

Academics

- 2011- 2014 Ph.D. from the Science Faculty, School of Physics at National University of La Plata (UNLP), La Plata, Argentina.

Thesis: "Phase Singularities Study with Applications to Metrology"

CONICET Fellow at Centro de Investigaciones Ópticas (CIOp), La Plata-Argentina.
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- 2005-2010 Physics Engineering, EAFIT University, Medellin-Colombia.

Thesis: "Development of a Computer Module for the Synthesis and Processing of Optical Fields with Applications in Digital Holography and Speckle"
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- 2004 School: Colegio San Ignacio, Medellin-Colombia

Research Experience

- 01.2017- Current Computer Engineering and Computer Science Department (CECS), University of Louisville
Postdoctoral/Research/Teaching Associate.
- 01.2016- 12.2016 Mathematical Modelling Group, EAFIT University
Researcher. Project: Centro de Excelencia y Apropiación en Big Data y Data Analytics (CAOBA).
- 01.2015- 12.2015 Mathematical Modelling Group, EAFIT University
Researcher. Project: Emotion-detection system in audio signals: Prototype design.
- 01.2012- 12.2015 Centro de Investigaciones Ópticas, CIOp (CONICET, CIC) and OPTIMO (Dpto. Ciencias Básicas, Facultad Ingeniería, UNLP). **Research Assistant. Project:** Opto-digital image processing by using random carriers: Proyecto Universidad Nacional de La Plata 11/1168
- 01.2012- 12.2015 Centro de Investigaciones Ópticas, CIOp (CONICET, CIC) and OPTIMO (Dpto. Ciencias Básicas, Facultad Ingeniería, UNLP). **Research Assistant. Project:** Opto-digital image processing by using random carriers: Proyecto de Investigación Plurianual del CONICET (PIP 2012-2014 GI) No. 11220110100549.
- 07.2010- 06.2011 Applied Optics Group, EAFIT University **Research Assistant. Project:** Optical Vortex Metrology Stage II.
- 01.2010-07.2010 Applied Optics Group, EAFIT University **Research Assistant. Project:** Optical Vortex Metrology Stage I.

07.2009-07.2010	Basic Science Faculty, EAFIT UNIVERSITY Student Assistant Professorship
12.2008-06.2009	Vestimundo, GEF Industrial Internship Capacitive Humidity Sensor development to monitoring fabrics dry process
01.2006-11.2008	Basic Science Faculty, EAFIT UNIVERSITY Student Assistant Professorship

Teaching Experience

Course	Institution	Level	Year	Semester
Integral Signal Transforms	EAFIT University	Ph.D.	2016	2
Digital Signal Processing	Universidad del Azuay Ecuador	MSc	2016	1
Advance Project I				
Project: "Super-resolution techniques for Medical Image Processing"	EAFIT University	B.Eng	2016	1
Mathematical Physics II	EAFIT University	B.Eng	2016	1
Integral Signal Transforms	EAFIT University	Ph.D.	2015	2
Mathematical Physics II	EAFIT University	B.Eng	2015	2
Fourier Optics	EAFIT University	MSc	2015	1
Physics I	EAFIT University	B.Eng	2015	1
Advance Project I				
Project: "Synthesis and Recognition of facial characteristics in video"	EAFIT University	B.Eng	2015	1
Research Practice in Mathematical Engineering				
Project: "Evaluation and development of facial features extraction strategies in noisy images for emotion recognition"	EAFIT University	B.Eng	2015	1

Academic Events Participations

28.10.2015- 30.10.2015	San Nicolás, Argentina, XX Congreso Argentino de Bioingeniería, IX Jornada de Ingeniería Clínica
11.11.2013-15.11.2013	Universidad Pontificia Bolivariana, Medellín, Colombia XIII Encuentro Nacional de Óptica, IV CANCOA 2013

22.07.2013-26.07.2013	Porto, Portugal VIII Iberoamerican Conference on Optics, XI Latinamerican meeting on Optics, Lasers and Applications
14.10.2012-18.10.2012	Rochester, New York, USA Frontiers in Optics 2012/Laser Science XXVIII
10.09.2012-14.09.2012	Universidad EAFIT, Medellín, Colombia III Congreso Nacional de Ingeniería Física
20.09.2010-24.09.2010	PUCP, Lima, Peru VII Reunión Iberoamericana de Óptica y X Encuentro Latinoamericano de Óptica, Láseres y Aplicaciones
29.06.2010-02.07.2010	Orlando, Florida, USA The 2nd International Symposium on Optical Engineering and Photonic Technology: OEPT 2010
05.10.2009-09.10.2009	Universidad del Magdalena, Santa Marta XXIII Congreso Nacional de Física
18.05.2009-22.05.2009	UNAL Sede Manizales, I Congreso Nacional de Ingeniería Física
09.03.2009-13.03.2009	PUCP, Lima, Peru II Conferencia Internacional de Espectroscopia, Spectra 2009
12.08.2009-15.08.2008	Universidad EAFIT, Medellín, Colombia Congreso Colombiano de Astronomía y Astrofísica
17.07.2008-22.07.2008	Las Vegas, Nevada, USA 2008 World Congress in Computer Science, Computer Engineering, and Applied Computing
16.09.2007-20.09.2007	Bonn, Germany Computer Algebra in Scientific Computing, 10th International Workshop
03.11.2006-08.11.2006	Dallas, Texas, USA 10th WSEAS International Conference on Applied Mathematics

Publications

“Pressure ulcer image segmentation technique through synthetic frequencies generation and contrast variation using toroidal geometry”. David Ortiz P, Daniel Sierra-Sosa, Begona Garcia-Zapirain, Biomedical engineering online, 16(1), 4. 2017

“Multiplexado en color para esquemas ópticos de encriptación”. Sierra Sosa, D. E., Tebaldi, M. C., Horrillo, S., Pérez Cabré, E., Millán, M. S., Bolognini, N. A., & Torroba, R. In III Jornadas de Investigación, Transferencia y Extensión de la Facultad de Ingeniería. 2015

“Double Fourier analysis for Emotion Identification in Voiced Speech”. Daniel Sierra-Sosa, Manuela Bastidas, David Ortiz, Olga Lucia Quintero. Journal of Physics Conference Series, ISSN: 17426588, 17426596, 2015

"Novel vortex-transform for high frequency modulated patterns". Daniel Sierra-Sosa, Luciano Angel Toro, Nestor Bolognini, Myrian Tebaldi. Optics Express ISSN: 1094-4087 ed: v.21 fasc.20 p.23706 - 23711 ,2013

"Effect of the internal modulation of speckles in displacement measurements in optical vortex metrology". Daniel Sierra-Sosa, Luciano Angel Toro, Daniel Alexis Gomez Tejada, Roman Castaneda. Proceedings Of Spie, The International Society For Optical Engineering ISSN: 0277-786X ed: Proceedings Of Spie The International Society For Optical Engineering v.8785 fasc.N/A p.87858C-1 - 87858 ,2013

"In-plane Displacement measurement in Vortex Metrology by Synthetic Network Correlation Fringes", Luciano Angel-Toro, Daniel Sierra-Sosa, Myrian Tebaldi, Nestor Bolognini, J. Opt. Soc. Am. A, Vol. 30, No. 3, 2013

"Vortex Metrology Using Fourier Analysis Techniques: Vortex Networks Correlation Fringes", Luciano Angel-Toro, Daniel Sierra-Sosa, Myrian Tebaldi, Nestor Bolognini, Applied Optics, Vol 51, No. 30, 2012

"Optical Vortex Metrology from Phase Modulo 2π Maps", Daniel Sierra-Sosa, Luciano Angel-Toro, Myrian Tebaldi, Nestor Bolognini, FiO/LS Technical Digest OSA, 2012

"Speckle Decorrelation Influence on Measurements Quality in Vortex Metrology", Luciano Angel-Toro, Daniel Sierra-Sosa, Myrian Tebaldi, Nestor Bolognini, Optics Communications, 285, p. 4312-4316, 2012

"Understanding the Physical Optics Phenomena by Using a Digital Application for Light Propagation", Daniel Sierra-Sosa, Luciano Angel-Toro, Journal of Physics: Conference Series, Vol. 274, 2011

"Digital Optics Tool for Multi-Purpose Experimental Applications", Daniel Sierra-Sosa, Luciano Angel-Toro, 3rd International Multi-conference on Engineering and Technological Innovation. Proceedings Vol. II, 2010.

"Efficiency Factors of Cylindrical Porous Catalyzer, Using Computer Algebra" Country: Unite States. The 2008 World Congress in Computer Science, Computer Engineering, and Applied Computing CSC, CSREA Press p.284-288, 2008

"Automatic Stability Analysis for a Diffusion Equation with Memories Using Maple", Daniel Sierra-Sosa, Lecture Notes in Computer Science: Springer, v.4770 fasc.1 p.370 - 376 ,2007

"Normal Modes of Oscillation in an Inhomogeneous Hanging Chain using Maple", Daniel Sierra-Sosa, WSEAS Transactions On Mathematics ISSN: 1109-2769 ed: v.6 fasc.1 p.38 - 42 ,2007

Other Activities and Productions

Digital Art Intervention "The wood and the shadows" in "Paisájemed: 5 sound and audiovisual installations" (December 2016). EAFIT University, Medellin-Colombia

Software Registry, Daniel Sierra-Sosa, Luciano Angel-Toro, Name: VORTEX - SIM, Registry: 13-39-322 Colombia, October 10, 2013.

Mechatronic Project for art exposition "Flores para Ethel Gilmur"(April-August 2010). Modern Art Museum of Medellin, MAMM, Medellin-Colombia

Digital Arts Intervention "The book and its variations, Paper smell is like the smell of skin. Palimpsest". First place, grants for artistic and cultural creation Medellín 2013

Digital Arts Proposal "PALIMPSEST Chapter 3", Finalist at DevArt 2014 competition by Google with the Barbican.

IDIOMS:

Spanish: Native

English: TOEFL Total score 103

Reading. 29
Listening. 29
Speaking. 24
Writing. 21