-routing".  
**I. Sanz**, March 1993 \*.
- 7) " Residential wide band access networks ".  
**R. Diaz de la Iglesia**, June 1994.
- 8) " Reciprocal and non-reciprocal optical fiber networks, with perturbations ".  
**J. L. Arce**, July 1997. (*Full Professor at Universidad de Cantabria*).
- 9) " Electro-optical modulators and fiber gratings in photonic systems ".  
**D. Benito**, June 1999. (*Full Professor at Universidad Pública de Navarra*).
- 10) " Fiber gratings in optical communications ".  
**A. Carballar**, September 1999 \*. (*Full Professor at Universidad de Sevilla*).
- 11) " Photonic signal processing using dualities in fiber gratings ".  
**J. Azaña**, February 2001 \*. (*Full Professor at INRS-Quebec, Canada* ).
- 12) "Multiband Photonic Signals Analysis and Processing".  
**V. García Muñoz**, June 2008. (*Photonics Test Engineer at IMEC, Leuven, Belgium*).
- 13) "Photonic Signal Processing with Resonant Structures".  
**M. A. Preciado**, February 2010. (*Research Fellow at University of Glasgow, Scotland, UK*).
- 14) "Arbitrary waveform generation based on Microwave Photonics Technology for Ultrawideband applications".  
**V. Moreno**, November 2016. (*Dr. Ing. at Vodafone, Dusseldorf, Germany*)

**Research Projects (Principal Researcher)**

- 1.-"Design procedures for integrated optics devices with electrodes".  
Financed by: Telefónica ( Research and Development), (1986).
- 2.-"Development of tunable electro-optic filters for Optical Communications".  
Financed by: Advice Committee for Scientific and Technical Research of Spain (CAICYT), (1987-1988).
- 3.-"Study and design of electro-optic filters for switching and routing of optical signals realized in NbO<sub>3</sub>Li".  
Financed by: General Management of Telecommunications in the Ministry of Transport, Tourism, and Communications of Spain, (1988).
- 4.- "Foundations of optoelectronic computers, FOCUS".  
ESPRIT Basic Research Action.  
Financed by: 100% by the European Economic Community, (1989-1991).
- 5.-"Development of a coherent fiber optic transmission system".  
Financed by: Alcatel, Standard Eléctrica, S.A., (1989-1993).
- 6.- "Computers and Optics, COSTY"  
ESPRIT Basic Research Action  
Financed by: 100% by the European Economic Community, (1990-1992).
- 7.-"Development of new optical fiber-based devices for its application in photonic systems".  
Financed by: Interministry Commission of Science and Technology of Spain (CICYT), through the National Program of Information and Communication Technologies, (1990-1992).
- 8.-"Development of structures based on Erbium doped fiber to be employed in optical processing".  
Financed by: Madrid Autonomous Community, through a Regional Research Initiative, (1991-1992).
- 9.-"Development of photonic sensors for detection of electrical currents and voltages".  
Financed by: Interministry Commission of Science and Technology of Spain (CICYT), as a special action of the National Program of Information and Communication Technologies, (1994).
- 10.-"Development of new device based on fiber gratings and their applications in optical communications"  
Financed by: Interministry Commission of Science and Technology of Spain (CICYT), through the National Program of Information and Communication Technologies,(1996-1998).
- 11.-"Fiber gratings applied to photonic signal processing".  
Financed by: Interministry Commission of Science and Technology of Spain (CICYT), through the National Program of Information and Communication Technologies,(1999-2001).
- 12.-" Multiband Periodic Structures and Photonic Processing ".  
Financed by: Interministry Commission of Science and Technology of Spain (CICYT), through the National Program of Information and Communication Technologies, (2002-2004).
- 13.-"Time-Frequency and Impulse Responses in CDMA".  
Financed by: Ministerio de Educación y Ciencia, through Plan Nacional de Investigación Científica, Desarrollo e Innovación Tecnológica 2004-2007, (2005-2007).
- 14.-" Photonic Signal Processing: Analysis, Designs and Applications".  
Financed by: Ministerio de Educación y Ciencia, through Plan Nacional de Investigación Científica, Desarrollo e Innovación Tecnológica 2004-2007, (2007-2010).
- 15.-"Resonant Structures for Wide-Band Photonic Signal Applications".  
Financed by: Ministerio de Ciencia e Innovación, through Plan Nacional de Investigación Científica, Desarrollo e Innovación Tecnológica 2008-2011, (2011-2014).
- 16.-"Ultrast Fast Photonic Pulse Processing".  
Financed by: Ministerio de Economía y Competitividad, through Plan Estatal de Investigación Científica y Técnica y de Innovación 2013-2016, (2015-2019).

**ISI-JCR Journal Publications** (reverse chronological order)

- 104) D. Domenech, P. Chamorro-Posada, F. J. Fraile-Pelaez, M. J. Erro, S. Tainta, M. A. Muriel, R. Baños, J. Bolten, and H. Kleinjans, "Characterization of Microring Filters for Differential Group Delay Applications". *IEEE/OSA Journal of Lightwave Technology*, Vol. 35, No. 14, pp. 2943-2947, (2017).
- 103) V. Moreno, J. Mora, D. Barrera, M. A. Muriel and J. Capmany, "UWB pulses generation and modulation through a customized FBG based photonic device". *IEEE Photonics Technology Letters*, Vol. 28, No. 21, pp. 2319-2322, (2016).
- 102) V. Moreno, M. J. Connelly, J. Romero-Vivas, L. Krzczanowicz, J. Mora, M. A. Muriel and J. Capmany. "Integrated 16-ps Pulse Generator Based on a Reflective SOA-EAM for UWB Schemes". *IEEE Photonics Technology Letters*, Vol. 28, No. 20, pp. 2180-2182, (2016).
- 101) V. Moreno, M. Rius, J. Mora, M. A. Muriel and J. Capmany, "Scalable High-Order UWB Pulse Generation Employing an FBG-Based Photonic Superstructure" *IEEE Photonics Technology Letters*, Vol. 27, No. 20, pp. 2146-2149, (2015).
- 100) V. Moreno, M. Rius, J. Mora, M. A. Muriel and J. Capmany, "Scalable UWB Photonic Generator based on the combination of doublet pulses". *Optics Express*, Vol. 22, No. 13, pp. 15346-15351, (2014).
- 99) S. Tainta, M. J. Erro, M. J. Garde and M. A. Muriel, "Temporal self-imaging effect for periodically modulated trains of pulses". *Optics Express*, Vol. 22, No. 12, pp. 15251-15266, (2014).
- 98) V. Moreno, M. Rius, J. Mora, M. A. Muriel and J. Capmany, "UWB Monocycle Generator based on the non-linear effects of an SOA-integrated structure". *IEEE Photonics Technology Letters*, Vol., No., pp., (2014).
- 97) V. Moreno, M. Rius, J. Mora, M. A. Muriel and J. Capmany, "UWB Doublet Generation Employing Cross-Phase Modulation in a Semiconductor Optical Amplifier Mach-Zehnder interferometer". *IEEE Photonics Journal*, Vol. 5, No. 6, Article 7101106 (1-6), (2013).
- 96) S. Tainta, M. J. Erro, M. J. Garde and M. A. Muriel, "Experimental Electrically Reconfigurable Time-Domain Spectral Amplitude Encoding/Decoding in an OCDMA System". *Fiber and Integrated Optics*, Vol. 32, pp. 324-335, (2013).
- 95) V. Moreno, M. Rius, J. Mora, M. A. Muriel and J. Capmany, "Integrable high order UWB pulse photonic generator based on cross-phase modulation in an SOA-MZI". *Optics Express*, Vol. 21, No. 19, pp. 22911-22917, (2013).
- 94) M. A. Preciado and M. A. Muriel, "Bandlimited Airy Pulses for Invariant Propagation in Single-Mode Fibers". *IEEE/OSA Journal of Lightwave Technology*, Vol. 30, No. 23, pp. 3660-3666,(2012).
- 93) S. Tainta, M. J. Erro, W. Amaya, M. J. Garde, S. Sales and M. A. Muriel, "Periodic Time-Domain Modulation for the Electrically Tunable Control of Optical Pulse Train Envelope and Repetition Rate Multiplication". *IEEE Journal of Selected Topics in Quantum Electronics*, Vol. 18, No. 1, pp.377-383, (2012).
- 92) M. J. Erro, A. Loayssa, S.Tainta, R. Hernandez, D. Benito, M. J. Garde, and M. A. Muriel, "On the Measurement of Fiber Bragg Grating's Phase Responses and the Applicability of Phase Reconstruction Methods". *IEEE Transactions on Instrumentation and Measurement*, Vol. 60, No. 4, pp. 1416-1422, (2011).
- 91) J. Caraquitená, M. Beltrán, R. Llorente, J. Martí, and M. A. Muriel, "Spectral self-imaging effect by time-domain multilevel phase modulation of a periodic pulse train". *Optics Letters*, Vol. 36, No. 6, pp. 858-860, (2011).

- 90) S. Tainta, W. Amaya, M. J. Erro, M. J. Garde, S. Sales and M. A. Muriel, "WDM compatible and electrically tunable SPE-OCDMA system based on the temporal self-imaging effect". *Optics Letters*, Vol. 36, No. 3, pp. 400-402, (2011).
- 89) M. A. Preciado, and M. A. Muriel, "Proposed flat-topped pulses bursts generation using all-pass multi-cavity structures". *Optics Express*, Vol. 17, No. 16, pp. 13875-13880, (2009).
- 88) V. Garcia-Muñoz, C. Caucheteur, S. Bette, M. Wuilpart, M. A. Muriel and P. Mégret, "Reduction of polarization related effects in superimposed fiber Bragg gratings". *Applied Optics*, Vol. 48, No. 9, pp. 1635-1641, (2009).
- 87) M. A. Preciado and M. A. Muriel, "Flat-top pulse generation based on a fiber Bragg grating in transmission". *Optics Letters*, Vol. 34, No. 6, pp. 752-754, (2009).  
[Selected for the May 2009 issue of Virtual Journal of Ultrafast Science, Vol. 8, No 5, Photonics, <http://www.vjultrafast.org> ]
- 86) M. A. Preciado and M. A. Muriel, "Design of an ultrafast all-optical differentiator based on a fiber Bragg grating in transmission". *Optics Letters*, Vol. 33, No. 21, pp. 2458-2460, (2008).
- 85) M. A. Preciado, and M. A. Muriel, "All-pass optical structures for repetition rate multiplication". *Optics Express*, Vol. 16, No. 15, pp. 11162-11168, (2008).
- 84) M. A. Preciado, and M. A. Muriel, " Ultrafast all-optical integrator based on a fiber Bragg grating: proposal and design". *Optics Letters*, Vol. 33, No. 12, pp. 1348-1350, (2008).
- 83) M. A. Preciado, and M. A. Muriel, " Repetition rate multiplication using a single all-pass optical cavity". *Optics Letters*, Vol. 33, No. 9, pp. 962-964, (2008).
- 82) J. Capmany, M. A. Muriel, and S. Sales, " Highly accurate synthesis of fiber and waveguide Bragg gratings by an impedance reconstruction layer-aggregation method". *IEEE Journal of Quantum Electronics*, Vol. 43, No. 10, pp. 889-898, (2007).
- 81) M. A. Preciado, and M. A. Muriel, "Ultrafast all-optical Nth-order differentiator and simultaneous repetition-rate multiplier of periodic pulse train". *Optics Express*, Vol. 15, No. 19, pp. 12102-12107, (2007).
- 80) V. García-Muñoz, M. A. Preciado, and M. A. Muriel, "Simultaneous ultrafast optical pulse train bursts generation and shaping based on Fourier series developments using superimposed fiber Bragg gratings". *Optics Express*, Vol. 15, No. 17, pp. 10878-10889, (2007).
- 79) J. Capmany, P. Muñoz, J.D. Domenech, and M. A. Muriel, "Apodized coupled resonator waveguides". *Optics Express*, Vol. 15, No. 16, pp. 10196-10206, (2007).
- 78) J. Capmany, M. A. Muriel and S. Sales, " Synthesis of 1-D Bragg gratings by a layer-aggregation method". *Optics Letters*, Vol. 32, No. 16, pp. 2312-2314, (2007).
- 77) M. A. Preciado, V. García-Muñoz, and M. A. Muriel, "Ultrafast all-optical Nth-order differentiator based on chirped fiber Bragg gratings" *Optics Express*, Vol. 15, No. 12, pp. 7196-7201, (2007).
- 76) M.J. Erro, I. Arnedo, M.A.G. Laso, T. Lopetegi and M. A. Muriel, "Phase-Reconstruction in Photonic Crystals From S-Parameter Magnitude In Microstrip Technology" *Optical and Quantum Electronics*, Vol. 39, No. 4-6, pp. 321-331, (2007).
- 75) M. A. Preciado, V. Garcia-Muñoz and M. A. Muriel, "Grating Design of Oppositely Chirped FBGs for Pulse Shaping". *IEEE Photonics Technology Letters*, Vol. 19, No. 6, pp. 435-437, (2007).



- 74) V. Torres-Company, J. Lancis, P. Andres and M. A. Muriel, "Real-Time Optical Spectrum Analyzers Operating With Broadband Continuous-Wave Light Source ".  
*Optics Communications*, Vol. 273, pp. 320-323, (2007).
- 73) V. Garcia-Muñoz, M. A. Muriel and J. Capmany, "Analysis of Superimposed Fiber Bragg Gratings Using the Microwave V-I Transmission Matrix Formalism ".  
*IEEE Photonics Technology Letters*, Vol. 17, No. 11, pp. 2343-2345, (2005).
- 72) V. Garcia-Muñoz and M. A. Muriel, "Hermite-Gauss Series Expansions Applied to Arrayed Waveguide Gratings".  
*IEEE Photonics Technology Letters*, Vol. 17, No. 11, pp. 2331-2333, (2005).
- 71) J. Lancis, J. Caraquitená, P. Andres and M. A. Muriel, " Temporal Self-Imaging Effect for Chirped Laser Pulse Sequences: Repetition Rate and duty Cycle Tunability".  
*Optics Communications*, Vol. 253, pp. 156-163, (2005).
- 70) J.L. Arce-Diego, D. Pereda-Cubian and M. A. Muriel, " Polarization effects in short and long period fibre gratings: A generalized approach ".  
*Journal of Optics A: Pure and Applied Optics*, Vol. 6, No. 3, pp. S45-S51, (2004).
- 69) J. Capmany, M. A. Muriel, S. Sales, J. J. Rubio and D. Pastor, "Microwave V-I transmission Matrix Formalism for the Analysis of Photonic Circuits: Application to Fiber Bragg Gratings".  
*IEEE/OSA Journal of Lightwave Technology*, Vol. 21, No. 12, pp. 3125-3134,(2003).
- 68) J. Capmany, D. Pastor, S. Sales and M. A. Muriel, "Pulse distortion in optical fibers and waveguides with arbitrary chromatic dispersion".  
*Journal of the Optical Society of America B*, Vol. 20, No. 12, pp. 2523-2533, (2003).
- 67) J.Azaña and M. A. Muriel, " Study of Optical Pulses-Fiber Gratings Interaction by Means of Joint Time-Frequency Signal Representations".  
*IEEE/OSA Journal of Lightwave Technology*, Vol.21, No. 11, pp. 2931-2941,(2003).
- 66) M. A. G. Laso, T. Lopetegui, M. J. Erro, D. Benito, M. J. Garde, M. A. Muriel, M. Sorolla, and M. Guglielmi, "Real-Time Spectrum Analysis in Microstrip Technology".  
*IEEE Transactions on Microwave Theory and Techniques*, Vol. 51, No. 3, pp. 705-717, (2003).
- 65) A. Carballar and M. A. Muriel, "Growth Modeling of Fiber Gratings: A Numerical Investigation".  
*Fiber and Integrated Optics*, Vol. 21, No. 6, pp. 451-463, ( 2002 ).
- 64) M. A. G. Laso, T. Lopetegui, M. J. Erro, D. Benito, M. J. Garde, M. A. Muriel, M. Sorolla, and M. Guglielmi, "Chirped Delay Lines in Microstrip Technology".  
*IEEE Microwave and Wireless Components Letters*, Vol. 11, No. 12, pp. 486-488, (2001).
- 63) J. Azaña and M. A. Muriel, "Technique for Simultaneously Multiplying the Repetition Rate of Multi-Wavelength Optical Pulse Trains".  
*IEEE Photonics Technology Letters*, Vol.13, No.12, pp. 1358-1360, (2001).
- 62) J. Azaña and M. A. Muriel; "Temporal Self-Imaging Effects: Theory and Application for Multiplying Pulse Repetition Rates".  
*IEEE Journal of Selected Topics in Quantum Electronics*, Vol. 7, No. 4, pp.728-744, (2001).
- 61) J. Azaña and M. A. Muriel; "Simultaneous Multi-Wavelength Real-Time Optical Spectrum Analysis".  
*Applied Optics*, Vol. 40, N° 23, pp.3831-3842, (2001).
- 60) J.Azaña, M.A.Muriel, L.R.Chen, and P.W.E.Smith, "Fiber Bragg Grating Period Reconstruction Using Time-Frequency Signal Analysis and Application to Distributed Sensing".  
*IEEE/OSA Journal of Lightwave Technology*, Vol.19, No.5, pp.646-654,(2001).
- 59) J.Azaña and M.A.Muriel, "Real-Time Fourier Transformation Performed Simultaneously over Multi-Wavelength Signals".  
*IEEE Photonics Technology Letters*, Vol.13, No.1, pp. 55-57, (2001).

- 58) J.Azaña, M.A.Muriel, and A.Carballar, "Real-Time Fourier Transformer System Using transmissive Fiber Gratings".  
*Fiber and Integrated Optics*, Vol. 19, No. 4, pp. 439-453, (2000).
- 57) M.J.Erro, M.A.G.Laso, D.Benito, M.J.Garde, and M.A.Muriel, "Third-Order Dispersion in Linearly Chirped Bragg Gratings and Its Compensation".  
*Fiber and Integrated Optics*, Vol. 19, No. 4, pp. 367-382, (2000).
- 56) J.Azaña and M.A.Muriel, "Reconstruction of Fiber Gratings Period Profile by use of Wigner-Ville Distribution and Spectrograms".  
*Journal of the Optical Society of America A*, Vol. 17, No. 12, pp. 2496-2505 (2000).
- 55) J.Azaña and M.A.Muriel, "Reconstructing Arbitrary Strain Distributions within fiber gratings by Time-Frequency Signal Analysis".  
*Optics Letters*, Vol. 25, No. 10, pp. 698-700, (2000).
- 54) J.Azaña and M.A.Muriel, "Real-Time Optical Spectrum Analysis Based on the Time-Space Duality in Chirped Fiber Gratings".  
*IEEE Journal of Quantum Electronics*, Vol.36, No.5, pp. 517-526, (2000).
- 53) J.Azaña, L.R.Chen, M.A.Muriel, and P.W.E.Smith, "Experimental Demonstration of Real-Time Fourier Transformation Using Linearly Chirped Fibre Bragg Gratings".  
*Electronics Letters*, Vol. 35, No. 25, pp.2223-2224, (1999).
- 52) J.Azaña and M.A.Muriel, "Technique for multiplying the repetition rates of periodic trains of pulses by means of a temporal self-imaging effect in chirped fiber gratings".  
*Optics Letters*, Vol. 24, No. 2, pp.1672-1674, (1999).
- 51) J.Azaña and M.A.Muriel, "Temporal Talbot effect in fiber gratings and its applications".  
*Applied Optics*, Vol. 38, No. 29, pp.6700-6704, (1999).
- 50) D.Benito, M.A.G.Laso, M.J.Erro M.J.Garde, and M.A.Muriel, "Chirped Fiber Grating-based Fiber-optic Communication Evaluator: Design and Implementation".  
*Optical Engineering*, Vol.38, No.10, pp.1640-1644, (1999).
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