# Table of Contents

Welcome from RIAO-OPILAS-MOPM 2019 Conference Chairs

Welcome Address by the President of RIAO

Venue

Conference Floor Plan

Meetings Committees

Program at a Glance

Plenary Speakers

Panel of Discussion on the participation of Women in the field of Optics and Photonics sponsored by OSA

Program in Detail

Posters Session

Local Information

Author Index
Welcome
Dear Colleagues and Students:

On behalf of the Ibero-American Network on Optics, (Red Iberoamericana de Óptica, RIAO), and Mexican Academy of Optics (Academia Mexicana de Óptica, AMO), we give you the warmest welcome to this magnificent event, X Ibero American Optics Meeting, XIII Latin American Meeting on Optics, Lasers and Applications, and Mexican Optics and Photonics Meeting, RIAO-OPTILAS-MOPM-2019. We are proud that this event is organized for second time in our country.

We would like to thank the participation of eight distinguished plenary speakers whose abstracts are included at the beginning of the program guide. We will also have a Panel of Discussion on the participation of Women in the field of Optics and Photonics sponsored by OSA.

A total of 393 papers (138 from students and 255 from researchers) were accepted through a review process and will be presented at the meetings; out of these papers, 32 were selected as invited. The program foresees the presentation of 205 oral presentations and 188 posters.

Participants came from 31 countries: Argentina (14), Austria (1), Bolivia (1), Brazil (4), Canada (6), Chile (3), China (1), Colombia (63), Cuba (1), El Salvador (1), España (21), Francia (7), Germany (2), Ireland (1), Israel (1), Italy (3), Japan (4), México (221), Netherlands (4), Norwegian (1), Perú (2), Poland (1), Portugal (2), Romania (2), Russia (1), Sweden (1), Switzerland (4), United Kindom (2), United States (14), Uruguay (3), and Venezuela (1).

We will have a special Issue of Applied Optics and Revista Mexicana de Física to the works that be presented in RIAO-OPTILAS-MOPM 2019. The papers published will be those approved by the reviewers.

These events are an excellent opportunity to collaborate with colleagues who share the same area of knowledge. We know that all of you have made a great effort to attend this International Conferences. For this reason, we thank you immensely for your interest in participating by publicizing your latest research.

For students, it is an excellent opportunity to meet internationally renowned researchers, face to face, who only know by names in books or in scientific articles. They will be able to explore the possibilities of conducting research stays that can help them continue or finish their graduate work.

We appreciate the collaboration of those who one way or another participated so that these Conferences will take place. Our gratitude is also extended to our sponsors: Centro de Investigaciones en Óptica, Centro de Investigación Científica y de Educación Superior de Ensenada, B. C., Consejo Nacional de Ciencia y Tecnología, SPIE, Optical Society, RMF, Photonics, Solex Vintel, International Commission for Optics, BCB, Universidad Autónoma de Baja California, Universidad de Guadalajara, Student Chapters of SPIE and OSA from Centro de Investigaciones en Óptica, Student Chapter of SPIE from Instituto Nacional de Astrofísica, Óptica y Electrónica, University of North Carolina at Charlotte, Instituto de Ciencias Aplicadas y Tecnología and Coordinación de la Investigación Científica from Universidad Nacional Autónoma de México.

For all, the best of the best and enjoy the conferences and the beautiful and peaceful beaches of Cancún.

Josué Álvarez-Borrego
General Chair
CICESE, B. C. México
AMO President, 2019-2020

Amalia Martínez-García
General Co-Chair
CIO, León-Guanajuato, México
AMO Past President, 2015-2016

Eduardo Tepichín-Rodríguez
General Co-Chair
INAOE, Puebla, México
AMO Vice-President, 2019-2020

X Ibero American Optics Meeting, XIII Latin American Meeting on Optics, Lasers and Applications, and Mexican Optics and Photonics Meeting, Cancun, Mexico, 23-27 September 2019
Welcome Address by the President of RIAO

It is a pleasure for me to receive you on behalf of the Iberian American Optics Network and give you the warmest welcome to our RIAO-OPTILAS - 2019 event. The Latin American Meeting of Optics, Lasers and their Applications, OPTILAS, was the first serious attempt of the Latin American communities of Optics and Lasers, seeking unity and cooperation between optical research groups and providing support for the development of these disciplines in Latin America. In this sense, we must thank the pioneering efforts and the work of the optical communities of Argentina, Brazil and Mexico, which have allowed the evolution of our disciplines and the achievements on which we base the current state of our science in Latin America. On the other hand, the Iberian initiative to meet in 1992 in the first RIAO, sealed the beginning of a broader cooperation that exceeds continental boundaries and significantly increases our recognition as a distinguishable region in the globality of the contemporary world. The Iberian - American Optics Meeting, joined since 1998 to the Latin American Meeting of Optics, Lasers and their Applications; RIAO-OPTILAS is definitely the most important meeting of the regional optical community, not only in the geographical sense but especially in the cultural and historical sense, in the broad sense of shared heritage and historical discovery of our social and cultural identity. In this regard, I welcome with satisfaction the simultaneous realization of Mexican Optics and Photonics Meeting, as this highlights the local character of our realities and contrasts the effort that it means to build ties of union and cooperation.

This is the opportunity to see friends and colleagues again, to compare and share our experiences, to propose and program future actions and to build dreams. I invite you to enjoy these days sharing ideas and helping to build futures, I invite you to meet each other without inhibitions or fears, so that this event contributes effectively to remind us that we are part of a huge nation, from California to Tierra del Fuego, from the western edge of the Pacific to the Iberian Peninsula, which requires us to ensure its future and its well-being.

These ideas of cooperation, mutual support, dialogue and academic discussion, of joining efforts to pursue common goals and seek common well-being, are part of the essence and the purpose of the Iberian American Network of Optics.

I do not want to leave this opportunity without acknowledging and thanking Josué Álvarez-Borrego, Eduardo Tepichín-Rodríguez and Amalia Martínez-García for their excellent work, which has allowed us to meet at this event. Likewise, I want on behalf of the Iberian American Optics Network, to thank the other committees whose work has contributed to shaping this RIAO - OPTILAS 2019, I must also thank the Mexican and international institutions that have contributed to this Meeting, supported financially or logistically its realization.

Dear speakers and attendees, thank you very much for attending our call and for actively participating in this RIAO-OPTILAS, it is you who make the idea and purpose of this event a reality; Let us make it a memorable occasion, an indelible memory that, framed in the fascinating beauty of this Mexican land, keeps in our mind and in our hearts the awareness of our identity and our commitment to the future.

Welcome to the X RIAO, the XIII OPTILAS and the MOPM-2019!

Efraín Solarte Rodríguez
Universidad del Valle, Cali, Colombia
President of Red Iberoamericana de Óptica
Venue
CANCUN INTERNATIONAL CONVENTION CENTER, Krystal Hotel & Resort Cancún, Aloft Hotel and Beachscape Kin Ha Villas & Suites Cancún
Located: 23.2 km from Cancún International Airport
Address: Boulevard Kukulcán, km 9, Zona Hotelera, 77500 Cancún, Quintana Roo, Mexico

ITS SURROUNDINGS
* Krystal Hotel & Resort Cancún, Aloft Hotel and Beachscape Kin Ha Villas & Suites Cancún, with a privileged location in the heart of the Hotel Zone of Cancun.
* Close to the area of the most famous nightclubs and discos.
* Hotels very close to the Convention Center.
* 15 minutes from downtown.
* 5 minutes from La Isla Shopping Village.
* 11 km from Plaza Las Americas.
* 5 minutes from Plaza Kukulcán.
* 1 block from Plaza Forum.
* 13 km from the Nizuc Park.
* 20 minutes from the Cancun International Airport.

GEOGRAPHY:
Cancun is located in the State of Quintana Roo in the Yucatan Peninsula; a flat platform of limestone emerged from the sea millions of years ago, there are no elevations or hills, underground rivers come to the surface in the form of sink holes or wells, the soil is not very thick so the vegetation is a semi – tropical jungle with a wild and exuberant fauna.

BUSINESS HOURS:
X Ibero American Optics Meeting, XIII Latin American Meeting on Optics, Lasers and Applications, and Mexican Optics and Photonics Meeting, Cancun, Mexico, 23-27 September 2019
Business hours are from 8 am through 9 pm some offices are closed from 2pm to 4pm. Shopping malls are open usually until 9:30 pm or 10:00 pm. Restaurants and bars at the hotel zone are open until 1:00 am.

**CLIMATE:**
Cancun has a Semi – tropical climate, meaning hot and humid all year round.

**DID YOU KNOW?**
Cancun means “snake’s nest” in Mayan.

**CURRENCY:**
The official currency is the Mexican Peso.

**ELECTRICITY:**
Electricity in Mexico is 110 Volts alternating at 60 Cycles per second.

**WATER QUALITY:**
In Mexico it is not recommended to drink water from the tap; hotels at the touristic zone have their own purification systems so you can use the water to wash your teeth, shower, etc. Ice at the hotels, restaurants and convenience stores is safe.

**MEDICAL:**
All hotels at the hotel zone can get you an English speaking doctor in a short period of time, five star hotels have medical attention on site, however, if it is needed an ambulance will be called immediately. Cancun offers excellent hospitals and medical attention with top of the line technology.

**TIME ZONE:**
Mexico is divided in different time zones. Most of the Mexican territory, including the Mayan Riviera and Mexico City, are in Central Time zone (Greenwich Mean Time GMT – 6 hours), and changes to daylight saving time from the first Sunday of April to the last Sunday of October.

**LANGUAGE:**
The official language of Mexico is Spanish; in Cancun as in most of the touristic places in Mexico, everybody in hotels, stores, flea markets and shopping malls speak English.

**POPULATION**
Population in the mainland is 628 000 inhabitants officially.
Conference Floor Plan

CANCUN INTERNATIONAL CONVENTION CENTER

Explanation of session codes
Ple denotes plenary conference
Mo, Tu, We, Th, denote the day of the week
O denotes oral presentation
P denotes poster presentation
Pa denotes Panel of Discussion
Session Designation:
1 = 1st Parallel Session, 2 = 2nd Parallel Session,...5 = 5th Parallel Session.
The second number after the point means presentation order

Examples:
PleMo_1
OTu_5.3
PWe_1
PaTh_1

X Ibero American Optics Meeting, XIII Latin American Meeting on Optics, Lasers and Applications, and Mexican Optics and Photonics Meeting, Cancun, Mexico, 23-27 September 2019
Committees

**Conference General Chair**
Josué Álvarez Borrego, Centro de Investigación Científica y de Educación Superior de Ensenada, México

**General Co-Chairs**
Eduardo Tepichín Rodríguez, Instituto Nacional de Astrofísica, Óptica y Electrónica, Puebla, México
Amalia Martínez García, Centro de Investigaciones en Óptica, León, Gto., México

**Steering Committee**
Efraín SOLARTE, RIAO President
Pedro ANDRÉS, RIAO Past President
Eric ROSAS, RIAO Secretary & RIAO Appointed VP to the International Commission for Optics
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Manuel Iván Ocegueda Miramontes, UABC

**Logistics Committee**
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**Technical Program Subcommittees**
Amalia Martínez-García, Program Chair

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Coherence and statistical optics
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Diffraction and gratings
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Fiber optics, sensors and optical communications
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Laser and laser optics
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Eduardo Pisano Chavez. CIO, México
Mary Peña-Gomar, Universidad Michoacana de San Nicolas de Hidalgo, México
Sergey Novikov, Moscow Institute of Physics and Technology, Rusia

Nonlinear optics
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María Teresa Flores-Arias, Universidad de Santiago de Compostela, España. Co-Chair

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Jorge Alejandro Reyes Esqueda, Instituto de Física, UNAM, México
Humberto Michinel, Universidad de Vigo, España
Antonio Díez Cremades. Universidad de Valencia, España

**Novel optical materials and 3D printing**
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Israel de León Arizpe, ITESM, México. Co-Chair
Arturo Hernández-Serrano, University of Warwick, UK
Hamed Golmohammadi, Chemistry & Chemical Engineering Research Center of Iran
Héctor Alán Aguirre Soto, Tecnológico de Monterrey, México
Alejandro Reyes Coronado, UNAM, México

**Optics in computing**
John Fredy Barrera Ramírez, Universidad de Antioquia, Medellín - Colombia Co-Chair
Ricardo A. Depine, Universidad de Buenos Aires, Argentina. Co-Chair

**Optical data storage**
Jorge Alejandro Reyes Esqueda, Instituto de Física, UNAM, México. Co-Chair

**Optical design and fabrication**
Daniel Malacara Hernández, CIO, México. Co-Chair
Maximino Avendaño Alejo, ICAT-UNAM, México. Co-Chair
Rufino Díaz-Uribe, CCADET, UNAM, México. Co-Chair
Alejandro Cornejo Rodríguez, INAOE, México. Co-Chair
Guillermo Baldwin-Olguín, Pontificia Universidad Católica de Perú
Yobani Mejía, Universidad Nacional de Colombia, Colombia
Juan Carlos Miñano, Universidad Politécnica de Madrid, España
Miguel A. Alonso González, The Institute of Optics, University of Rochester, USA

**Optical devices**
Jorge Enrique Rueda Parada, Universidad de Pamplona, Colombia. Co-Chair
Edgar Rueda, Universidad de Antioquia, Colombia. Co-Chair
Carlos Ríos, MIT, USA
Álvaro Bastidas, UNAL, Colombia
Jorge Gómez, Politécnico Jaime Isaza Cadavid, Colombia
Miguel Ángel Suárez, Univ. Bourgogne Franche-Comté, Francia

**Optical micro and nano manipulation including optofluidics and microfluidics**
Víctor Ruiz-Cortés, CICESE, México. Co-Chair
Karen Volke-Sepúlveda, IFUNAM, México. Co-Chair
Salomón Elieser Márquez Villalobos, CIO, México
Raúl José Hernández Hernández, UNAM-ICN, México
Julio César Ramírez San Juan, INAOE, México
José Luis Hernández Pozos, UAM-I, México

**Optics at surfaces**
Manuel Filipe-Costa, Universidade do Minho, Portugal. Co-Chair
Anatoly Khomenko, CICESE, México. Co-Chair
Alfonso Lastras Martínez, Universidad Autónoma de San Luis Potosí, México. Co-Chair

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José Benito Vázquez-Dorrio, University of Vigo, España
Rogério Nogueira, University of Aveiro, Portugal
Orlando Frazão, University of Porto, Portugal
Joaquim Carneiro, Department of Physics, University of Minho, Portugal.

Optics and photonics in the industry
Alfredo Solís-Ventura, SolexVintel, México. Co-Chair
Víctor Dolores-Calzadilla, Photonic Integration Technology Centre - TU Eindhoven, The Netherlands. Co-Chair
Aura Higuera Rodríguez, Synopsis, The Netherlands
Alonso Millán Mejía, SMART Photonics, The Netherlands
Osslan Osiris Vergara Villegas, Universidad Autónoma de Ciudad Juárez, México
Luis Manuel Ledesma Carrillo, Universidad de Guanajuato, México
Rodolfo Iván Rodríguez Montoya, INAOE, México

Optoelectronics, Detectors and Sources
Mario Enrique Rodríguez García, UNAM, México. Co-Chair
Elena Tchaikina Kolesnikova, CICESE, México. Co-Chair
Rafael García Gutiérrez, UNISON, México
Patricia Puente Ramírez, UANL, México
T. V. L’vova, Ioffe Institute, Rusia
Yury Blokh, Technion-Israel Institute of Technology, Israel
Alfonso Lastras Martínez, UASLP, México

Organic and hybrid optoelectronics
José Luis Maldonado Rivera, CIO, México. Co-Chair
Gerko Oskam, CINVESTAV-Mérida, México. Co-Chair
Bernardo A. Frontana-Uríbe, CCIQS, UAEMex-UNAM, México
Juan José Alvarado Gil, Cinvestav-Mérida, México
Antonio E. Jiménez González, IER-UNAM, México
Ignacio González Martínez, UAM-I, México

Physical optics
Gabriel Martínez Niconoff, INAOE, México. Co-Chair
Eduardo Tepichín Rodríguez, INAOE, México. Co-Chair

Quantum optics
Alfred U’Ren, UNAM, México. Co-Chair
Héctor Manuel Moya Cessa, INAOE, México. Co-Chair

Remote sensing and sensors
Erna Frins, Universidad de la Republica, Uruguay. Co-Chair
Boris Escalante-Ramírez, UNAM, México. Co-Chair
Alejandra López Caloca, Centro de Investigación en Ciencias de Información Geoespacial (Centro Geo), México
Jimena Olveres, Facultad de Ingeniería, UNAM, México

Scattering
Rafael Espinosa-Luna, CIO, México. Co-Chair
Augusto García-Valenzuela, ICAT-UNAM, México. Co-Chair
Gelacio Atondo Rubio, Universidad Autónoma de Sinaloa, México
Rubén Gerardo Barrera, Instituto de Física, UNAM, México

Oscar Gabriel Rodríguez Herrera, Instituto de Ciencias Aplicadas a la Tecnología, ICAT, UNAM, México
Héctor Pérez Aguilar, Facultad de Ciencias Físico-Matemáticas, Universidad Michoacana de San Nicolás de Hidalgo, México

Spectroscopy
J. Oracio C. Barbosa-García, CIO, México. Co-Chair
Víctor Ulises Contreras Loera, UNAM, México. Co-Chair
Gabriel J. Vázquez-Torres, UNAM, México
Horacio Martínez-Valencia, UNAM, México
Marco Antonio Meneses, CIO, México
Ignacio Rosas, CIO, México

Thin films
Roberto Machorro-Mejía, UNAM, México. Co-Chair
Francisco Villa Villa, CIO, México. Co-Chair
Gonzalo Gálvez, Pontificia Universidad Católica de Perú

THz, microwaves and millimeter-waves photonics
Mariana Alfaro Gómez, Universidad Autónoma de Aguascalientes, México. Co-Chair
Carlos Treviño-Palacios, INAOE, México. Co-Chair
Elodie Strupiechonski, CINVESTAV, México
Francisco Javier González Contreras, UASLP, México
Naser Qureshi, ICAT-UNAM, México

Ultrafast optics
Ramón Carriles Jaimes, CIO, México. Co-Chair
Jesús Garduño-Mejía, ICAT-UNAM, México. Co-Chair
Gustavo Torchia, CIOp, Argentina
Jorge Luis Domínguez Juárez, CFATA, UNAM, México

Vision, color, and visual optics
Walter D. Furlan, Universidad de Valencia, España. Co-Chair
María Sagrario Millán, Universitat Politècnica de Catalunya, España. Co-Chair
Esther Perales, Universidad de Alicante, España
Justo Arines, Universidad de Santiago de Compostela, España.

X-ray optics
Mourad Idir, Brookhaven National Laboratory, USA, Co-Chair
Daniele Cocco, Lawrence Berkeley National Laboratory, University of California. Co-Chair
Bernd Meyer, LNLS, Brazil
Hidekazu Mimura, The University of Tokyo, Japan
Guillaume Dovillaire, Imagine Optic, France
Josep Nicolas, Cells-Alba, España
Makina Yabashi, Riken, Japan
Amparo Vivo, ESRF, USA

X Ibero American Optics Meeting, XIII Latin American Meeting on Optics, Lasers and Applications, and Mexican Optics and Photonics Meeting, Cancun, Mexico, 23-27 September 2019
<table>
<thead>
<tr>
<th>Day</th>
<th>Monday 23</th>
<th>Tuesday 24</th>
<th>Wednesday 25</th>
<th>Thursday 26</th>
<th>Friday 27</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00-9:00</td>
<td>Opening</td>
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<td>9:00-10:30</td>
<td>Research Parallel Session: Invited Talks &amp; Oral Contributions</td>
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<td>10:30-11:00</td>
<td>Coffee Break &amp; Exhibit Hall Opening</td>
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<td>Plenary Talk 1:</td>
<td>John E. Greivenkamp</td>
<td>Plenary Talk 3:</td>
<td>Ursula Gibson</td>
<td>Plenary Talk 5:</td>
<td>Guillermo H. Kaufmann</td>
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<td>Roberta Ramponi</td>
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<td>Zeev Zalevsky</td>
<td>Plenary Talk 6:</td>
<td>Philip Russell</td>
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<td>AMO ASSEMBLY AND DANIEL MALACARA AWARD</td>
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**Sunday 22:** Registration 14:00-18:00, Executive Office

**Welcoming reception:** 19:30-20:30, Terraza Akumal

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**X RIAO-XIII OPTILAS-MOPM 2019 Program at a glance**

**Convention Center, Cancún, Quintana Roo, México. September 23-27, 2019**

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**X Ibero American Optics Meeting, XIII Latin American Meeting on Optics, Lasers and Applications, and Mexican Optics and Photonics Meeting,**

**Cancun, Mexico, 23-27 September 2019**
PLENARY SPEAKERS

John E. Greivenkamp is a Professor at the College of Optical Sciences of the University of Arizona where he has taught courses in optical engineering since 1991. He received his BS in Physics and Math from Thomas More College in 1976. After receiving a Ph.D. from the Optical Sciences Center in 1980, he was employed by Eastman Kodak. He is a fellow of SPIE-the International Society for Optics and Photonics and of OSA. He serves as the editor for the SPIE Field Guides Series and is the author of Field Guide to Geometrical Optics. He is the founder and curator of the Museum of Optics at the College of Optical Sciences. Professor Greivenkamp was honored with the 2017 SPIE Educator Award and he serves as the 2019 SPIE President-Elect.

PleMo_1 Abstract

The History of Telescopes and Binoculars

John E. Greivenkamp
2019 SPIE President-Elect
College of Optical Sciences, University of Arizona, Tucson AZ USA

The design of the refracting telescope advanced rapidly following its invention in 1608, reaching its modern configuration in about a century. Even though the development of binoculars began almost simultaneously, nearly three hundred years elapsed before practical prismatic binoculars became available. The impediments to practical binoculars were not only in optical design, but in mechanical design, manufacturing, and materials. This talk will document the evolution of telescopes and binoculars using examples from the collection of antique optics at the College of Optical Sciences at the University of Arizona.
PLENARY SPEAKERS

Roberta Ramponi is the Director of the CNR Institute for Photonics and Nanotechnologies (IFN) since 2013. Previously, she was a researcher at the Center for Quantum Electronics and Electronic Instrumentation of the National Research Council (CNR) (1980 to 1992), and was appointed Professor of Physics at Politecnico di Milano in 1992, where she acted as head of the research line “Photonics devices and solid state lasers” from 2002 to 2013. After having been President of the European Optica Society (2006 to 2008, she has been Vice-President of the International Commission for Optics (ICO) from 2008 to 2017, and is now the President of ICO until 2020. She is also a member of the Executive Board and Board of the Stakeholders of Photonics21, Europe’s Photonics Public Private Partnership, and chair of Work Group7 (Photonics Research, Education and Training).

Her research activities mainly focused on laser applications to biology and medicine, time-resolved spectroscopy, nonlinear optics, integrated photonics, micro-optofluidic labs-on-chips for biosensing and energy applications, integrated quantum optics, and femtosecond laser micromachining. She is/was involved in many EU, national, and regional funded strategic basic and applied research projects. She co-authored more than 150 papers on peer-reviewed journals (h-index 41, 7461 citations, as from google scholar data, December 8th, 2018).

PleMo_2 Abstract

Femtosecond laser micromachining for the realization of integrated quantum photonics circuits and sensors in diamond

Vibhav Bharadwaj¹, Ottavia Jedrkiewicz², John Patrick Hadden³,⁴, Belén Sotillo⁵, Andrea Chiappini⁶, Cristina Armellini⁶, Argyro Giakoumaki¹, Thien Le Phu¹, Monica Bollani¹,⁷, Maurizio Ferrari⁶, Paul E Barclay⁴, Shane M Eaton⁴ and Roberta Ramponi¹,*

¹CNR Institute for Photonics and Nanotechnologies (IFN) and Department of Physics, Politecnico di Milano, piazza Leonardo da Vinci 32, 20133 Milano, Italy
²CNR Institute for Photonics and Nanotechnologies (IFN) and DISAT, Università degli Studi dell’Insubria, Como, Italy
³School of Physics and Astronomy, Cardiff University, Cardiff, United Kingdom
⁴Institute for Quantum Science and Technology, University of Calgary, Calgary, Canada
⁵Department of Materials Physics, Complutense University of Madrid, Madrid, Spain
⁶CNR Institute for Photonics and Nanotechnologies (IFN)-CSMFO and FBK-CMM, Trento, Italy
⁷L-NESS Laboratory for Nanostructure Epitaxy and Spintronics on Silicon, Como, Italy
*E-mail: roberta.ramponi@polimi.it

Diamond has outstanding properties of optical transparency, hardness, bio-inertness and thermal conductivity. Recently, it has interested the scientific community due to a naturally occurring defect, the Nitrogen Vacancy (NV) color center, which has been an ideal candidate as a qubit with long electron spin coherence times and its ability to be found, manipulated and read out optically. The spin states can be used for sensing magnetic and electric fields through the Zeeman and Stark effects, respectively and hence pose as powerful atom sized field sensors.

The hardness of diamond makes it a material in which the fabrication of integrated devices is not trivial. Femtosecond laser writing has been extensively exploited for the realization of 3D fully integrated photonic circuits and opto-microfluidic devices in glasses. In this work we show that this technique is a versatile and efficient enabling tool also for diamond quantum photonics and sensing. Indeed, laser writing can be used for realizing optical waveguides, Bragg gratings, high aspect ratio microchannels and to deterministically inscribe NV centers in the bulk of diamond. For field sensing applications, ensemble NVs will play a key role allowing higher sensitivities of detection. The capability of using a single fabrication platform to inscribe
waveguides and NV centers in bulk diamond, together with microchannel networks, paves the way towards the realization of novel, biocompatible, ultrasensitive imaging and sensing devices, for applications to life science. Moreover, diamond photonic devices are likely to have a great impact also in quantum information and quantum computing applications.

Acknowledgments

The authors acknowledge financial support from the SIR MIUR grant “DIAMANTE” and H2020 Marie Curie ITN project “PHOTOTRAIN”.

X Ibero American Optics Meeting, XIII Latin American Meeting on Optics, Lasers and Applications, and Mexican Optics and Photonics Meeting, Cancun, Mexico, 23-27 September 2019
PLENARY SPEAKERS

Ursula Gibson received a Ph.D. in physics from Cornell University in 1982. After Cornell, she joined the faculty of the University of Arizona Optical Sciences Center, becoming an associate professor before moving to the Thayer School of Engineering at Dartmouth College in 1990. She currently holds a professorship in the Physics department at the Norwegian University of Science and Technology (NTNU), where she has been since 2010. She is also an adjunct professor in the Department of Applied Physics at the KTH Royal Institute of Technology. She held visiting positions at the United States Air Force Academy, NASA’s Marshall Space Flight Center, Tampere University of Technology (Finland), Chalmers University (Sweden), and the University of Queensland (Australia), among others. In 2008, she was awarded a Fulbright Scholarship, working at the VTT Research facility in Espoo, Finland. She has served as a consultant for many enterprises, including Kodak Inc., the US Department of Defense and the American University of Kuwait. In addition to reviewing for journals, other professional activities include service on the Executive Committee of the Vacuum Society of America (Thin Films Division), as an organizer for Materials Society Symposia and on the Editorial Boards for journals such as the Journal of Vacuum Science and Technology, NanoEthics, and Materials Characterization.

Her research on optical materials has been wide ranging, including polymers, protein crystals and semiconductors, with an emphasis on limited dimension structures such as thin films and waveguides. She holds three patents, has authored 7 book contributions and over 100 refereed journal articles with 2300 citations. Prof. Gibson’s present research is focused on semiconductor-core optical fibers.

Abstract

Semiconductor-core Fibers

Ursula Gibson
Norwegian University of Science and Technology

Optical fibers with novel cores have been receiving increasing attention, due to the large nonlinear coefficients and electrooptic properties that are present in semiconductors and other crystalline cores. The structure of such a fiber, with the large surface to volume ratio and small thermal mass, allows novel laser heat treatment, leading to recrystallization, spatial segregation of the constituents in alloy or eutectic systems, in both the radial and axial directions. We describe fabrication, structure, testing and potential of recent Group IV and III-VI semiconductor core fibers and the inscription of structures into them.
PLENARY SPEAKERS

Zeev Zalevsky received his B.Sc. and direct Ph.D. degrees in electrical engineering from Tel-Aviv University in 1993 and 1996 respectively. Zeev is currently a full Professor in the faculty of engineering at Bar-Ilan University, Israel. He is the head of the electro-optics track and the director of the nano-photonics center in the nanotechnology institute. His major fields of research are optical super resolution, biomedical optics, nano-photonics and electro-optical devices. Zeev has published more than 480 refereed journal papers, more than 300 conference proceeding papers, more than 530 international presentations. Zeev has about 50 issued patents, 6 authored books, 3 books as an editor and 30 book chapters.

For his research Zeev has received various national and international prizes such as the Krill prize, the International Commission of Optics (ICO) prize and Abbe medal, Juludan prize, the international SAOT (School for Advanced Optical Technologies) Young Researcher Prize, the Lean and Maria Taubenblatt Prize for Excellence in Medical Research, the young investigator award in nanoscience and nanotechnology, the international Wearable Technologies (WT) Innovation World Cup 2012 Prize, OSA Outstanding Reviewer Award, the Image Engineering Innovation Award of the Society for Imaging Science and Technology (IS&T), the Outstanding Young Scientist Award (OYSA) of NANOSMAT, Serial Innovator Award given by the International Wearable Technologies (WT), SPIE Startup Challenge Winner Prize, 2017 Europe Technology Innovation Leadership Award, IAAM Scientist Medal Award for 2017, the Photonics Award (1st place) at Startup World in Munich, the Dr. Horace Furumoto Innovations Professional Young Investigator Award given by the ASLMS (American Society for Laser Medicine and Surgery), The Asian Advanced Materials Award for the year 2018 given by IAAM, the SPIE Prism Award for photonic innovation and more.

Zeev is also a Fellow of several large scientific societies as OSA, SPIE, EOS, IOP, IET and IS&T. He is also a Fellow of the American National Academy of Inventors.

PleTu_4 Abstract

**Breaking the bounds of imaging in label-free nanoscopy, micro-endoscopy and ophthalmology**

Zeev Zalevsky  
*Faculty of Engineering and the Nanotechnology Center, Bar-Ilan University, Ramat-Gan 52900, Israel*

Imaging systems as well as human vision system have limited capability for separation of spatial features and this information can also be extracted only from depth limited range. The reasons to the resolution and depth of focus limitations are related to the effect of diffraction i.e. the finite dimensions of the imaging optics as well as the geometry of the sensor.

In this talk I will present novel photonic approaches and means to exceed the above-mentioned resolution and depth of focus limitations and show how those concepts can be adapted to micro endoscopy as well as to microscopy related configurations as well as embedded into ophthalmic device while aiming to correct visual deficiencies.

In the case of micro-endoscopy, I will show how projection of wavelength dependent codes can enhance the resolution of the collected light. This concept of wavelength multiplexing super resolved imaging will also be demonstrated for imaging through biological scattering medium such as biological tissues and liquids as blood. The projected wavelength dependent high-resolution encoding patterns are sent via laser-based illumination fiber while the collected light is collected via ultra-thin multi-core imaging fiber-based endoscope. Another approach to be discussed will include the projection of time dependent high-resolution codes coming from a multi-mode fiber while the result is high resolution imaging in ultra-thin endoscopic multi-core and lens-less imaging fiber.

Then, in the case of micro-endoscopy I will present how the resolution limit can go much below sub-wavelength bound towards nanoscopic imaging while using label-free configurations involving time multiplexing (time dependent light collection) based upon label-free non-static nano-particles either moving in uncontrolled...
Brownian motion or being manipulated with light. The presented realizations either use metallic nanoparticles or silicon coated nanoparticles. The last part of the talk will be related to extending the depth of focus of imaging systems in all-optical manner while introducing “interference” effect based extended depth of focal imaging (rather than diffraction and refraction based). The proposed extended depth of focus approaches will be implemented in ophthalmic usage on top of conventional spectacles, contact lenses and intraocular lenses while aiming to simultaneously correct various visual refractive errors, such as myopia, hyperopia, presbyopia, regular/irregular astigmatism, as well as their combinations. I will also mention how this interference-based extended depth of focus approach can be combined with nanoparticles and laser-based treatment of the surface of the cornea.

In all of the above-mentioned topics experimental validation related to long lasting research activity conducted in the lab, will be presented.
PLENARY SPEAKERS

**Guillermo H. Kaufmann** received his DSc degree in physics in 1978 from Universidad de Buenos Aires, Argentina. Until December 2016, he was a professor at the Physics Department of Universidad Nacional de Rosario and a chief scientist of Consejo Nacional de Investigaciones Científicas y Técnicas. He was the head of the Optical Metrology Laboratory at Instituto de Física Rosario and during the last eight years he was also the director of the French Argentine International Centre of Information and Systems Sciences. He has performed postdoctoral work at the UK National Physical Laboratory and also at the University of Michigan. He has also worked as a visiting researcher at the Swiss Federal Institute of Technology at Lausanne, the University of Cambridge and the Mechanical Engineering Laboratory in Japan. He has performed research work at Loughborough University, UK, during his last sabbatical year and also in 1994, 1995, 1996, 1998, 1999 and 2001, and in 1995, 1997 and 1999 he has also worked at the Centro de Investigaciones en Optica, México. Prof. Kaufmann has edited two books, and has authored three book chapters and more than 170 scientific papers published in refereed journals and proceedings of international conferences. His major research interests include the development of coherent optics techniques for strain analysis and nondestructive testing, speckle metrology, phase shifting interferometry, fringe analysis and digital image processing. He was a member of the Editorial Board of Optics and Lasers in Engineering, and was also a member of the Editorial Board of Optics & Photonics News and a topical editor of Applied Optics. He is a fellow of SPIE and the Optical Society of America. In 2003 the Secretary of Science and Technology of Argentina awarded him the Bernardo Houssay Prize for his contributions in the field of optical engineering. He is the recipient of the 2015 SPIE Chandra S. Vikram Award for Optical Metrology and the 2016 ICO Galileo Galilei Award.

PleWe_5 Abstract

**The Empirical Mode Decomposition method: some applications in speckle metrology**

Guillermo H. Kaufmann

*Instituto de Física Rosario, Esmeralda y Ocampo, S2000EZP Rosario, Argentina*

ghkaufmann@gmail.com

In 1998 Huang et al. presented a non-linear method called Empirical Mode Decomposition (EMD) for adaptively representing a non-stationary signal as a sum of zero-mean well-behaved fast and slow oscillation modes referred to as intrinsic mode functions (IMFs). This decomposition is carried out through a sifting process which generates a fully data-driven method, so that no basis functions are fixed in the analysis process. Therefore, the frequency discrimination does not correspond to a predetermined sub-band filtering and the mode selection is equivalent to an automatic and adaptive data-driven filtering.

This talk presents the 1D and 2D EMD methods to decompose a signal or an image in a small number of high and low frequency IMFs and also shows several applications of both approaches in the field of speckle metrology. In particular, these methods are applied to speckle noise reduction of Digital Speckle Pattern Interferometry fringes, to the evaluation improvement of phase distributions coded in Temporal Speckle Pattern Interferometry signals, to the normalization of Digital Speckle Pattern Interferometry signals, to the normalization of Digital Speckle Pattern Interferometry signals, and to minimize the influence of large sets of low or non-modulated pixels in phase measurements of Temporal Speckle Pattern Interferometry signals. Various examples are used to illustrate the advantages produced by both approaches.
PLENARY SPEAKERS

Professor Philip Russell is a founding Director of the Max-Planck Institute for the Science of Light (MPL) and holds the Krupp Chair of Experimental Physics at the University of Erlangen-Nuremberg. He obtained his D.Phil. degree in 1979 at the University of Oxford. His interests currently focus on scientific and technical applications of photonic crystal fibers. He is a Fellow of the Royal Society and the Optical Society (OSA) and has won a number of awards including the 2000 OSA Joseph Fraunhofer Award/Robert M. Burley Prize, the 2005 Thomas Young Prize of IOP, the 2005 Körber Prize for European Science, the 2013 EPS Prize for Research into the Science of Light, the 2014 Berthold Leibinger Zukunftsfonds, the 2015 IEEE Photonics Award and the 2018 Rank Prize for Optoelectronics. He was OSA's President in 2015, the International Year of Light.

PleWe_6 Abstract

Light-matter interactions in photonic crystal fibres
Philip Russell
Max Planck Institute for the Science of Light (MPL) and Department of Physics, Friedrich-Alexander University, Staudtstrasse 2, 91058 Erlangen, Germany

Photonic crystal fibres (PCFs) continue to offer unexpected optical properties, leading to novel applications. An example is twisted PCF, which creates optical vortices that carry orbital angular momentum [Russell et al: Phil. Trans. R. Soc. A 375, 20150440 (2017)], as well as providing an elegant means of providing circular birefringence and dichroism, most recently in hollow-core PCF [Roth et al: Optica 5, 1315 (2018)]. Twisting the periodically structured “space” within a coreless photonic crystal fibre creates a helical channel where guided modes can form despite the absence of any discernible core structure [Beravat et al: Science Advances 2, e1601421 (2016)]. Intense interactions between light and sound in solid-core PCF enable stable all-optical mode-locking of fibre lasers at a high harmonic (a few GHz) of the round-trip frequency [Pang et al: Nat. Phot. 10, 454–458 (2016)]. Single-ring hollow-core PCF, comprising a ring of thin-walled capillaries surrounding a central hollow core, guides over an extremely wide frequency range and, through pressure-adjustable dispersion, provides a simple means of compressing pulses down to single-cycle durations [Elu et al: Optica 4, 1024 (2017)], as well as underpinning a range of unique and extremely bright sources of tunable deep and vacuum ultraviolet light [Köttig et al: Optica 4, 1272 (2017)]. Filled with a Raman-active gas such as hydrogen, hollow core PCF enables highly efficient wavelength conversion from the vacuum UV to the mid-IR [Bauerschmidt et al: Optica 2, 536 (2015)]. During the talk, a selection of recent results from work carried out at MPL will be presented.
PLENARY SPEAKERS

Pramod Rastogi received his MTech degree from the Indian Institute of Technology Delhi, and doctorate degree from the University of Franche Comté in France. He started his research at the EPFL in Switzerland 1978. He is the author or coauthor of over 175 scientific papers published in peer-reviewed archival journals. He is also the author of Encyclopaedia articles, and has edited/authored nine books in the fields of Holography, DSPI, Optical metrology & Digital Optical Signal Analysis with internationally reputed publishers: Professor Rastogi is the 2014 recipient of the SPIE Dennis Gabor Award. He is also a Member of the Swiss Academy of Engineering Sciences. He is a Fellow of the Society of the Photo-Optical Instrumentation Engineers (1995) and a Fellow of the Optical Society of America (1993). He is also a recipient of the "Hetényi Award" for the most significant research paper published in Experimental Mechanics in the year 1982. Professor Rastogi is the co-editor-in-chief of the International journal of Optics and Lasers in Engineering, Elsevier.

PleTh_7 Abstract

Dual Phase Shifting Holographic Interferometry: An Overview
Pramod Rastogi
Applied Computing and Mechanics Laboratory, Ecole Polytechnique Federale de Lausanne, 1015 Switzerland

Dual Phase Shifting Holographic Interferometry: An Overview Pramod Rastogi Applied Computing and Mechanics Laboratory, Ecole Polytechnique Federale de Lausanne, 1015 Switzerland Abstract: Phase measurement has been a topic of increasingly important interest to researchers active in optical metrology to an extent that substantial advances in the area have been reported over the past three decades. However, these developments have been largely unsuccessful in addressing the recurrent need to extract multiple displacement information transmitted through the phase. One particular advance that has opened new avenues in metrology is the use of estimation techniques to measure multiple phases, simultaneously. This approach has for the first time shown the capability of simultaneously measuring dual phase steps imparted to the two piezoelectric devices integrated in the configurations involving four-beam interferometry. This has primarily lead to research focused on understanding and implementing processes needed for supporting information embedded in such interferometers. This talk presents an overview of estimation techniques based on spectral decomposition with emphasis on describing the performance of each approach.
PLENARY SPEAKERS

Enrique Tajahuerce is associate professor at the Department of Physics in Universitat Jaume I, Castelló, Spain. He develops his research at the Institute of New Imaging Technologies (INIT) in the same university, where he belongs to the management team since 2010. He received the PhD in physics from Universidad de Valencia, Spain, in 1998. He has developed research activities at the Technological Institute of Optics (AIDO) in Valencia, Spain, from 1989 to 1992 and at the Electrical and Computer Engineering Department in the University of Connecticut, Storrs, USA, from 1999 to 2000.

He is co-author of 7 patents, 1 edited book, 14 book chapters, more than 90 research papers and over 120 communications in international conference meetings (36 of them by invitation). He has participated in the scientific committee and organisation of international conferences organized by several scientific societies such as OSA, IEEE, and SPIE. In 2008 received the IEEE Donald G. Fink Prize Paper Award. He serves as topical editor for Optics Letters.

Dr. Tajahuerce coordinates the Photonics Research Group (GROC-UJI) at University Jaume I. His research interests lie in the areas of diffractive optics, adaptive optics, optical security and encryption, digital holography, and computational imaging. Currently, the research group focuses its activity on computational imaging by means of structured light, integrated detection, and compressive sensing. These techniques have been applied to security and encryption, multispectral and polarimetric cameras, phase imaging, optical microscopy, and imaging through scattering media.

PleTh_8 Abstract

Computational imaging with structured light and integrated detection
Pedro Andrés, Vicent Climent, Jesús Lancis, and Enrique Tajahuerce
GROC-UJI, Instituto de Nuevas Tecnologías de la Imagen (INIT), Universitat Jaume I, 12071 Castelló, España
enrique.tajahuerce@uji.es

Computational imaging techniques based on structured light permit to avoid light sensors with pixelated structure. The method is based on sampling the scene with a set of microstructured light patterns while a simple bucket detector, for instance a photodiode, records the light intensity transmitted, reflected or diffused by the object. Images are then computed numerically from the photocurrent signal by using different mathematical algorithms. A common approach is to use light patterns codifying functions of a basis, such as Hadamard or Fourier components. Images are retrieved by a simple basis transformation. The simplicity of the sensing device in single-pixel imaging allows working efficiently in conditions where light is scarce. It also makes easier to measure the spatial distribution of multiple optical properties of the light, such as the polarization state or the spectral content, in a simple way. Single-pixel detectors permit to use a broader spectral range compared to conventional cameras, helping to extend imaging techniques to exotic spectral regions. Furthermore, single pixel cameras have proved the ability to perform non-invasive imaging through scattering media in biological tissues.

In this contribution, firstly we review the fundamentals of computational imaging techniques using structured light and single-pixel detection. We focus on optical systems using Hadamard patterns as sampling functions. Second, we describe recent applications of the technique in multidimensional imaging, providing information about the spatial distribution of polarization, wavelength, or phase. Finally, we show the potential of single-pixel imaging techniques to obtain images through turbid media.
PaTh_1 Panel of Discussion on the participation of Women in the field of Optics and Photonics sponsored by OSA

Invited participants:

Ursula Gibson
OSA President
Norwegian University of Science and Technology

María Sagrario Millán
Facultad de Óptica y Optometría, Universitat Politècnica de Catalunya, España

Who will participate in the following topics:

- Given the constant demand of today’s society on more spaces for inclusion and visibility for women in all areas. What do you consider is being done from the world of science and technology to promote these spaces in their countries?
- Personal experience as a Woman in the field of Optics and Photonics

Kari Apter
Senior Director, Research & Program Development
The Optical Society (OSA)

Krisinda Plenkovich
Director for Education and Community Services
International Society for Optics and Photonics (SPIE)

María Josefa Yzel Giménez
Autonomous University of Barcelona

Who will presenter different aspects of the inclusivity/diversity efforts and the OSA/SPIE survey
Professor Ursula Gibson served on the faculties of the University of Arizona Optical Sciences Center and the Thayer School of Engineering at Dartmouth College, and currently holds a professorship in the Physics department at the Norwegian University of Science and Technology (NTNU), where she has been since 2010. She holds adjunct positions in the Department of Applied Physics at the KTH Royal Institute of Technology in Stockholm and the Chemistry department at Dartmouth. She has held visiting positions at the United States Air Force Academy, NASA’s Marshall Space Flight Center, Tampere University of Technology (Finland), Chalmers University (Sweden), and the University of Queensland (Australia), among others. In 2008, she was awarded a Fulbright Fellowship, working at the VTT Research facility in Espoo, Finland. Professional activities include service on the Executive Committee of the Vacuum Society of America (Thin Films Division), as an organizer for a Materials Society Symposium and service on the Editorial Boards for the Journal of Vacuum Science and Technology, NanoEthics, and Materials Characterization. She has served on the Board of the Optical Society, OSA, and was elected as the 2019 President of this 20,000 member organization. Her research on optical materials has been wide ranging, including polymers, protein crystals and semiconductors, with an emphasis on limited dimension structures such as thin films and waveguides. Prof. Gibson’s present research is focused on semiconductor-core optical fibers. 

Women in Optics

The core values of OSA summarize my vision of Women in Optics rather well; these are innovation, integrity, inclusivity and impact ("i4"). It is clear that the third value, inclusivity, is essential for women to participate in the other three. Critical contributions are provision of opportunities, and recognition of accomplishments. My role in the OSA is partly due to an 'affirmative action' policy - OSA now alternates election slates that are single-gender, assuring that the leadership will be 50% female, providing role models. In addition, there are funds provided to increase the number of female invited speakers, and initiatives to increase the fraction of women nominated for awards. 

Experience:

Women are often in the minority in science and engineering, and I have been part of a sub-10% fraction in most of my professional (and, come to think of it, extracurricular) activities. This has been true despite the recognition by administrations and governments that gender equality is a worthy goal. Recently, things have been less isolated; both the OSA and Norway take inclusivity very seriously. There are 25% women faculty in the Physics department at NTNU. That drops to 17% at the full professor level, but it is promising. The use of both targeted funding, and assuring that any majority candidate selections are thoroughly justified and documented contributes to the higher than usual representation, but does not bring the representation in line with the numbers of high-school female achievers. More incentives need to be present at the critical undergraduate/graduate education level. As a member of OSA since the 1980s, I have seen dramatic changes in the makeup of the staff, and hope to see continued evolution of the membership gender balance in the future.
**Professor María Sagrario Millán** received her PhD in Physics from the Universitat Autònoma de Barcelona and is full professor of the Universitat Politècnica de Catalunya (UPC). Lecturer on Optics and Image Processing related subjects. She leads a research group on Applied Optics and Image Processing (GOAPI) in UPC. Her research interests on image processing include optical and digital technologies, algorithms, and development of new applications to industry, security and medicine (ophthalmology). Professor Millán is author of textbooks, scientific publications and patents, and academic supervisor of PhD and MSc students. She is currently President-elect of the Spanish Society of Optics (SEDOPTICA), a society in which Prof. Millán has already been President of the Committee of Image Techniques as well as representative of the Spanish Territorial Committee in the International Commission for Optics (ICO). She is Senior member of the Optical Society of America (OSA), Fellow member of the scientific society SPIE and Fellow member of the European Optical Society (EOS). She is a member of the "Área de Mujer, Óptica y Fotónica Somos el Área de Mujer, Óptica y Fotónica de la Sociedad Española de Óptica".
Kari Apter has worked at OSA since 1989. During her long and varied tenure at OSA, she has worked in several areas including meetings/exhibits, awards, global programs and the executive office. As a result of this experience, Kari has a deep understanding of OSA and its key stakeholders and has developed significant relationships with a wide range of members and partners around the globe. Kari was instrumental in the development of CLEO/Europe and CLEO/Pacific Rim and continues to find opportunities for OSA to expand and grow its programs and services around the world. In her current role as Senior Director, Research and Program Development, she is charged with relationship development and management of new programs and society partnerships outside the U.S., helping to develop and implement OSA’s overarching strategic plan, establishing the OSA staff presence outside the US, as well as overseeing OSA’s Awards and Honors Program. This last program includes maintaining a healthy and broad portfolio of awards and medals and attracting diverse, quality nominations reflecting the breadth of the community.

Krisinda Plenkovich is the Director for Education and Community Services at SPIE, the International Society for Optics and Photonics where she oversees Education, Outreach, Membership and Public Policy activities. During her 18 years at SPIE, she has been responsible for SPIE’s Women in Optics programs and the Gender Equity Task Force, which was formed to identify how the optics and photonic workplace can better enable equal opportunities, reward and recognition for its members, regardless of gender. She manages strategic initiatives for SPIE and represents the Society on a number of collaborative national and international projects including the International Day of Light, Science Counts and the US National Photonics Initiative. She is a graduate of Western Washington University with over 25 years of experience in organizational development and nonprofit management.
Maria J. Yzuel is Professor Emeritus at the Universitat Autònoma (UAB) de Barcelona, Spain. Maria Yzuel has been a Professor of Optics at the Department of Physics, UAB from 1983 to 2011, where she is now Honorary Professor and Professor Emeritus. Formerly she was a Professor of Optics at the Universities of Zaragoza and Granada, Spain. She is a member of the Royal Academy of Sciences and Arts of Barcelona, Spain.

She earned her Physics degree and Ph. D. Degree from the University of Zaragoza, Spain. Dr. Yzuel had a British Council grant for a post doctoral stay (1967 and 1968) at the University of Reading (UK) under the supervision of Prof. Harold H. Hopkins. She has worked on diffraction image theory, image quality evaluation, image apodization, applications to photolithography, optical pattern recognition, color information in correlators, design of filters for image processing. She also worked in medical optics and, recently, she has been working in liquid crystal panels applied in diffractive optics and in polarization. She has published more than 300 scientific papers and she has supervised 20 Ph. D. Thesis.

She is Fellow member of the OSA (Optical Society of America), SPIE (The International Society for Optics and Photonics), the Institute of Physics (IOP), the EOS (European Optical Society), and Socia de Honor of the Spanish Optical Society (SEDOPTICA) and of the Royal Spanish Society of Physics. She served as President of SEDOPTICA from 1993 to 1996 and as Secretary General of the European Optical Society. She was Vice President of the Spanish Royal Society of Physics (2007-2011). She was a vice-president of the ICO from 1990 to 1996 and from 2011 to 2017. She served in the SPIE Board of Directors from 2001 to 2003 and from 2007 to 2011. Dr. Yzuel was the SPIE 2009 President. She received the SPIE Board of Directors Award in 2005 and the Medal of the University of Warsaw (2005). She became Doctor Honoris Causa from the University Miguel Hernandez, Elche in 2012 and from the University of Granada, Spain in 2017. In 2013 she received the high recognition of Commander of the Civil Order of Alfonso X the Wise from the Spanish Ministry of Education. She has received the 2014-Medal of Physics given by the Spanish Royal Society of Physics and the BBVA Foundation. In 2008 she received the UAB Prize in recognition of her academic work and for her activities in the field of women in science and she received the Equity Prize of the University of Alicante in 2016.

SPIE gave her name to the SPIE Education Award. The Walka Technologic Park in Huesca, Spain gave her name to a building. ICFO has given her name to the ICFO Maria Yzuel Fellowship Awards. She was President of the Spanish Committee for the International Year of Light celebrations in 2015 and she is currently the President of the Spanish Committee for the International Day of Light. Throughout her career she has promoted actions to support women in science, as founder of the Group “Mujeres en la Física” of the Real Sociedad Española de Fisica and through her work at the SPIE Women in Optics Committee and the Asociación de Mujeres Investigadoras y Tecnólogas.
## Program in Detail

**Monday, September 23, 2019**

**8:00-9:00 Opening Ceremony**

<table>
<thead>
<tr>
<th>Room Cozumel</th>
<th>Room Isla Mujeres 1</th>
<th>Room Isla Mujeres 2</th>
<th>Room Isla Mujeres 3</th>
<th>Room Isla Mujeres 4</th>
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<tbody>
<tr>
<td>Instrumentation, measurement</td>
<td>Biophotonics and biomedical applications: OMo_1.1,</td>
<td>Machine visión: OMo_3.1,</td>
<td>Scattering: OMo_4.1,</td>
<td>Nonlinear optics: OMo_5.1,</td>
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<td>and metrology: OMo_1.2, OMo_1.3</td>
<td>OMo_2.1,</td>
<td>OMo_3.2, OMo_3.3</td>
<td>OMo_4.2, OMo_4.3</td>
<td>OMo_5.2, OMo_5.3, OMo_5.4, OMo_5.5, OMo_5.6, OMo_5.7</td>
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<tr>
<td>Digital Holography: OMo_1.4,</td>
<td>OMo_2.2,</td>
<td>Remote sensing and sensors: OMo_3.4, OMo_3.5</td>
<td>Coherence and statistical optics: OMo_4.4, OMo_4.5</td>
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<td>OMo_1.5, OMo_1.6, OMo_1.7, OMo_1.8</td>
<td>OMo_2.3,</td>
<td>Optics at surfaces: OMo_3.6,</td>
<td>Quantum Optics: OMo_4.6, OMo_4.7, OMo_4.8</td>
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<td>Optics and photonics in the industry:</td>
<td>OMo_2.4,</td>
<td>OMo_3.7, OMo_3.8</td>
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<td>OMo_1.9, OMo_1.10</td>
<td>OMo_2.5,</td>
<td>Thin films: OMo_3.9, OMo_3.10</td>
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<tr>
<td><strong>OMo_1.1</strong> 9:00-9:30</td>
<td><strong>(INVITED)</strong> OPTICAL METROLOGY BEYOND ABBE AND RAYLEIGH</td>
<td><strong>OMo_3.1</strong> 9:00-9:15</td>
<td><strong>OMo_4.1</strong> 9:00-9:30</td>
<td><strong>OMo_5.1</strong> 9:00-9:30</td>
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<tr>
<td><strong>(INVITED)</strong> Joerg Bischoff, Rostyslav Mastylo, Gerard Granet, Eberhard Manske 1</td>
<td><strong>(INVITED)</strong> NEW DIRECTIONS FOR IMAGING AT DEPTH USING SHAPED LIGHT IN SPACE AND TIME</td>
<td><strong>(INVITED)</strong> EVOLUTIONARY COMPUTER VISION BASED LEUKOCYTES CLASSIFICATION</td>
<td><strong>(INVITED)</strong> SCATTERING FROM ROUGH SURFACES USING DESIGNED ILLUMINATION CALCULATED USING THE KIRCHHOFF APPROXIMATION</td>
<td><strong>(INVITED)</strong> EL LÁSER STELA (SANTIAGO TERAWATT LASER) PARA EXPERIMENTACIÓN EN LOS LÍMITES DE LA ÓPTICA NO LINEAL</td>
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<td>Room Cozumel</td>
<td>Kishan Dholakia School of Physics and Astronomy, University of St Andrews, UK</td>
<td>Rocio Ochoa-Montiel1-2, Mariana Chan-Ley3, Gustavo Olague4, Humberto Sossa1,4</td>
<td>N.C. Bruce, O.G. Rodríguez-Herrera, J. A. Franco-Ortega, M. Rosete-Aguilar, Instituto de Ciencias Aplicadas y Desarrollo Tecnológico, Universidad Nacional Autónoma de México, México</td>
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<td><strong>OMo_2.1</strong> 9:00-9:30</td>
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<td>Room Isla Mujeres 2</td>
<td>Rocio Ochoa-Montiel1-2, Mariana Chan-Ley3, Gustavo Olague4, Humberto Sossa1,4</td>
<td>N.C. Bruce, O.G. Rodríguez-Herrera, J. A. Franco-Ortega, M. Rosete-Aguilar, Instituto de Ciencias Aplicadas y Desarrollo Tecnológico, Universidad Nacional Autónoma de México, México</td>
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<td>Room Isla Mujeres 3</td>
<td>N.C. Bruce, O.G. Rodríguez-Herrera, J. A. Franco-Ortega, M. Rosete-Aguilar, Instituto de Ciencias Aplicadas y Desarrollo Tecnológico, Universidad Nacional Autónoma de México, México</td>
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<td>OMo_1.2</td>
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<td>DETERMINACIÓN DEL ERROR INDUCIDO EN LOS HACES DE MUESTREO Y MEDIDA DE UN SISTEMA DE MEDIDA RONCHI PARA SUPERFICIES CONVexas DEBIDO AL USO DE SISTEMAS ÓPTICOS REALES</td>
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<td>\textsuperscript{1}Franco Gonzales, \textsuperscript{2}Josep Arasa</td>
<td>\textsuperscript{1}Departamento de Ciencias, Pontificia Universidad Católica del Perú, Lima, Perú</td>
<td>\textsuperscript{2}Center for the Development of Sensors and Systems (CD6), Ensenada, Baja California, México</td>
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<tr>
<th>OMo_2.2</th>
<th>9:30-9:45</th>
<th>INTERNAL OPTICAL REFLECTIVITY FROM A BIOFILM: MODELLING AND EXPERIMENT</th>
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<tr>
<td>Anays Acevedo-Barrera and Augusto García-Velazquez</td>
<td>Instituto de Ciencias Aplicadas y Tecnología, Universidad Nacional Autónoma de México, Ciudad de México, Mexico</td>
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<th>OMo_3.2</th>
<th>9:15-9:30</th>
<th>EVOLVING VISION PROGRAMS FOR THE CLASSIFICATION OF DIGITIZED ART</th>
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<tr>
<td>Mariana Chan-Ley, Gustavo Olague</td>
<td>Departamento de Ciencias de la Computación, Centro de Investigación Científica y de Educación Superior de Ensenada, Baja California, México</td>
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<tr>
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<th>9:30-9:45</th>
<th>SELF-LOCALIZATION OFモノCLAR CAMERA WITH THE GRASSMAN-CAYLEY ALGEBRA</th>
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<tr>
<td>Gustavo Olague, Mariana Chan-Ley, Gerardo E. Altamirano-Gómez</td>
<td>Departamento de Ciencias de la Computación, Centro de Investigación Científica y de Educación Superior de Ensenada, Baja California, México</td>
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<tr>
<th>OMo_4.2</th>
<th>9:30-9:45</th>
<th>LIGHT SCATTERING IN THE EVANESCENT REGION OF AN INTERFACE AIRPOLISHED SURFACE OF AN OPTICAL GLASS: ROUGHNESS MEASUREMENT AND MODELLING</th>
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<tr>
<td>R. Cortés\textsuperscript{<strong>}, F. Villa-Villa\textsuperscript{*}, V. Coello\textsuperscript{</strong>}, H. Pérez-Aguilar\textsuperscript{***}</td>
<td>*Centro de Investigaciones en Optica A. C., León Gto. México</td>
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<tr>
<th>OMo_5.2</th>
<th>9:30-9:45</th>
<th>EFFECT OF CORE CARBO-MERIZATION IN AN ORGANIC MOLECULE WITH QUADRUPOlar OPTICAL RESPONSE: THE CASE OF TWO-PHOTON ABSORPTION</th>
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<tr>
<td>Rodrigo Misael Barba-\textsuperscript{Barba\textsuperscript{1}}, Marwa Chammam\textsuperscript{2}, Jayaramakrishnan Velusamy\textsuperscript{3}, Dymytrii Listunov\textsuperscript{2}, Carine Duhayon\textsuperscript{2}, Valerie Maraval\textsuperscript{2}, Remi Chauvin\textsuperscript{2}, Gabriel Ramos-</td>
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X Ibero American Optics Meeting, XIII Latin American Meeting on Optics, Lasers and Applications, and Mexican Optics and Photonics Meeting, Cancun, Mexico, 23-27 September 2019
<table>
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<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
<th>Affiliations</th>
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| OMo_1.3 | 9:45-10:00 | The REFLEX: A NEW INSTRUMENT FOR TELESCOPE METROLOGY | Guillaume Dovillaire¹, Rémy Juvénal¹, Thierry Avignon²  
¹Imagine Optic, Orsay, France  
²Institut d’Optique Graduate School, France |
| OMo_2.3 | 9:45-10:00 | ESTUDIOS PRECLÍNICOS A PARTIR DE IMÁGENES ÓPTICAS DE RADIOACCIÓN CERENKOV PRODUCIDAS POR RADIOFÁRMACOS MARCADOS CON 177Lu | Nallely P. Jiménez-Mancilla³, Keila Isaac-Olivé², Eugenio Torres-García³, Miguel A. Camacho-López², Gerardo J. Ramírez-Nava⁴, Héctor Mendoza-Nava⁴  
³CONACyT, Instituto Nacional de Investigaciones Nucleares, México  
²Universidad Autónoma del Estado de México, Facultad de Medicina, Toluca, Estado de México, México  
⁴Universidad Autónoma del Estado de México, Facultad de Medicina, Toluca, Estado de México, México |
| OMo_3.4 | 9:45-10:00 | ANÁLISIS DEL COMPORTAMIENTO EN 3D DE LAS CORRIENTES EN LA COSTA NORTE COLOMBIANA CON DATOS DE SENORES REMOTOS | Vilma Viviana Ojeda Caicedo¹,², Luis Jesús Otero Díaz²,³, Ricardo Rafael Torres Parra¹  
¹Facultad de Ciencias Básicas, Universidad Tecnológica de Bolívar, Cartagena, Colombia  
²Departamento de Física, Universidad del Norte, Barranquilla, Colombia  
³Departamento de Física, Universidad del Norte, Barranquilla, Colombia |
| OMo_4.3 | 9:45-10:00 | UNIFYING ANALYTICAL APPROXIMATIONS TO THE EFFECTIVE REFRACTIVE INDEX OF COLLOIDS | Augusto García-Valenzuela, Anays Acevedo-Barrera  
Instituto de Ciencias Aplicadas y Tecnología, Universidad Nacional Autónoma de México, Ciudad de México, México |
| OMo_5.3 | 9:45-10:00 | FORMATION AND LIGHT GUIDING PROPERTIES OF DARK SOLITONS INDUCED IN A BIOSYNTHESIZED GOLD NANOCOLLOID | A. Balbuena Ortega¹,², F. E. Torres-González³, V. López Gayou¹, R. Delgado Macuil³, A. V. Arzola³, K. Volke-Sepulveda¹  
¹Instituto de Física, Universidad Nacional Autónoma de México, CDMX, México  
²Instituto de Energías Renovables, Universidad Nacional Autónoma de México, Temixco, Morelos, México.  
³Instituto Politécnico Nacional -CIBA Tlaxcala, Tlaxcala, México |
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<tr>
<td><strong>Mo_1.4</strong> 10:00-10:15</td>
<td>BEAM QUALITY MERIT FUNCTION BY OFF-AXIS OPTICAL VORTEX SCANS</td>
<td>Mateusz Szatkowski¹,², Agnieszka Popiołek - Masajada¹, Jan Masajada¹</td>
<td>Department of Optics and Photonics, Wrocław University of Science and Technology, Wrocław, Poland</td>
</tr>
<tr>
<td><strong>Mo_2.4</strong> 10:00-10:15</td>
<td>EFFECT OF MELANIN CONTENT IN LIGHT INTERACTION WITH HUMAN SKIN USING THE MONTE CARLO METHOD FOR THE FIRST AND SECOND BIOLOGICAL WINDOWS</td>
<td>F Miranda-Casasola¹, C Sánchez-Pérez¹, E Gutiérrez-Herrera¹, J A Alvarez-Chavez³, H L Offerhaus⁴</td>
<td>Instituto de Ciencias Aplicadas y Tecnología, Universidad Nacional Autónoma de México</td>
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<td><strong>Mo_3.5</strong> 10:00-10:15</td>
<td>OBSERVATION OF ATMOSPHERIC TRACE GASES BASED ON DOAS ANALYSIS</td>
<td>Erna Frins, Nicolás Casaballe, Matías Osorio, Jeanette Fracchia, Alexandra Penner, José Ferrari</td>
<td>Instituto de Física, Facultad de Ingeniería, Universidad de la República, Montevideo, Uruguay</td>
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<tr>
<td><strong>Mo_4.4</strong> 10:00-10:15</td>
<td>NUMERICAL IMPLEMENTATION OF A MACH-ZEHNDER INTERFEROMETER FOR BOSE-EINSTEIN CONDENSATES</td>
<td>Gustavo Marín-Alvarado, Jessica Gil-Londoño, Karen Rodríguez-Ramírez</td>
<td>Departamento de Física, Universidad del Valle, Cali, Colombia</td>
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<tr>
<td><strong>Mo_5.4</strong> 10:00-10:15</td>
<td>INFRARED NONLINEAR TRANSMISSION OF A COMPLEX SYSTEM WITH ALLOYED AND DISREGATED Ag AND Pt NANOPARTICLES IN ION-IMPLANTED SILICA</td>
<td>J. Bornacelli¹, C. Torres-Torres¹, R. Rangel-Rojo¹, J. C. Cheang-Wong³, A. Oliver³</td>
<td>Instituto de Física, Universidad Nacional Autónoma de México, Ciudad de México, México</td>
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<tr>
<td><strong>Mo_1.5</strong> 10:15-10:30</td>
<td>NUMERICAL DARK FIELD ILLUMINATION FOR DIGITAL LENSLESS HOLOGRAPHIC</td>
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MICROSCOPY OF BIOLOGICAL SAMPLES
C. Trujillo¹, J. Garcia-Sucerquia²
¹Physical Sciences Department, School of Science, Universidad EAFIT, Medellín, Colombia. ²School of physics, Universidad Nacional de Colombia, Medellín, Colombia

DYNAMICS
Luis F. Devia-Cruz, Santiago Camacho-López
Departamento de Óptica, Centro de Investigación Científica y de Educación Superior de Ensenada, Mexico

ELLIPTICITY AND ORIENTATION OF THE POINCARÉ SPHERE.
Karol Salazar and Rafael Torres
Universidad Industrial de Santander, Bucaramanga, Colombia

LINEALIDAD SATURABLE
Cristian Mejía-Cortes, Jorge Castillo Barake
Programa de Física, Facultad de Ciencias Básicas, Universidad del Atlántico, Colombia

10:30-11:00 COFFEE BREAK

PlMo_1 11:00-12:00: THE HISTORY OF TELESCOPES AND BINOCULARS
John E. Greivenkamp
College of Optical Sciences, University of Arizona, Tucson AZ USA
Conference Chair: Josué Álvarez-Borrego, CICESE, México

OMo_1.6 12:00-12:15
CALIBRATION OF AN SLM USING GEOMETRIC PHASE INTERFEROMETRY
University of North Carolina at Charlotte, NC, USA

OMo_2.6 12:00-12:30
(INVITED) DEEP LEARNING APPLICATIONS IN DIGITAL VIDEO MICROSCOPY AND OPTICAL MICROMANIPULATION
Saga Helgadottir, Aykut Argun, Giovanni Volpe
Department of Physics, Gothenburg University, Göteborg, Sweden

OMo_3.6 12:00-12:15
FEMTOSECOND LASER-INDUCED PERIODIC SURFACE STRUCTURE FORMATION ON THIN BISMUTH LAYER UPON ATMOSPHERIC IRRADIATION
R. Santillan¹, P. Segovia-Olvera¹, M. Camacho-Lopez², S. Camacho-Lopez¹
¹Centro de Investigación Científica y de Educación Superior de Ensenada, Baja California, México
²Universidad Autónoma del Estado de México, Toluca, México

OMo_4.6 12:00-12:15
PARA-PARTICLES ON A TRAPPED ION QUANTUM COMPUTER
C. Huerta Alderete¹,², Nhung H. Nguyen², Daiwei Zhu², N. M. Linke¹, B. M. Rodriguez-Lara¹,³
¹Instituto Nacional de Astrofísica, Óptica y Electrónica, Sta. María Tonantzintla, Pue., México
²Joint Quantum Institute, University of Maryland, USA
³Tecnologico de Monterrey, León, México

OMo_5.6 12:00-12:15
NONLINEAR OPTICAL PARAMETERS OF LITHIUM TETRABORATE GLASSES ACTIVATED BY RARE EARTH METAL IONS AND SNP
División de Ciencias e Ingenierías, Universidad de Guanajuato, León, México

X Ibero American Optics Meeting, XIII Latin American Meeting on Optics, Lasers and Applications, and Mexican Optics and Photonics Meeting, Cancun, Mexico, 23-27 September 2019
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<th>Session Code</th>
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<th>Title</th>
<th>Authors</th>
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<tr>
<td>OMo_1.7</td>
<td>12:15-12:30</td>
<td>A PERFORMANCE METRIC TO COMPARE OPTICAL ENCRYPTION TECHNIQUES (AND WHY NOT TO USE CORRELATION TECHNIQUES)</td>
<td>Ana Hiza Ramirez-Andrade, Rosario Porras-Aguilar, Konstantinos Falaggis</td>
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<tr>
<td>OMo_3.7</td>
<td>12:15-12:30</td>
<td>EVOLUTION FROM Ti TO TiO2 LASER-INDUCED PERIODIC SURFACE STRUCTURES UPON FEMTOSECOND PULSED IRRADIATION</td>
<td>A. Wong-Gutierrez, R. Santillan, P. Segovia-Olvera, M. Camacho-Lopez, S. Camacho-Lopez</td>
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<tr>
<td>OMo_5.7</td>
<td>12:15-12:30</td>
<td>Second Harmonic Generation from Nanoparticles of Non-Centrosymmetric Geometry</td>
<td>Raksha Singla, W. Luis Mochan, Instituto de Ciencias Físicas, Universidad Nacional Autónoma de México, Cuernavaca, Morelos, México</td>
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<td>OMo_1.8</td>
<td>12:30-12:45</td>
<td>ADDRESSING AND HANDLE OF THE REFERENCE BEAM IN DIGITAL HOLOGRAPHY BY THE ANALYSIS OF ITS SPECTRAL COMPONENTS</td>
<td>J. Nicomedes Leal, J. M. Flores-Moreno, Modesto Medina-Melendrez</td>
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<tr>
<td>OMo_2.7</td>
<td>12:30-13:00</td>
<td>INVITED DYNAMICS OF TRAPPED, ROTATING PARTICLES IN LIQUID AND VACUUM</td>
<td>Kishan Dholakia, SUPA, School of Physics and Astronomy, University of St Andrews, North Haugh, UK</td>
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<tr>
<td>OMo_4.8</td>
<td>12:30-12:45</td>
<td>SINGLE-SHOT FULL FIELD QUANTUM OPTICAL COHERENCE TOMOGRAPHY.</td>
<td>Z. Ibarra-Borja, C. Sevilla-Gutierrez, H. Cruz-Ramírez, A. B. U' Ren, R. Ramírez</td>
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X Ibero American Optics Meeting, XIII Latin American Meeting on Optics, Lasers and Applications, and Mexican Optics and Photonics Meeting, Cancun, Mexico, 23-27 September 2019
|Mo_1.9| 12:45-13:00| ANÁLISIS DE IMÁGENES MULTIESPECTRALES PARA LA EVALUACIÓN DE CALIDAD EN ALIMENTOS | Instituto de Investigación en Comunicación Óptica, Universidad Autónoma de San Luis Potosí, San Luis Potosí, México
CONACyT - Instituto de Investigación en Comunicación Óptica, Universidad Autónoma de San Luis Potosí, San Luis Potosí, México |

|Mo_3.9| 12:45-13:00| PELÍCULAS DELGADAS DE GRAFITO FABRICADAS POR ABLACIÓN LASER A DIFERENTES CONDICIONES DE CRECIMIENTO | F González1, R. Ospina2, R. Cabanzo1, H Riascos1
1Plasma, láser y Aplicaciones, Universidad Tecnológica de Pereira, Colombia
2Universidad Industrial de Santander, Colombia |

|Mo_1.10| 13:00-13:30| (INVITED) JePPiX: OPEN-ACCESS PLATFORMS FOR PHOTONIC INTEGRATED CIRCUITS | V. Dolores-Calzadilla1, K. Williams2
1Photonic Integration Technology Centre, Eindhoven University of Technology, 2Photonic Integration Group, Eindhoven University of |

|Mo_2.8| 13:00-13:15| DESPLAZAMIENTO DE MICROPARTÍCULAS HUECAS MEDIANTE UN CAMPO EVANESCENTE | G. Morales Valenzuela1,2, Víctor Ruiz-Cortés1
1Centro de Investigación Científica y de Educación Superior de Ensenada, Baja California |

|Mo_3.10| 13:00-13:15| GENERAL OPTICAL PROPERTIES OF APERIODIC AND PERIODIC INHOMOGENEOUS THIN FILMS | Raúl García-Llamas1, Jesús D. Valenzuela-Sau2, Sandra L. Gastelum-Acuña2, José M. NapólesDuarte3
1Departamento de Investigación en Física, Universidad de Sonora, México |
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<td>Centro de Nanociencias y Nanotecnología, México</td>
<td>Cátedras Conacyt-Universidad de Sonora. Hermosillo, Sonora, México</td>
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<td><strong>OMo_2.9 13:15-13:30</strong></td>
<td><strong>OMo_2.9 13:15-13:30</strong></td>
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<td>PHOTOTHERMAL SIGNATURE AND BLOOD SEDIMENTATION RATE OF WHOLE HUMAN BLOOD BY PHOTOACOUSTIC TECHNIQUE</td>
<td>PHOTOTHERMAL SIGNATURE AND BLOOD SEDIMENTATION RATE OF WHOLE HUMAN BLOOD BY PHOTOACOUSTIC TECHNIQUE</td>
<td>PHOTOTHERMAL SIGNATURE AND BLOOD SEDIMENTATION RATE OF WHOLE HUMAN BLOOD BY PHOTOACOUSTIC TECHNIQUE</td>
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<td>Argelia Pérez-Pacheco¹, Rosa María Quispe Siccha², Flor del Carmen Cortés Ortegò³, Marco Polo Colín García⁴</td>
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<td>¹Unidad de Investigación y Desarrollo Tecnológico, Hospital General de México, Dr. Eduardo Liceaga, Mexico</td>
<td>²Facultad de Ciencias, Universidad Nacional Autónoma de México</td>
<td>²Facultad de Ciencias, Universidad Nacional Autónoma de México</td>
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13:30- 15:00 LUNCH (on your own)

**PleMo_2 15:00- 16:00** **FEMTOSECOND LASER MICROMACHINING FOR THE REALIZATION OF INTEGRATED QUANTUM PHOTONICS CIRCUITS AND SENSORS IN DIAMOND**

Roberta Ramponi
CNR Institute for Photonics and Nanotechnologies (IFN) and Department of Physics, Politecnico di Milano, Italy
Conference Chair: Diana Tentori Santa Cruz, CICESE, México

16:00-17:30 POSTER SESSION 1
### Tuesday, September 24, 2019

<table>
<thead>
<tr>
<th>Room Cozumel</th>
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<th>Room Isla Mujeres 4</th>
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<tr>
<td>Fiber optics, sensors and optical communications:</td>
<td>Microscopy: <strong>OTu_2.1</strong>, <strong>OTu_2.2</strong>, <strong>OTu_2.3</strong>, <strong>OTu_2.4</strong>, <strong>OTu_2.5</strong>, <strong>OTu_2.6</strong></td>
<td>Physical optics: <strong>OTu_3.1</strong>, <strong>OTu_3.2</strong>, <strong>OTu_3.3</strong>, <strong>OTu_3.4</strong>, <strong>OTu_3.5</strong>, <strong>OTu_3.6</strong></td>
<td>Spectroscopy: <strong>OTu_4.1</strong>, <strong>OTu_4.2</strong>, <strong>OTu_4.3</strong>, <strong>OTu_4.4</strong>, <strong>OTu_4.5</strong>, <strong>OTu_4.6</strong>, <strong>OTu_4.7</strong>, <strong>OTu_4.8</strong>, <strong>OTu_4.9</strong></td>
<td>Materials Processing with lasers: <strong>OTu_5.1</strong>, <strong>OTu_5.2</strong>, <strong>OTu_5.3</strong></td>
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<tr>
<td><strong>OTu_1.1</strong> 9:00-9:30 <strong>(INVITED)</strong> HIGH-FIDELITY DISTRIBUTED ACOUSTIC SENSING USING OPTICAL FIBERS: A NEW TOOL IN GEOPHYSICS</td>
<td><strong>OTu_2.1</strong> 9:00-9:30 <strong>(INVITED)</strong> LIGHT SHEET MICROSCOPY FOR 3D IMAGING OF FAST DYNAMICS OCCURRING IN BIOLOGICAL SAMPLES</td>
<td><strong>OTu_3.1</strong> 9:00-9:15 TRANSFORMATION OF SPIRALLY POLARIZED VECTOR FIELDS BY ANISOTROPIC MEDIA</td>
<td><strong>OTu_4.1</strong> 9:00-9:30 <strong>(INVITED)</strong> ON USE OF SPECTRAL INDEXES IN APPLICATIONS FOR SMART AGRICULTURE</td>
<td>Laser and laser optics: <strong>OTu_5.4</strong>, <strong>OTu_5.5</strong>, <strong>OTu_5.6</strong>, <strong>OTu_5.7</strong></td>
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<tr>
<td>Maria R. Fernandez-Ruiz¹, Sonia Martínz-López², Miguel Gonzalez-Herraez², Hugo F. Martins² ¹Departamento de Electrónica, Edificio Politécnico, Universidad de Alcalá, Spain. ²Instituto de Optica, Consejo Superior de Investigaciones Científicas, Madrid, Spain</td>
<td>Pablo Loza Álvarez, ICFO-The Institute of Photonic Sciences, Barcelona, Spain</td>
<td>Julio C. Gutiérrez-Vega², Benjamin Pérez-García¹, Raul I. Hernandez Aranda⁴, Carlos López-Mariscal⁴, ¹Photonicity and Mathematical Optics Group, Tecnológico de Monterrey, Monterrey, México ²Underwater Photonics, Cozumel, Mexico, ¹Department of Physics and Astronomy, Appalachian State University, Boone, NC</td>
<td>Aldeman Reyes-Trujillo¹,², Frank D. Montenegro-Hurtado¹, Mayra A. Mejía-Martínez¹,², Julian A. Aponzámancilla¹,², Richy R. Pomeo-Moreno², Brenda M. Montoya-Gómez¹,², Carlos A. Galindez-Jamioy¹, and Efraín Solarte-Rodriguez¹</td>
<td>³Grupo de Optica Cuántica, Departamento de Física, Universidad del Valle, Cali, Colombia ⁴Grupo de Ingeniería de Recursos Hídricos y Suelos, Escuela de los Recursos Naturales y del Ambiente – ³Instituto Universitario de Estudios avanzados en Física y Tecnología, Universidad de Salamanca, Spain ⁴Spanish Center for Pulsed Lasers, Salamanca, Spain ⁵Departamento de Física, Universidad de La Laguna, Santa Cruz de Tenerife, Spain ⁶Aplicaciones del Láser y Fotónica, Universidad de Salamanca, Spain</td>
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<tr>
<td><strong>OTu_3.2</strong> 9:15-9:30 IMPLEMENTACIÓN DE HACES AIRY MEDIANTE HOLOGRAMAS DE POLARIZACIÓN</td>
<td><strong>OTu_3.2</strong> 9:15-9:30 IMPLEMENTACIÓN DE HACES AIRY MEDIANTE HOLOGRAMAS DE POLARIZACIÓN</td>
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**X Ibero American Optics Meeting, XIII Latin American Meeting on Optics, Lasers and Applications, and Mexican Optics and Photonics Meeting, Cancun, Mexico, 23-27 September 2019**
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<th>Session</th>
<th>Title</th>
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<tbody>
<tr>
<td>OTu_1.2</td>
<td>9:30-9:45</td>
<td>An Electric Field Sensing-Detection System Based On Linbo3 Birefringent Optical Waveguides</td>
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<td>Ma. Del Rocío Ricardez Trejo, Celso Gutiérrez Martínez</td>
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<td>Instituto Nacional de Astrofísica, Óptica y Electrónica, Puebla, México</td>
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<td>EIDENAR, Universidad del Valle, Cali, Colombia</td>
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<td>OTu_2.2</td>
<td>9:30-9:45</td>
<td>Periodic Solutions on an AFM Considering Dissipative Forces</td>
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<td>Johan S. Duque, Alexander Gutierrez</td>
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<td>Faculty of Basic Sciences, Technological University of Pereira, Colombia</td>
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<td>Atómica, Molecular y Fotónica, Universidad de La Laguna, Santa Cruz de Tenerife, Spain</td>
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<td>OTu_3.3</td>
<td>9:30-9:45</td>
<td>Elementos Difrangentes para la Modulación Axial de Haces Bessel</td>
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<td>Edgardo Balderrama González, Víctor Ruiz Cortés</td>
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<td>División de Física Aplicada, Centro de Investigación Científica y Educación Superior de Ensenada, Baja California, México</td>
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<td>5Universitat Rovira i Virgili, Departament Química Física i Inorgànica, Física i Cristal·lografia de Materials i Nanomaterials (FiCMA-FiCNA)-EMaS, Campus Sescelades, Tarragona, Spain</td>
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<td>OTu_4.2</td>
<td>9:30-9:45</td>
<td>Two-Dimensional FTIR Correlation Study of Carbon Dots of Ionic Liquids</td>
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<td>Mayamarú Guerra, Anibal Mendez, Juan Chirinos, Ysaias Alvarado, Tamara Zoltan, Ernesto San-Blas, Nestor Cubillan</td>
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<tr>
<td>1Facultad de Ciencias Básicas, Universidad Tecnológica de Bolívar, Cartagena, Colombia</td>
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<tr>
<td>2Laboratorio de Polímeros, Departamento de Química, Facultad Experimental de Ciencias, Universidad del Zulia, Maracaibo, Venezuela</td>
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<td>3Laboratorio de Protección Atómica, Molecular y Fotónica, Universidad de La Laguna, Santa Cruz de Tenerife, Spain</td>
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<td>4Faculty of Basic Sciences, Technological University of Pereira, Colombia. 5Universitat Rovira i Virgili, Departament Química Física i Inorgànica, Física i Cristal·lografia de Materials i Nanomaterials (FiCMA-FiCNA)-EMaS, Campus Sescelades, Tarragona, Spain</td>
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<td>OTu_5.2</td>
<td>9:30-9:45</td>
<td>Femtosecond Laser Induced Element Redistribution in Glasses for Photonic Applications</td>
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<td>Pedro Moreno-Zárate, Francisco Muñoz, Manuel Macías-Montero, Antonio Dias, Belen Sotillo, Paloma Fernandez, Rosalía Serna, Javier Solís</td>
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<td>1Higer Technological Institute of Acatlan de Osorio, Mexico</td>
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<td>2Institute of Ceramics and Glass (CSIC), Madrid, Spain</td>
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<td>3Laser Processing Group, Dark Matter, Dark Energy and Cosmology Institute, Madrid, Spain</td>
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<td>4Faculty of Basic Sciences, Technological University of Pereira, Colombia. 5Universitat Rovira i Virgili, Departament Química Física i Inorgànica, Física i Cristal·lografia de Materials i Nanomaterials (FiCMA-FiCNA)-EMaS, Campus Sescelades, Tarragona, Spain</td>
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<td>6School of Physics, Shandong University, Shandong, China</td>
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<td>OTu_1.3 9:45-10:00</td>
<td>OTu_2.3 9:45-10:00</td>
<td>OTu_3.4 9:45-10:00</td>
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<td>SENSOR DE FIBRA ÓPTICA PARA DETECCIÓN DE COMPUESTOS ORGÁNICOS VOLÁTILES</td>
<td>COMPUTATIONAL MULTIFOCAL IMAGING IN 3D FLUORESCENCE MICROSCOPY</td>
<td>REVERSIBILIDAD DE ONDAS PLANAS</td>
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<tr>
<td>Jorge Luis Rodríguez García-Piña1, Georgina Beltrán Pérez1, Severino Muñoz Aguirre1, J. Castillo Mixcóatl1, Raúl Delgado Macuil2 1Facultad de Ciencias Físico Matemáticas, Benemérita Universidad Autónoma de Puebla 2Instituto Politécnico Nacional, CIBA Tlaxcala México</td>
<td>Julia R. Alonso3, Alejandro Silva3, Ariel Fernández3, José A. Ferrari3, Miguel Arocena2,3,4 1Instituto de Física, Facultad de Ingeniería, Universidad de la República, Montevideo, Uruguay 2Sección Biología Celular, Facultad de Ciencias, Universidad de la República, Montevideo, Uruguay 3Departamento de Genómica, Instituto de Investigaciones Biológicas Clemente Estable, Montevideo, Uruguay 4Cátedra de Bioquímica y Biofísica, Facultad de</td>
<td>Guillermo Baldwin Departamento de Ciencias, Sección Física, Pontificia Universidad Católica del Perú, Lima, Perú</td>
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<td>Session</td>
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| OTu_1.4 | 10:00-10:15 | CYCLIC SYMMETRY IN MULTICORE FIBERS  
Benjamín Jaramillo Ávila, J. Naya Hernández, S. Ma. Toxqui Rodríguez, B. M. Rodríguez-Lara  
1CONACYT-Instituto Nacional de Astrofísica, Óptica y Electrónica, Santa María Tonantzintla, Pue., Mexico  
2Tecnológico de Monterrey, Escuela de Ingeniería y Ciencias, Monterrey, N.L., Mexico  
3Academia Mexicana de Ciencias, Verano de la Investigación Científica – Tecnológico de Monterrey, Escuela de Ingeniería y Ciencias, Monterrey, N.L., Mexico  
4Instituto Nacional de Astrofísica, Óptica y Electrónica, Santa María Tonantzintla, Pue., Mexico |
| OTu_2.4 | 10:00-10:15 | DISPERSION MEASUREMENT BY CHROMATIC CONFOCAL MICROSCOPE  
Johnson Garzón, Derfrey Duque, Tijani Gharbi  
1Grupo de Óptica y Espectroscopía, Centro de Ciencia Básica, Universidad Pontificia Bolivariana, Medellín Colombia  
2GICEI, Facultad de Ingeniería, Institución Universitaria Pascual Bravo, Medellín, Colombia  
3Nanomedicine Lab, Université de Franche-Comté, Besancon, France |
| OTu_3.5 | 10:00-10:15 | EFECTOS DE LA PRESIÓN SOBRE LA ESTRUCTURA DE BANDA FOTÓNICA EN UNA RED HEXAGONAL DE TRIÁNGULOS EQUILÁTEROS  
Francis Segovia-Chaves, Herbert Vinck-Posada, Erik Navarro Barón  
1Grupo de Superconductividad y Nanotecnología, Departamento de Física, Universidad Nacional de Colombia, Bogotá, Colombia  
2Grupo de Física Teórica, Programa de Física, Universidad Surcolombiana, Neiva-Hulla, Colombia |
| OTu_4.4 | 10:00-10:15 | IMPROVING THE LUMINOUS EFFICACY IN Ce3+ DOPED OXYFLUORIDE PHOSPHOR PLATES FOR LIGHTING APPLICATIONS  
Alejandro Arredondo, Daniel Ortiz, Haggeo Desirena  
1Centro de Investigaciones en Óptica A.C, León, México  
2Colegio de Estudios Científicos y Tecnológicos del Estado de Guanajuato # 2, León, México |
| OTu_1.5 | 10:15-10:30 | TEMPERATURE SENSITIVITY OF A WHISPERING GALLERY MODE MICROCAVITY BASED ON BISMUTH-FILLED PHOTONIC CRYSTAL FIBER  
A. Arellano-Morales, J. Molina-González, H. Desirena, Sergio Calixto |
| OTu_2.5 | 10:15-10:30 | NEW FAST SINTERING OF PIGs THROUGH LASER HEATING  
A. Arellano-Morales, J. Molina-González, H. Desirena, Sergio Calixto |
| OTu_3.6 | 10:15-10:30 | SISTEMA MECANICO-DIGITAL DE MEDICIÓN DE RADIOS DE CURVATURA SIN CONTACTO UTILIZANDO PEQUEÑOS DESPLAZAMIENTOS EN LA ESPECTROSCOPIA DE ROMPIEMIENTO INDUCIDO POR LÁSER (LIBS) EN MUESTRAS LÍQUIDAS ACÚSTICAMENTE LEVITADAS  
Ezpeleta Valdés, A. Arellano-Morales, J. Molina-González, H. Desirena |

X Ibero American Optics Meeting, XIII Latin American Meeting on Optics, Lasers and Applications, and Mexican Optics and Photonics Meeting, Cancun, Mexico, 23-27 September 2019
<table>
<thead>
<tr>
<th>Session</th>
<th>Time</th>
<th>Title</th>
<th>Speaker(s)</th>
<th>Institution(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OTu_1.6</td>
<td>12:00-12:15</td>
<td>CONTROLLED FABRICATION OF POLYMER END-CAPPED FIBER OPTIC SENSORS FOR REFRACTIVE INDEX SENSING</td>
<td>Mildred S. Cano-Velázquez, Juan Hernández-Cordero</td>
<td>Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México, CDMX, México</td>
</tr>
<tr>
<td>OTu_2.6</td>
<td>12:00-12:15</td>
<td>NEW ACHIEVEMENTS IN LABEL FREE MULTIMODAL MICROSCOPY IMAGING</td>
<td>George A. Stanciu, Stefan G. Stanciu, Denis E. Tranca, Radu Hristu, Antonela Toma</td>
<td>Center for Microscopy-Microanalysis and Information Processing, University of North Carolina at Chapel Hill, USA</td>
</tr>
<tr>
<td>OTu_3.7</td>
<td>12:00-12:15</td>
<td>ORTHOGONAL AND TILTED FBGS SIMULATION FOR TELECOMMUNICATIONS DESIGN AT 1.5 AND 2UM VIA AN ADAPTED TRANSFER MATRIX METHOD</td>
<td>O. de Luna, G. G. Perez-Sanchez, J. A. Alvarez-Chavez, H. L. Offerhaus</td>
<td>Centro de Investigaciones en Óptica A. C. León, Gto. México</td>
</tr>
<tr>
<td>OTu_4.6</td>
<td>12:00-12:15</td>
<td>ENHANCED LASER-INDUCED BREAKDOWN SPECTROSCOPY USING GRAPHITE ON DIELECTRIC SAMPLES</td>
<td>C. Sánchez-Aké, B. Stefanuk, J. L. Benítez, O. Depablos-Rivera, T. García-Fernández, S. Negrete, M. Villagráñ-Muniz</td>
<td>PRUEBA DE RONCHI, Universidad de las Américas Puebla, Puebla, México</td>
</tr>
<tr>
<td>OTu_5.4</td>
<td>12:00-12:15</td>
<td>PASSIVELY Q-SWITCHED ER/YB DOUBLE CLAD FIBER LASER USING RF MAGNETRON SPUTTERED AL-DOPED ZNO THIN FILM AS SATURABLE ABSORBER P Prieto-Cortés, R I Álvarez-Tamayo, M Garcia-Méndez, M Durán-</td>
<td></td>
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</tbody>
</table>

**10:30-11:00 COFFEE BREAK**

**PLET1 11:00-12:00: SEMICONDUCTOR-CORE FIBERS**

**Ursula Gibson**

Norwegian University of Science and Technology

Conference Chair: Daniel Malacara-Hernández, CIO, México
<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>OTu_1.7</td>
<td>MEASUREMENT OF THE LONGITUDINAL RELAXATION TIME T1, VIA DELAYED OPTICAL NUTATION INSIDE A HOLLOW CORE PHOTONIC CRYSTAL FIBER FILLED WITH ACETYLENE</td>
<td>Manuel Ocegueda, Jordan Díaz, Priscilla Iglesias, Serguei Stepanov, Nayeli Casillas, Eliseo Hernández. 1Departamento de Física, Universidad Autónoma Metropolitana, Departamento de Ciencias Básicas, CdMx, Mexico. 2Optical Sciences Group, University of Twente, Enschede, The Netherlands.</td>
</tr>
<tr>
<td>OTu_2.7</td>
<td>FORMACIÓN DE IMÁGENES A TRAVÉS DE MEDIOS DISPERSORES UTILIZANDO UNA CÁMARA DE UN SOLO PIXEL</td>
<td>J. Antonio Cisneros-Martínez, Rüben Ramos-García, Roger Chiu-Zarate. 1Instituto Nacional de Astrofísica, Optica y Electronica, Tonantzintla, Puebla, México. 2Centro Universitario de los Campus Arapiraca, Universidade Federal de Pernambuco.</td>
</tr>
<tr>
<td>OTu_3.8</td>
<td>MULTI-OBJECTIVE METAMODELING-BASE OPTIMIZATION FOR ROBUST COLOR GENERATION VIA HYBRID METAL-DIELECTRIC GRATINGS</td>
<td>Soukaina Es-Saidi, D. Macias, S. Blaize. 1Charles Delaunay Institute, CNRS, Light, Nanomaterials, Nanotechnologies, University of Paris-Sud. 2Charles Delaunay Institute, CNRS, Light, Nanomaterials, Nanotechnologies, University of Paris-Sud.</td>
</tr>
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<td>OTu_4.7</td>
<td>CARACTERÍSTICAS DEL MICROPLASMA DE COBRE PRODUCIDO POR LÁSER MEDIANTE ESPECTROSCOPÍA DE EMISIÓN ÓPTICA</td>
<td>Nicolas Castaño, Jhon F. Ospina, Henry Riascos Plasma, láser y aplicaciones, Universidad Tecnológica De Pereira, Colombia.</td>
</tr>
<tr>
<td>OTu_5.5</td>
<td>BORATE NANOCRYSTALS: MULTIFUNCTIONAL MATERIALS FOR RANDOM LASERS</td>
<td>André L. Moura, Sandra J. Carreño, Pablo I. R. Pincheira, Lauro J. O. Maia, Vladimir Jerez, Anderson S. L. Gomes, Cid B. de Araújo. 1Campus Arapiraca, Universidade Federal de Pernambuco. 2School of Electrical, Electronic, Computer and Mechanical Engineering, University of the West of Scotland.</td>
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<tr>
<td><strong>OTu_1.8 12:30-12:45</strong> MEASURING SURFACE TENSION BY MEANS OF A TWO-HOLE OPTICAL FIBER</td>
<td>Natanael Cuando-Espitia¹, J.R. Guzman-Sepulveda², M. A. Fuentes-Fuentes³, M. Torres-Cisneros⁴, K. Gonzalez-Gutierrez⁵, P. LikamWa⁴, and D. A. May-Arrioja¹</td>
<td>¹CONACyT, Applied Physics Group, DICIS, University of Guanajuato, Salamanca, Guanajuato, México ²CREOL, The College of Optics and Photonics, University of Central Florida, Orlando, USA ³Centro de Investigaciones en Óptica, Aguascalientes, México. ⁴Applied Physics Group, DICIS, University of Guanajuato, Salamanca, Guanajuato, México ⁵Motorola Solutions de México,</td>
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<tr>
<td><strong>OTu_3.9 12:30-12:45</strong> PARALLEL ARCHITECTURE PROPOSAL: IMPROVED NUMERICAL SIMULATION OF RE-DOPED MICRO-TAPERED OPTICAL FIBERS</td>
<td>R. Sanchez-Lara¹, D. E. Ceballos-Herrera², J. L. Vazquez-Avila³, J.A Trejo-Sánchez⁴, J. A. Alvarez-Chavez⁴,⁵, H. L. Offerhaus⁴</td>
<td>¹Universidad Autónoma del Carmen, Facultad de Ingeniería, Cdad. del Carmen, Campeche México ²Universidad Nacional Autónoma de México, Instituto de Ingeniería, Mexico ³CONACyT- Centro de Investigacion en Matemáticas, Yucatan Mexico ⁴Optical Sciences Group, University of Twente, Enschede, The Netherlands</td>
</tr>
<tr>
<td><strong>OTu_4.8 12:30-12:45</strong> FLUORESCENT PROPERTIES IN SCORPIONS AND CORRELATIONS WITH THEIR ECOLOGY</td>
<td>Daniel López-Cabrera¹, Gabriel Ramos-Ortiz¹, Edmundo González Santillán², Rafael Espinosa-Luna³</td>
<td>¹Centro de Investigaciones en Óptica, León, Gto., México ²Facultad de Ciencias, UNAM, México</td>
</tr>
<tr>
<td><strong>OTu_5.6 12:30-12:45</strong> ADAPTIVE OPTICS ON HIGH POWER LASER WITH ILAO STAR</td>
<td>Guillaume Dovillaire¹, Guillaume Beaugrand¹, Thomas Lebrun⁴, Xavier Leveq⁴, Olivier Chalus⁴, Guillaume Matras³, François Lureau¹</td>
<td>¹Imagine Optic, Orsay, France ²Thales LAS France, Elancourt, France</td>
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<tr>
<td>Session Code</td>
<td>Time</td>
<td>Title</td>
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<tr>
<td>OTu_1.9</td>
<td>12:45-13:00</td>
<td>ORBITAL ANGULAR MOMENTUM DETECTION BASED ON A VOLUME HOLOGRAPHIC OPTICAL ELEMENT</td>
</tr>
<tr>
<td>OTu_3.10</td>
<td>12:45-13:00</td>
<td>DISMINUCIÓN DEL NÚMERO DE CÁLCULOS EN LA INTEGRAL DE Difracción Debido a Las Simetrías de la Función Respuesta al Impulso y su APLICACIÓN EN CÁLCULOS ITERATIVOS</td>
</tr>
<tr>
<td>OTu_4.9</td>
<td>12:45-13:00</td>
<td>ESPECTROSCOPIA DE REFLECTANCIA DIFUSA in situ PARA ESTIMAR LA RESPUESTA DE LA CAÑA DE AZUCAR (Saccharum Officinarum L.) A LA FERTILIZACIÓN NITROGENADA</td>
</tr>
<tr>
<td>OTu_5.7</td>
<td>12:45-13:00</td>
<td>DESARROLLO DE UNA FUENTE DE ALIMENTACIÓN ELECTRÓNICA DE BAJO COSTO, BASADA EN UN SISTEMA DE IONIZACIÓN DE CORRIENTE SIMMER PARA LÁSERES PULSADOS DEL TIPO YAG:Nd+++</td>
</tr>
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</table>

13:00-14:30 LUNCH (on your own)

<table>
<thead>
<tr>
<th>Session Code</th>
<th>Time</th>
<th>Title</th>
<th>Authors and Affiliations</th>
</tr>
</thead>
</table>
| PleTu_4     | 14:30-15:30 | BREAKING THE BOUNDS OF IMAGING IN LABEL-FREE NANOSCOPY, MICRO-ENDO SCOPY AND OPHTHALMOLOGY | Zeev Zalevsky

X Ibero American Optics Meeting, XIII Latin American Meeting on Optics, Lasers and Applications, and Mexican Optics and Photonics Meeting, Cancun, Mexico, 23-27 September 2019
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:30-17:00</td>
<td>POSTER SESSION 2</td>
<td></td>
</tr>
<tr>
<td>17:00-17:30</td>
<td>Photo Cozumel Room</td>
<td></td>
</tr>
<tr>
<td>17:30-18:30</td>
<td>AMO ASSEMBLY AND DANIEL MALACARA AWARD</td>
<td>Isla Mujeres Room 1</td>
</tr>
<tr>
<td>20:00-23:00</td>
<td>BANQUET Cozumel Room</td>
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</tr>
</tbody>
</table>
### Wednesday, September 25, 2019

<table>
<thead>
<tr>
<th>Room Cozumel</th>
<th>Room Isla Mujeres 1</th>
<th>Room Isla Mujeres 2</th>
<th>Room Isla Mujeres 3</th>
<th>Room Isla Mujeres 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instrumentation, measurement and metrology: <strong>OWe_1.1</strong>, <strong>OWe_1.2</strong>, <strong>OWe_1.3</strong>, <strong>OWe_1.4</strong>, <strong>OWe_1.5</strong>, <strong>OWe_1.6</strong>, <strong>OWe_1.7</strong>, <strong>OWe_1.8</strong>, <strong>OWe_1.9</strong>, <strong>OWe_1.10</strong>, <strong>OWe_1.11</strong></td>
<td>Image processing, vision and artificial intelligence: <strong>OWe_2.1</strong>, <strong>OWe_2.2</strong>, <strong>OWe_2.3</strong>, <strong>OWe_2.4</strong>, <strong>OWe_2.5</strong>, <strong>OWe_2.6</strong>, <strong>OWe_2.7</strong>, <strong>OWe_2.8</strong>, <strong>OWe_2.9</strong>, <strong>OWe_2.10</strong></td>
<td>X Rays: <strong>OWe_3.1</strong>, <strong>OWe_3.2</strong>, <strong>OWe_3.3</strong>, <strong>OWe_3.4</strong>, <strong>OWe_3.5</strong>, <strong>OWe_3.6</strong>, <strong>OWe_3.7</strong>, <strong>OWe_3.10</strong>, <strong>OWe_3.11</strong>, <strong>OWe_3.12</strong></td>
<td>Medical optics and biotechnology: <strong>OWe_4.1</strong>, <strong>OWe_4.2</strong>, <strong>OWe_4.3</strong>, <strong>OWe_4.4</strong>, <strong>OWe_4.5</strong>, <strong>OWe_4.6</strong>, <strong>OWe_4.7</strong>, <strong>OWe_4.8</strong></td>
<td>Organic and hybrid optoelectronics: <strong>OWe_5.1</strong>, <strong>OWe_5.2</strong>, <strong>OWe_5.3</strong>, <strong>OWe_5.4</strong>, <strong>OWe_5.5</strong></td>
</tr>
<tr>
<td>Geometric Optics: <strong>OWe_1.12</strong>, <strong>OWe_1.13</strong>, <strong>OWe_1.14</strong>, <strong>OWe_1.15</strong></td>
<td>Fourier Optics and signal processing: <strong>OWe_2.11</strong>, <strong>OWe_2.12</strong>, <strong>OWe_2.13</strong></td>
<td>Nanophotonics and metamaterials: <strong>OWe_3.8</strong>, <strong>OWe_3.9</strong>, <strong>OWe_3.10</strong>, <strong>OWe_3.11</strong></td>
<td>Optoelectronics, Detectors and Sources: <strong>OWe_4.9</strong>, <strong>OWe_4.10</strong>, <strong>OWe_4.11</strong></td>
<td>Atmospheric and Ocean Optics: <strong>OWe_5.6</strong>, <strong>OWe_5.7</strong></td>
</tr>
<tr>
<td><strong>OWe_1.1</strong> 9:00-9:30 (INVITED) 3D FULL-FIELD STRAIN MEASUREMENTS IN BIOLOGICAL SOFT TISSUES USING OCT-DVC AND TISSUE CLEARING TECHNIQUES V.A. Acosta Santamaría, M. Flechas Garcia, J. Molimard, S. Avril Mines Saint-Etienne, Univ Lyon, France</td>
<td><strong>OWe_2.1</strong> 9:00-9:15 USING A MULTILAYER PERCEPTRON TO DETERMINE THE POWER OF IMPLANTED IOL IN CATARACT SURGERY J.C. Fernández-Álvarez¹, I. Hernández-López², P. P. Cruz-Cobas³, T. Cárdenas-Díaz², A.J. Batista Leyva¹</td>
<td><strong>OWe_3.1</strong> 9:00-9:30 (INVITED) RECENT PROGRESS IN HARD X-RAY REFLECTIVE OPTICS FOR SYNCHROTRON RADIATION SOURCES Kazuto Yamauchi Department of Precision Science and Technology, Graduation School of Engineering, Osaka University, Japan</td>
<td><strong>OWe_4.1</strong> 9:00-9:30 (INVITED) ADVANCES IN LASER SCANNING TECHNOLOGY FOR OPTICAL COHERENCE TOMOGRAPHY Virgil-Florin Duma¹²¹ University of Arad, Romania ²Doctoral School, Polytechnic University of Timisoara, Romania</td>
<td>Integrated optics: <strong>OWe_5.8</strong>, <strong>OWe_5.9</strong>, <strong>OWe_5.10</strong>, <strong>OWe_5.11</strong></td>
</tr>
</tbody>
</table>

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X Ibero American Optics Meeting, XIII Latin American Meeting on Optics, Lasers and Applications, and Mexican Optics and Photonics Meeting, Cancun, Mexico, 23-27 September 2019
<table>
<thead>
<tr>
<th><strong>OWe_2.2</strong> 9:15-9:30</th>
<th><strong>Universidad de la Habana, Cuba</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SISTEMA DE ENCRIPCIÓN DE UN SOLO BRAZO DE ILUMINACIÓN EN EL DOMINIO DE FRESEL</strong></td>
<td></td>
</tr>
<tr>
<td>Alexis Jaramillo Osorio¹, John Fredy Barrera Ramírez¹, Alejandro Mira-Agudelo¹, Alejandro Vélez²,³, Roberto Torroba²,⁴</td>
<td></td>
</tr>
<tr>
<td>¹Grupo de Óptica y Fotónica, Instituto de Física, Facultad de Ciencias Exactas y Naturales, Universidad de Antioquia, Medellín, Colombia</td>
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<tr>
<td>²Centro de Investigaciones Ópticas (CONICET La Plata-CIC-UNLP), La Plata, Argentina</td>
<td></td>
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<tr>
<td>³Facultad de Ciencias Exactas, Universidad Nacional de La Plata, La Plata, Argentina.</td>
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<tr>
<td>⁴UIDET OPTIMO, Facultad de Ingeniería, Universidad Nacional de La Plata, Argentina</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>OWe_1.2</strong> 9:30-9:45</th>
<th><strong>DIGITALIZACIÓN TRIDIMENSIONAL DE OBJETOS ARQUEOLÓGICOS USANDO UN SENSOR KINECT V2</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ricardo Contreras¹, Juan José Barrios², Jaime Meneses³</td>
<td></td>
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<tr>
<td>¹Universidad Santo Tomás,</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>OWe_2.3</strong> 9:30-9:45</th>
<th><strong>COMPRESIÓN DE ESCENAS DINÁMICAS HOLOGRÁFICAS EN EL DOMINO DE FRESEL MEDIANTE TÉCNICAS ÓPTICO-VIRTUALES</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>S. Trejos⁴, M. Gómez⁴, A. Velez², J. F. Barrera¹, R. Torroba²,³</td>
<td></td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th><strong>OWe_3.2</strong> 9:30-9:45</th>
<th><strong>X-RAY OPTICS FOR THE UPGRADED ADVANCED PHOTON SOURCE</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Timothy Graber, Jonathan Knopp, Luca Rebuffi, Ruben Reininger, Xianbo Shi, Mohan Ramanathan</td>
<td></td>
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</tbody>
</table>

<table>
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<tr>
<th><strong>OWe_4.2</strong> 9:30-9:45</th>
<th><strong>ROBUST MEASUREMENT OF 3-D SKIN FEATURES VIA PARAMETRIC FITTING</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Jesús Pineda¹, Raúl Vargas³, Lenny A. Romero², Javier Marrugo⁴, Hernando Altamar Mercado⁴, Jaime Meneses⁴</td>
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<th><strong>OWe_5.2</strong> 9:30-10:00</th>
<th><strong>(INVITED) EXCITON POLARONS IN TWO DIMENSIONAL ORGANIC-INORGANIC HYBRID PEROVSKITES</strong></th>
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<tbody>
<tr>
<td>Carlos Silva¹,²</td>
<td></td>
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<tr>
<td>¹School of Chemistry and Physics, Universidad de las Palmas de Gran Canaria, Las Palmas de Gran Canaria, Spain</td>
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X Ibero American Optics Meeting, XIII Latin American Meeting on Optics, Lasers and Applications, and Mexican Optics and Photonics Meeting, Cancun, Mexico, 23-27 September 2019
<table>
<thead>
<tr>
<th>OWe_1</th>
<th>9:45-10:00</th>
<th>ANÁLISIS ESTADÍSTICO DE LOS PATRONES DE MOTEADO EN REGULARES DE TENSIÓN POSITIVA</th>
<th>Y. F. López Álvarez, F. G. Peña Leona, F. J. Casillas Rodríguez, J. Muñoz Maciel, M. E. Rodríguez Franco</th>
<th>Universidad Tecnológica del Norte de Aguascalientes, Universidad de Guadalajara, Lagos de Moreno Jalisco, México</th>
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</thead>
<tbody>
<tr>
<td>OWe_2</td>
<td>9:45-10:00</td>
<td>COMPRESIÓN DE UN VIDEO HOLOGRÁFICO</td>
<td>Melisa Gómez Valencia, Soraya Trejos, John Fredy Barrera Ramirez, Roberto Torroba</td>
<td>Grupo de Óptica y Fotónica, Instituto de Física, Facultad de Ciencias Exactas y Naturales, Universidad de Antioquia, Medellín, Colombia</td>
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<tr>
<td>OWe_3</td>
<td>9:45-10:00</td>
<td>BEAMLINE DESIGN CONSIDERATIONS FOR THE ADVANCED HIGH ENERGY PHOTON SOURCE (HPES)</td>
<td>Fugui YANG, Quanjie JIA, Lidan GAO, Weiwei ZHANG, Huirong WANG, Weifan SHENG, Ming LI</td>
<td>Laboratory of X-Ray Optics and Technologies, Beijing Synchrotron Radiation Facility, Institute of High Energy Physics, Beijing, China</td>
</tr>
<tr>
<td>OWe_4</td>
<td>9:45-10:00</td>
<td>TOMÓGRAFO FOTOACÚSTICO PARA LA RECONSTRUCCIÓN DE IMÁGENES</td>
<td>Misael Ruiz-Veloz, Gerardo Gutiérrez-Juárez, Luis Poloparada, Rafael Fernández-Ayala</td>
<td>Departamento de Ingeniería Física, Universidad de Guanajuato, León, México</td>
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</tbody>
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X Ibero American Optics Meeting, XIII Latin American Meeting on Optics, Lasers and Applications, and Mexican Optics and Photonics Meeting, Cancun, Mexico, 23-27 September 2019
<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>OWe_1.4</td>
<td>10:00-10:15 THE FLIPPED VOLTAGE FOLLOWER AS AN INPUT STAGE FOR SIPM DATA ACQUISITION SYSTEMS</td>
<td>Alejandro Bautista-Castillo$^{1,2}$, Sergio A. Rosales-Nuñez$^{2}$, Daniel Durini$^{1}$, Victor R. Gonzalez-Diaz$^{2}$, Alejandro Diaz-Sánchez$^{2}$, José M. Rocha-Pérez$^{1,3}$, José de J. Rangel-Magdaleno$^{1}$, Ruben Alfaro$^{2}$, Arturo Iriarte$^{3}$</td>
</tr>
<tr>
<td>OWe_2.5</td>
<td>10:00-10:15 MULTI-FOCUS IMAGE FUSION USING TRADE-OFF INTERPOLATION</td>
<td>Pedro Abraham Moreno-Vazquez$^{1}$, Luis Manuel Ledesma-Carrillo$^{1}$, David Ignacio Serrano-García$^{1}$</td>
</tr>
<tr>
<td>OWe_3.4</td>
<td>10:00-10:30 (INVITED) DEVELOPMENT OF XFEL SUB-10 NM FOCUSING MIRRORS AT SACLA: WAVEFRONT-CORRECTED MULTILAYER KB SYSTEM AND UPGRADE TO ADVANCED KB SYSTEM</td>
<td>J. Yamada$^{1}$, S. Matsuyama$^{2}$, T. Inoue$^{1}$, N. Nakamura$^{2}$, T. Osaka$^{1}$, I. Inoue$^{1}$, Y. Inubushi$^{1,3}$, K. Tono$^{1,3}$, H. Yumoto$^{3}$, T. Koyama$^{3}$, H. Ohashi$^{3}$, T. Ishikawa$^{1}$, K. Yamauchi$^{2}$, M. Yabashi$^{1,3}$</td>
</tr>
<tr>
<td>OWe_4.4</td>
<td>10:00-10:15 LIGHT PROPAGATION IN ACCOMMODATIVE SCHEMATIC HUMAN EYE MODEL AND ITS APPLICATION</td>
<td>J. E. Gómez-Correa Cátedras Conacyt- Centro de Investigación Científica y de Educación Superior de Ensenada, Baja California, Unidad Monterrey, PIIT Apodaca, N.L, Mexico</td>
</tr>
<tr>
<td>OWe_5.3</td>
<td>10:00-10:15 FECTO DEL SUSTITUYENTE AMINO EN LAS PROPIEDADES ELECTRÓNICAS Y DE REACTIVIDAD QUÍMICA INTRÍNSICA DE LOS SIETE DERIVADOS MONO SUSTITUIDOS ESTÉREO ISÓMEROS DE LA MOLÉCULA 1 BENZOPYRIDINA PARA EL ESTADO FUNDAMENTAL EN FASE GASEOSA</td>
<td>Hugo Pereira$^{1,2}$, Oscar L. Neira Bueno$^{1,2}$, Departamento de Física, Universidad Popular del Cesar, Valledupar, Colombia</td>
</tr>
<tr>
<td>OWe_1.5</td>
<td>10:15-10:30 Retardance characterization over the complete aperture of liquid crystal variable retarders.</td>
<td>Ivan Montes González, Neil C. Bruce</td>
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<tr>
<td>OWe_2.6</td>
<td>10:15-10:30 SIMULATED ANNEALING APPLIED TO INTERFEROGRAM DEMODULATION BASED ON THE INDEPENDENT WINDOW TECHNIQUE</td>
<td>Iosvani Moré Quintero, Francisco J. Cuevas de la Rosa Centro de Investigaciones en</td>
</tr>
<tr>
<td>OWe_4.5</td>
<td>10:15-10:30 MELANOMA DIAGNOSIS USING SPECTRAL INDEXES OBTAINED FROM THE FRACTIONAL FOURIER TRANSFORM</td>
<td>Esbayely Garza-Flores$^{1}$, Esperanza Guerra-Rosas$^{1}$, Josué Álvarez Borrego$^{2}$</td>
</tr>
<tr>
<td>OWe_5.4</td>
<td>10:15-10:30 ORGANIC SOLAR CELLS AND NANOSCALE RE-ORDERING ANALYZED THROUGH SCANNING TUNNELING MICROSCOPY AND SPECTROSCOPY</td>
<td>I. Caballero-Quintana$^{1}$, D. Romero-Borja$^{15}$, J. Nicasio-</td>
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| México         | Óptica, A.C., León, Guanajuato, México | 1SOLEXVINTEL, Ciudad de México, México  
2Centro de Investigación Científica y de Educaci´n Superior de Ensenada, División de Física Aplicada, Departamento de Óptica, Ensenada, B. C., México | Collazo1, O. Amargós-Reyes1, A. Jiménez-González2, J.-L. Maldonado1  
1Research Group of Optical Properties of Materials, Centro de Investigaciones en Óptica, León, Gto., México  
2Renewable Energies Institute, UNAM, Temixco, Mor. México  
§Current postdoctoral fellow at Center for Polymers and Organic Solids, Department of Chemistry and Biochemistry, University of California Santa Barbara, Santa Barbara, CA, USA |
|---------------|---------------------------------------|-------------------------------------------------|

**10:30-11:00 COFFEE BREAK**

**PleWe_5 11:00-12:00 THE EMPIRICAL MODE DECOMPOSITION METHOD: SOME APPLICATIONS IN SPECKLE METROLOGY**
Guillermo H. Kaufmann  
Instituto de Física Rosario, Rosario, Argentina  
Conference Chair: Jorge Ojeda Castañeda, DICIS, Universidad de Guanajuato

<table>
<thead>
<tr>
<th>OWe_1.6 12:00-12:15</th>
<th>OWe_2.7 12:00-12:15</th>
<th>OWe_3.5 12:00-12:15</th>
<th>OWe_4.6 12:00-12:30</th>
<th>OWe_5.5 12:00-12:15</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODELOS TRIDIMENSIONALES DE OBJETOS ARQUEOLÓGICOS DEL PERIODO HISTÓRICO GUANE TEMPRANO</td>
<td>DEEP LEARNING FOR DIGITAL HOLOGRAPHIC MICROSCOPY: AUTOMATIC DETECTION OF PHASE OBJECTS IN RAW</td>
<td>SCATTERING EFFECT FROM MIRROR SURFACE DEFECTS: ANALYTICAL AND SIMULATION APPROACH</td>
<td>(INVITED) PORTABLE DEVICE TO MONITOR SKIN CONDITION</td>
<td>ELECTROLUMINESCENCE IN AN ORGANIC LED WITH A TERBIUM COMPLEX AS THIN FILM</td>
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X Ibero American Optics Meeting, XIII Latin American Meeting on Optics, Lasers and Applications, and Mexican Optics and Photonics Meeting, Cancun, Mexico, 23-27 September 2019
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<td>Gonzalez, G. García-Torales, B. Bravo-Medina, Mexico</td>
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**OWe_1.7** 12:15-12:30

*Topometría de Superficies por doble proyección de luz estructurada con iluminación divergente*

Jorge R. Parra-Michel, Rafael Martínez-Peláez and A. Duarte-Moller Facultad de Ingeniería Civil, Mecánica e Industrial, Universidad De La Salle Bajío, León, Guanajuato, México

**OWe_2.8** 12:15-12:30

*PATTERN RECOGNITON SYSTEM TO LOCALIZE REFLECTORS IN SEISMIC IMAGES*

Selene Solorza-Calderón, Antonio González-Fernández, Mario González-Escobar Facultad de Ciencias, Universidad Autónoma de Baja California, Ensenada, México. División de Ciencias de la Tierra, Centro de Investigación Científica y de Educación Superior de Ensenada, Ensenada, México.

**OWe_3.6** 12:15-12:30

*START-TO-END SIMULATION OF COHERENT X-RAY SCATTERING EXPERIMENTS AT LIGHT SOURCES USING THE “SYNCHROTRON RADIATION WORKSHOP” CODE*

O. Chubar, A. Fluerasu, A. He, M. S. Rakitin, L. Wiegart National Synchrotron Light Source II, Brookhaven National Laboratory, Upton, NY, USA

**OWe_5.6** 12:15-12:30

*INFLUENCIA DEL ESTRÉS TÉRMICO CORALINO UTILIZANDO SENSORAMIENTO REMOTO: ANÁLISIS DE CASO ISLA TESORO-COLOMBIA*

Isabella Taboada-Canchila, Kimberly Bravo-Mendoza, Jesús Pineda-Castro, Edisson Chavarro-Mesa, Vilma Queda-Caicedo, Vilma Ojeda-Caicedo Facultad de Ciencias Básicas, Universidad Tecnológica de Bolívar, Colombia
<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
<th>Affiliations</th>
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</table>
| OW_1.8  | APPLICATION OF ESPI TO OPTICAL – MECHANICAL CHARACTERIZATION OF SAMPLES OF BIOMATERIALS | Gustavo A. Gómez-Méndez, Amalia Martínez-García, Juan Antonio Rayas, Alexander Gaitán | Centro de Investigaciones en Óptica, León, Guanajuato, México
Instituto Interdisciplinario de las Ciencias, Universidad del Quindio, Armenia, Quindio, Colombia |
| OW_2.9  | MÉTODO DE BARRIDO ESPIRAL PARA EL PROCESAMIENTO DE IMÁGENES DIGITALES  | Alma Rocío Cabazos-Marín, Josué Álvarez-Borrego | Facultad de Ciencias, Universidad Autónoma de Baja California, Ensenada, Baja California, México
Departamento de Óptica, División de Física Aplicada, Centro de Investigación Científica y de Educación Superior de Ensenada, Baja California, México |
| OW_3.7  | DEVELOPMENT OF ELLIPSOIDAL MIRRORS FOR SOFT X-RAY NANOFOCUSING         | Hidekazu Mimura | Department of Precision Engineering, School of Engineering, The University of Tokyo, Japan |
| OW_4.7  | DIGITAL IMAGE PROCESSING FOR DETECTION OF MELANOMA USING HERMITE AND FOURIER TRANSFORM | Esperanza Guerra, Josué Álvarez Borrego | Centro de Investigación Científica y de Educación Superior de Ensenada, Baja California, México |
| OW_5.7  | SINGLE SENSOR MEASUREMENTS BASED BEAM WANDER EFFECTS                   | Omar Tijaro, Ana Beatriz Ramírez, Yezid Torres Moreno | Electrical, Electronics and Telecommunications Engineering School. Physics School, Universidad Industrial de Santander, Bucaramanga, Colombia |
| OW_1.9  | 3D-PROFILOMETRY BY PROJECTION OF DEFOCUSED                             | | |
| OW_2.10 | ENHANCING MORPHOLOGICAL TO IDENTIFY SHARK FINSS                        | | |
| OW_4.8  | USE OF LASER TECHNOLOGY TO SUPPLY DRUGS INTO A                        | | |

X Ibero American Optics Meeting, XIII Latin American Meeting on Optics, Lasers and Applications, and Mexican Optics and Photonics Meeting, Cancun, Mexico, 23-27 September 2019
**BINARY PATTERNS**
Jorge L. Flores¹, Adriana Silva¹, Antonio Muñoz² Guillermo García-Torales³, H. Santiago-Hernández³
¹Departamento de Electrónica, Universidad de Guadalajara, México
²Departamento de Ingenierías, Universidad de Guadalajara, Autlán, Jalisco, México

**COMBATING THE INTERNATIONAL ILEGAL TRADE**
S. Hernández¹, J. Álvarez-Borrego, E. Guerra-Rosas
¹Biomolecular Lab, Center for International Program, Veritas University, San José, Costa Rica
²División de Física Aplicada, Departamento de Óptica, CICESE, Ensenada, Baja California, México

**PATIENT’S BODY**
Minerva Robles - Agudo¹, Ignacio Rojas - Rodríguez¹, José A. Álvarez², Gabriel Plascencia¹
¹Universidad Tecnológica de Querétaro, México
²Faculty of Science and Technology, University of Twente, The Netherlands

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**13:00-14:30 LUNCH (on your own)**

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**PleWe_6 14:30-15:30: LIGHT-MATTER INTERACTIONS IN PHOTONIC CRYSTAL FIBRES**
Philip Russell
Max Planck Institute for the Science of Light and Department of Physics, Friedrich-Alexander University, Germany
Conference Chair: Miguel Andrés Bou, Universidad de Valencia, España

**OWe_1.10 15:30-15:45**
PROYECCIÓN DE UNA LÍNEA DE LUZ USANDO UN PROYECTOR MULTIMEDIA PARA LA RECONSTRUCCIÓN 3D DE OBJETOS
Heyner V. Rojas, J. A. Rayas, Amalia Martínez-García
Laboratorio de Pruebas Ópticas y Mecánicas, Centro de Investigaciones en Óptica, León, Guanajuato, México

**OWe_2.11 15:30-15:45**
DOUBLE PHASE MODULATION IN A SPATIAL LIGHT MODULATOR TO GENERATE COMPLEX OPTICAL FIELDS
Ivan Rincon, Victor Arrizon
Instituto Nacional de Astrofísica, Optica y Electronica, Sta. Ma. Tonantzinla ,Puebla, Mexico

**OWe_3.8 15:30-15:45**
Mie scattering in metamaterials
Lucila Juarez¹, Bernardo S. Mendoza¹, W. Luis Mochan²
¹Centro de Investigaciones en Óptica, León, Guanajuato, México
²Instituto de Ciencias Físicas, Universidad Nacional Autónoma de México, Cuernavaca, Morelos, Mexico

**OWe_4.9 15:30-15:45**
CARACTERIZACIÓN ESPACIAL DE UN MICRODISPLAY AMOLED VERDE
Juan Antonio Azor, María S. Millán
Grupo de Óptica Aplicada y Procesado de Imagen, Departamento de Óptica y Optometría. Universitat Politècnica de Catalunya – BARCELONATECH. Terrassa (Barcelona). España

**OWe_5.8 15:30-16:00**
(INVITED) ERBIUM-DOPED OXIDE THIN FILMS FOR SILICON PHOTONIC APPLICATIONS
A. Ruiz-Caridad¹, G. Marcaud¹, J. M. Ramirez¹, Elena Durán Valdeiglesias³, Christian Lafforgue³, Jianhao Zhang³, L. Largeau³, T. Maroutian³, S. Matzen¹, C. Alonso-Ramos¹, S. Collin¹, G. Agnus¹, S. Guerber¹, C. Baudot¹, F. Boeuf², S.
<table>
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<tr>
<th><strong>OWe_1.11</strong> 15:45-16:00</th>
<th>**COMPENSACIÓN DEL EFECTO GAMMA DEL PROYECTOR EN RECONSTRUCCIÓN 3D POR CORRIMIENTO DE FASE A 3 PASOS USANDO PROYECCIÓN DE FRANJAS</th>
<th><strong>OWe_1.12</strong> 16:00-16:15</th>
<th><strong>ARCHAEOLOGICAL MIRRORS OF CENTRAL AND SOUTH AMERICA</strong></th>
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<tbody>
<tr>
<td>Andrés González, Jaime Meneses</td>
<td>Grupo de óptica y tratamiento de señales, Universidad Industrial de Santander, Bucaramanga, Colombia</td>
<td>José Joaquín Lunazzi</td>
<td>Instituto de Física, Universidade Estadual de Campinas, Campinas-SP-Brasil</td>
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<th><strong>OWe_2.12</strong> 15:45-16:00</th>
<th><strong>HYPERBOLIC WINDOW FUNCTION TO ENHANCE TIME-FREQUENCY DISTRIBUTIONS</strong></th>
<th><strong>OWe_2.13</strong> 16:00-16:15</th>
<th><strong>TOWARDS A DESIGN OF ARBITRARY AXIAL DISTRIBUTIONS OF LIGHT USING DIFFRACTIVE OPTICAL ELEMENTS</strong></th>
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<tr>
<th><strong>OWe_3.9</strong> 15:45-16:00</th>
<th><strong>RECONFIGURABLE RESONATORS AND SOME APPLICATIONS</strong></th>
<th><strong>OWe_3.10</strong> 16:00-16:30</th>
<th><strong>(INVITED) INVESTIGATING FEL SOURCES: MERGING WAVEFRONT SENSING AND OPTICAL METROLOGY</strong></th>
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<tr>
<td>José Roberto Reyes-Ayona, Juan Manuel Sierra-Hernández, Tejinder Kaur Kataria, Daniel Jáuregui-Vázquez, Julián Moisés Estudillo-Ayala, Roberto Rojas-Laguna</td>
<td>Department of Electronics DICIS, Telecommunications and Photonics Group, Universidad de Guanajuato, Salamanca, México</td>
<td>M. Manfredda, L. Raimondi, N. Mahne, A. Simoncig, M.</td>
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<th><strong>OWe_4.10</strong> 15:45-16:00</th>
<th><strong>ENVEJECIMIENTO DE EMISORES LED BLANCOS</strong></th>
<th><strong>OWe_4.11</strong> 16:00-16:15</th>
<th><strong>PLASMON ABSORPTION PEAK SENSITIZED SOLAR CELLS.</strong></th>
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<tr>
<td>Guillermo Nicolás Skop, Ligia Ciocci Brazzano, Liliana Inés Perez, Eduardo Omar Acosta</td>
<td>Grupo de Láser, Óptica de Materiales y Aplicaciones Electromagnéticas, Departamento de Física, Facultad de Ingeniería - Universidad de Buenos Aires, Argentina</td>
<td>Javier Sotelo-Medina</td>
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<tr>
<th><strong>OWe_5.9</strong> 16:00-16:30</th>
<th><strong>INTEGRATED PHOTONICS AS A PLATFORM FOR PLASMONICS</strong></th>
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<tr>
<td>Rafael Salas-Montiel</td>
<td>Department of Physics, Mechanics, Materials,</td>
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X Ibero American Optics Meeting, XIII Latin American Meeting on Optics, Lasers and Applications, and Mexican Optics and Photonics Meeting, Cancun, Mexico, 23-27 September 2019
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<th>Time</th>
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<tr>
<td><strong>16:15-16:30</strong></td>
<td>WAVELENGTH ENCODING OF DEPTH REVEALED</td>
<td>José Joaquín Lunazzi&lt;br&gt; Instituto de Física, Universidade Estadual de Campinas, Campinas-SP-Brasil</td>
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</table>
| **16:30-16:45** | ALGORITMO PARA LA OPTIMIZACIÓN DE PERFILES DE RECUBRIMIENTOS DE CELDAS SOLARES DISPUESTAS VERTICALMENTE | Verónica Toro B.<sup>1</sup>, Santiago Bernal<sup>2</sup>, J. I. Marulanda<sup>3</sup>  
<sup>1</sup>Departament of Computer Science, Alto University,  
<sup>2</sup> Brookhaven National Laboratory, Upton, NY, USA  
<sup>3</sup> Instituto de Física, Unidad Ecocampus-Vallequillo, BUAP, Puebla, México |                                                                                             |
| **16:30-16:45** | Hartmann Wavefront Sensors Latest Results and Developments           | Guillaume Dovillaire<sup>1</sup>, Dietmar Korn<sup>2</sup>, Martin Piponnier<sup>3</sup>,  
Mourad Idir<sup>2</sup>, Philippe Zeitoun<sup>3</sup>  
<sup>1</sup>Imagine Optic, Orsay, France  
<sup>2</sup> Brookhaven National Laboratory, Upton, NY, USA  
<sup>3</sup> Imagine Optic, Orsay, France |                                                                                             |
| **16:30-16:45** | FLUORESCENT MICROPENDESTALS AND MICROFLUIDICS MASTER MASKS DEVELOPED BY LOW COST DIRECT LASER WRITING PROTOCOLS AND LOW ONE PHOTON ABSORPTION PHENOMENA | Guillaume Dovillaire<sup>1</sup>, Dietmar Korn<sup>2</sup>, Martin Piponnier<sup>3</sup>,  
Mourad Idir<sup>2</sup>, Philippe Zeitoun<sup>3</sup>  
<sup>1</sup>Imagine Optic, Orsay, France  
<sup>2</sup> Brookhaven National Laboratory, Upton, NY, USA  
<sup>3</sup> Imagine Optic, Orsay, France |                                                                                             |
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<th>OWe_1.15</th>
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<td>Pantallas nulas dentro de la región de la cáustica para generar imágenes por refracción aplicadas a piezas inmersivas.</td>
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<td>Edith G. Vázquez-Navarrete¹, Maximino Avendaño-Alejo², Gabriel Castillo-Santiago²</td>
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<tr>
<td>¹Universidad Nacional Autónoma de México, Facultad de Artes y Diseño, CDMX.</td>
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<tr>
<td>²Universidad Nacional Autónoma de México, ICAT, CDMX.</td>
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<th>OWe_3.12</th>
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<td>In situ spatial and temporal wavefront characterization of focusing optics at SLAC and SwissFEL hard X-ray beamlines with Moiré deflectometry.</td>
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<td>J. Krempasky¹, M. Seaberg², F. Koch³, U. Wagner⁴, A. Jaggi⁵, R. Follath⁵, L. Patthey⁵, Ch. David⁵, U. Flechsig¹</td>
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<tr>
<td>¹Photon Science Division, Paul Scherrer Institut, 5232 Villigen PSI, Switzerland</td>
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<tr>
<td>²Linac Coherent Light Source, SLAC National Accelerator Laboratory, Menlo Park, California, USA</td>
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<tr>
<td>³Laboratory for Micro- and Nanotechnology, Paul Scherrer Institut, 5232 Villigen PSI, Switzerland</td>
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17:00-18:30 POSTER SESSION 3

18:30-19:30 RIAO ASSEMBLY
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<th>Room Cozumel</th>
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<th>Room Isla Mujeres 2</th>
<th>Room Isla Mujeres 3</th>
<th>Room Isla Mujeres 4</th>
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<tr>
<td>Fiber optics, sensors and optical communications: OTh_1.1, OTh_1.2, OTh_1.3, OTh_1.4, OTh_1.5, OTh_1.6, OTh_1.7</td>
<td>Novel optical materials and 3D printed: OTh_2.1, OTh_2.2, OTh_2.3, OTh_2.4, OTh_2.5</td>
<td>X Rays: OTh_3.1, OTh_3.2, OTh_3.3, OTh_3.4, OTh_3.5, OTh_3.6, OTh_3.7, OTh_3.8, OTh_3.9</td>
<td>Optical Design and fabrication: OTh_4.1, OTh_4.2, OTh_4.3, OTh_4.4, OTh_4.5, OTh_4.6</td>
<td>THz, microwaves and millimeter waves photonics: OTh_5.1, OTh_5.2, OTh_5.3, OTh_5.4, OTh_5.5, OTh_5.6, OTh_5.7, OTh_5.8</td>
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<td>Imaging Systems: OTh_1.8, OTh_1.9, OTh_1.10, OTh_1.11, OTh_1.12</td>
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<td>Vision, color, and visual optics: OTh_5.9, OTh_5.10, OTh_5.11</td>
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<tr>
<td><strong>OTh_1.1</strong> 9:00-9:30 (INVITED) NOISE-LIKE PULSES FROM A FIGURE-EIGHT FIBER LASER AND ITS APPLICATION FOR SUPERCONTINUUM GENERATION Miguel Bello-Jiménez, Instituto de Investigación en Comunicación Óptica, UASLP, México.</td>
<td><strong>OTh_2.1</strong> 9:00-9:30 (INVITED) INTERACTING PLASMONIC NANOPICTURES AND NEAR-FIELD ENERGY TRANSFER Cecilia Noguez Instituto de Física, Universidad Nacional Autónoma de México</td>
<td><strong>OTh_3.1</strong> 9:00-9:30 (INVITED) COMPARISON OF OPTICAL METROLOGY METHODS FOR MEASURING ULTRA PRECISE 1-M LONG MIRROR May Ling Ng¹, Lance Lee¹, Daniel Morton³, Daniele Spiga³, Josep Nicolas⁵, Guillaume Douvillé, Rafael Mayer³, Daniele Cocco¹² Department of Engineering, Linear Coherent Light Source, SLAC National Accelerator Laboratory, CA, USA \ ³ALBA Synchrotron Light Source, Barcelona, Spain \ ⁵Imagine Optic SA, France</td>
<td><strong>OTh_4.1</strong> 9:00-9:15 GENERAL FORMULA TO DESIGN FREEFORM LENS SINGLET FREE OF SPHERICAL ABERRATION: THE ANALYTICAL SOLUTION OF THE LEVI-CIVITA PROBLEM Rafael G. González-Acuña, Julio C. Gutiérrez-Vega Photonics and Mathematical Optics Group, Tecnológico de Monterrey, Monterrey, México</td>
<td><strong>OTh_5.1</strong> 9:00-9:30 (INVITED) TOWARD REAL-TIME TERAHERTZ IMAGING: A COMPREHENSIVE OVERVIEW Hichem Guerboukha, Kathirvel Nallappan, and Maksim Skorobogativ Polytechnique Montreal, Montreal, Canada</td>
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</tr>
</tbody>
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**Thursday, September 26, 2019**
OTh_1.2 9:30-9:45
TEMPERATURE-SENSITIVE HO3+ AND TH3+ LONGITUDDINALLY-SHAPED OPTICAL FIBERS
1Universidad Autonoma del Carmen, Facultad de Ingenieria, Campeche Mexico
2Optical Sciences Group, University of Twente, The Netherlands
3IPN – Centro de Investigacion e Innovacion Tecnologica, CdMx, Mexico
4Universidad Nacional Autonoma de Mexico, Instituto de Ingenieria, Mexico

OTh_2.2 9:30-10:00
(INVITED) ENHANCED RESOLUTION AND FIDELITY USING RAFT AGENTS IN STEREOLITHOGRAPHY
Brian J. Green, C. Allan Guymon
Chemical and Biochemical Engineering, University of Iowa, USA

OTh_3.2 9:30-10:00
(INVITED) TWO-DIMENSIONAL STITCHING INTERFEROMETRY FOR SELF-CALIBRATION OF HIGH-ORDER ADDITIVE SYSTEMATIC ERRORS
Lei Huang, Tianyi Wang, Josep Nicolas, Amparo Vivo, Chao Zuo, Kashmira Tayabaly, Mourad Idir
1National Synchrotron Light Source II, Brookhaven National Laboratory, Upton, NY, USA
2ALBA Synchrotron Light Source, Cerdanyola del Vallès, Spain
3ESRF, Grenoble Cedex, France
4School of Electronic and Optical Engineering, Nanjing University of Science and Technology, Nanjing, Jiangsu Province, China

OTh_4.3 9:30-9:45
IMPLEMENTING NULL SCREENS TO TEST CEMENTED ACHROMATIC DOUBLET LENSES
Maria del Carmen Lopez-Bautista, Gabriel Castillo-Santiago, Maximino Avendano-Alejo
Instituto de Ciencias Aplicadas y Tecnología, Universidad Nacional Autónoma de México, Departamento de Óptica, Microondas y Acústica, Grupo de Metrología Óptica, Cd. de México, México

OTh_4.4 9:45-10:00
PRUEBA CUALITATIVA PARA DETECTAR SINGULARIDADES EN EL

OTh_5.2 9:30-10:00
(INVITED) MICROSCOPY AT THZ AND GHZ FREQUENCIES: STRATEGIES FOR PORTABLE AND LOW COST INSTRUMENTATION
Naser Qureshi, Angelica Y. Garcia-Jomaso, Dahl Ludim Hernandez-Roa, Ana Luz Munoz-Rosas, Carlos G. Treviño-Palacios, Jesus Garduño-Mejía, Oleg Kolokoltsev
1Instituto de Ciencias Aplicadas y Tecnología, Universidad Nacional Autónoma de México, Circuito Exterior S/N, Mexico City
2Instituto Nacional de Astronomía, Óptica y Electrónica, Sta Maria Tonantzintla, Puebla, México
MICROWAVE PHOTONIC FILTER
L. J. Quintero-Rodríguez1, R. Warnes-Lora1, Min Won-Lee2, J. Rodríguez-Asomoza3, I. E. Zaldívar-Huerta1
1Instituto Nacional de Astrofísica, Óptica y Electrónica, Depto. de Electrónica, Puebla, México,
2Université de Paris 13, Laboratoire de Physique des Lasers (UMCR CNRS 7538), Sorbonne Paris Cité
3Universidad de las Américas, Depto. de Ing. Electrónica, Cholula, Puebla, México

OTh 1.4 10:00-10:15
GENERATION OF MULTI-PASSBAND SIGNALS IN THE FREQUENCY RANGE 0-20GHz
L. A. González Mondragón1, J. D. López-Lugo2, J.A. Benítez-Martínez, R. Pimentel-Domínguez, J. Hernández-Cordero, F.M. Sánchez-Arévalo
1Instituto Nacional de Astrofísica, Óptica y Electrónica, Depto. de Electrónica, Tonantzintla, Puebla, México
2Universidad de las Américas, Depto. de Ing. Electrónica, Cholula, Puebla México

OTh 2.3 10:00-10:15
PHOTOMECHANICAL AND THERMAL EFFECTS ON A NANOCOMPOSITE CYLINDER OF PDMS AND CARBON NANOPowDER
J. D. López-Lugo1, J.A. Benítez-Martínez, R. Pimentel-Domínguez, J. Hernández-Cordero, F.M. Sánchez-Arévalo
1Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México

OTh 3.3 10:00-10:15
BEAM SPLITTER ZONE PLATES – ENABLING ADVANCED EXPERIMENTS AT X-RAY FREE ELECTRON LASERS
F. Döring1, B. Rösner1, M. Beye2, M. Langer1, A. Kubec3, A. Kleibert1, J. Raabe1, C. A. F. Vaz4, Christian David1
1Paul Scherrer Institut, Switzerland
2Deutsches Elektronen-Synchrotron DESY, Hamburg, Germany

OTh 4.5 10:00-10:15
ASPHERIC OPTICAL SURFACE MADE OF PDMS AND ITS APPLICATION IN THE ACQUISITION OF IMAGES
Angel S. Cruz Félix, Agustin Santiago Alvarado, Miguel Jácome Silva
Instituto de Física y Matemáticas, Universidad Tecnológica de la Mixteca, Huajuapan de León, Oaxaca, México

OTh 5.3 10:00-10:15
TERAHERTZ FIBER COMMUNICATIONS
Kathirvel Nallappan1,2, Hichem Guerboukha2, Yang Cao2, Chahe Nerguizian3, Maksim Skorobogatiy2
1Department of Electrical Engineering, Polytechnique de Montreal, Montreal, Quebec, Canada
2Department of Engineering Physics, Polytechnique de Montreal, Montreal, Quebec, Canada
<table>
<thead>
<tr>
<th>OTh_1.5 10:15-10:30</th>
<th>OTh_3.4 10:15-10:30</th>
<th>OTh_4.6 10:15-10:30</th>
<th>OTh_5.4 10:15-10:30</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXPERIMENTAL OBSERVATION OF POLARIZATION MODULATION INSTABILITY IN ALL-NORMAL DISPERSION PHOTONIC CRYSTAL FIBERS</td>
<td>NEW DESIGN OF ENVIRONMENTAL CELLS FOR X RAY LASER DIFFRACTION IMAGING OF SAMPLES IN MIXED SOLUTION</td>
<td>DESIGN OF NULL SCREENS FOR A CHEBYSHEV-TYPE SURFACE</td>
<td>TERAHertz IMAGING WITH 45 PIXELS BY USING THE K-SPACE/FREQUENCY DUALITY</td>
</tr>
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<td>A. Loredo-Trejo¹, Y. Lopez-Dieguez², L. Velázquez-Ibarra³, A. Diez¹, E. Silvestre⁴, M. V. Andrés¹</td>
<td>Takashi KIMURA¹²</td>
<td>Diana Castán-Ricaño¹, J. J Alvarado-Martínez¹, Fermín Granados-Agüstín¹, Maximino Avendaño-Alejo², Elizabeth Percino-Zacarias¹, Alejandro Cornejo-Rodríguez¹</td>
<td>Hichem Guerboukha, Kathirvel Nallappan, Maksim Skorobogatyv¹²</td>
</tr>
<tr>
<td>Departamento de Física Aplicada y Electromagnetismo, ICMUV, Universidad de Valencia, Spain</td>
<td>Department of Engineering, the University of Tokyo, Japan</td>
<td>PRESTO, Japan Science and Technology Agency, Saitama, Japan</td>
<td>Polytechnique Montreal, Montreal, Canada</td>
</tr>
<tr>
<td>Departamento de Electrónica, División de Ingenierías Campus Irapuato-Salamanca, Universidad de Guanajuato, México.</td>
<td>¹Instituto Nacional de Astrofísica, Óptica y Electrónica, Santa María Tonantzintla, Puebla, México</td>
<td>¹Instituto de Ciencias Aplicadas y Desarrollo Tecnológico, Universidad Nacional Autónoma de México, México D.F., México</td>
<td>INRS-EMT, Varennes, Canada</td>
</tr>
<tr>
<td>Departamento de Física, Universidad de Guanajuato, León, México.</td>
<td>²Instituto de Ciencias Aplicadas y Desarrollo Tecnológico, Universidad Nacional Autónoma de México, México D.F., México</td>
<td>²Instituto Nacional de Astrofísica, Óptica y Electrónica, Santa María Tonantzintla, Puebla, México</td>
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<tr>
<td>Departamento de Óptica, ICMUV, Universidad de Valencia, Burjasot, Spain</td>
<td>²Instituto Nacional de Astrofísica, Óptica y Electrónica, Santa María Tonantzintla, Puebla, México</td>
<td>²Instituto de Ciencias Aplicadas y Desarrollo Tecnológico, Universidad Nacional Autónoma de México, México D.F., México</td>
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10:30-11:00 COFFEE BREAK

**PleTh_7 11:00-12:00: DUAL PHASE SHIFTING HOLOGRAPHIC INTERFEROMETRY: AN OVERVIEW**

Pramod Rastogi

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X Ibero American Optics Meeting, XIII Latin American Meeting on Optics, Lasers and Applications, and Mexican Optics and Photonics Meeting, Cancun, Mexico, 23-27 September 2019
PaTh_1 12:00-13:30 **OSA: WOMEN IN THE FIELD OF OPTICS AND PHOTONICS (PANEL OF DISCUSSION)**

Ursula Gibson  
OSA President  
Norwegian University of Science and Technology

María Sagrario Millán  
Facultad de Óptica y Optometría, Universitat Politècnica de Catalunya, España

Kari Apter  
Senior Director, Research & Program Development  
The Optical Society (OSA), USA

Krisinda Plenkovich  
Director for Education and Community Services  
International Society for Optics and Photonics (SPIE), USA

María Josefa Yzuel Giménez  
Autonomous University of Barcelona, España

Panel Chair: Paulina Segovia Olvera, CICESE, México

13:30-15:00 LUNCH (on your own)
### PleTh_8 15:00-16:00: Computational imaging with structured light and integrated detection

**Enrique Tajahuerce**

GROC-UJI, Instituto de Nuevas Tecnologías de la Imagen (INIT), Universitat Jaume I, Castelló, España

Conference Chair: Eduardo Tepichín-Rodríguez, INAOE, México

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Speaker(s)</th>
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<tbody>
<tr>
<td>16:00-16:15</td>
<td>IMPLEMENTATION OF A MICROWAVE PHOTONIC NOTCH FILTER BASED ON THE CHROMATIC DISPERSION</td>
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<td></td>
<td>(INVITED) NOVEL APPLICATIONS IN OPTICALLY RECONFIGURABLE MATERIALS</td>
<td>Yunuen Montelongo, Ali K. Yetsis, School of Civil, Mechanical and Industrial Engineering, Universidad De La Salle Bajo, León, Mexico</td>
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<td>HIGH POWER MIRRORS FOR THE ADVANCED LIGHT SOURCE UPGRADE</td>
<td>Grant Cutler, Howard Padmore, Alastair MacDowell, Diane Bryant, Nathan Smith, Arnaud Allézy</td>
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<td>DEVELOPMENT OF A STABLE AND HIGH REPETITION LASER PLASMA X-RAY MICROFOCUS SOURCE</td>
<td>Lawrence Berkeley National Laboratory, One Cyclotron Road, Berkeley, California, USA</td>
</tr>
<tr>
<td>16:00-16:15</td>
<td>VISUALIZATION OF MOISTURIZERS EFFECTS ON STRATUM CORNEUM EX VIVO USING TERAHERTZ</td>
<td>Daniela I. Ramos-Soto, Edgar Saucedo-Casas</td>
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<td>SPECTROSCOPIC IMAGING</td>
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<td>16:00-16:15</td>
<td>3D-PRINTED TERAHERTZ PHOTONIC BANDGAP BRAGG WAVEGUIDE-BASED FLUIDIC SENSOR</td>
<td>Yang Cao, Kathirvel, Nallappan, Hichem Guerboukha, Thomas Gervais, Maxim Skorobogatyi</td>
</tr>
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<td></td>
<td>École Polytechnique de Montréal, Montreal, Québec, Canada</td>
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X Ibero American Optics Meeting, XIII Latin American Meeting on Optics, Lasers and Applications, and Mexican Optics and Photonics Meeting, Cancun, Mexico, 23-27 September 2019
<table>
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<th>OTh_1.8 16:30-16:45</th>
<th>OTh_2.5 16:30-16:45</th>
<th>OTh_3.6 16:30-16:45</th>
<th>OTh_4.8 16:30-16:45</th>
<th>OTh_5.7 16:30-16:45</th>
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<td>IMPORTANCIA DEL DISEÑO DEL ELEMENTO ÓPTICO CODIFICADOR EN EL BALANCE ENTRE RESOLUCIÓN, RUIDO Y PROFUNDIDAD DE FOCO EN WAVEFRONT CODING</td>
<td>NANOPAPER AS AN ADVANTAGEOUS (BIO)SENSING PLATFORM</td>
<td>TESTING OF RESISTIVE ELEMENT ADJUSTABLE LENGTH COOLING FOR HIGH REPETITION RATE FELS</td>
<td>TRANSIENT ABSORPTION WITH SUPERCONTINUUM PROBE FOR PHOTODYNAMIC STUDIES OF ORGANIC MOLECULES</td>
<td>LOW-LOSS AND DISPERSION FLAT UMBRELLA-SHAPE &amp; POROUS-CORE PHOTONIC CRYSTAL FIBER</td>
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<tr>
<td>Enrique Gonzalez-Amador^2, J-Miguel Olvera-Angeles^2, Justo Arines^1, Eva Acosta^2</td>
<td>Eden Morales-Narváez Biophotonic Nanosensors Laboratory, Centro de Investigaciones en Óptica, A. C., León, Guanajuato, México</td>
<td>Corey Hardin^1, May Ling Ng^1, Daniel Morton^1, Lance Lee^1, Lin Zhang^2, Daniele Cocco^1,^2</td>
<td>Rodrigo Misaell Barba-Barba, Ramón Carriles, Gabriel Ramos-Ortiz Centro de Investigaciones en Óptica, León, Guanajuato, México</td>
<td>N. Gomez-Cardona, J. Montoya-Cardona, Erick Reyes-Vera Department of Electronic and Telecommunications Engineering, Instituto Tecnológico Metropolitano, Medellín, Colombia</td>
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<tr>
<td>1Departamento de Física Aplicada, Facultad de Óptica y Optometría, Universidad de Santiago de Compostela, Coruña, España</td>
<td>2Departamento de Física Aplicada, Facultad de Física, Universidad de Santiago de Compostela, Coruña, España</td>
<td>1SLAC National Accelerator Laboratory, CA, USA</td>
<td>2Lawrence Berkeley National Laboratory, Berkeley, CA, USA</td>
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<td>OTh_1.9 16:45-17:00</td>
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<td>OTh_4.9 16:45-17:00</td>
<td>OTh_5.8 16:45-17:00</td>
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<td>RECENT PROGRESS IN PATTERN RECOGNITION WITH THE GENERALIZED HOUGH TRANSFORM: REAL-TIME, FULL INVARIANCE AND 3D ROBUST</td>
<td>CHARACTERIZATION OF SURFACE DEFORMATIONS DUE TO FIXATION AND COOLING OF X-RAY MIRRORS</td>
<td>TUNABLE SUM FREQUENCY GENERATION USING BiB3O6</td>
<td>SIMPLE PHYSICAL MODELS FOR THE PARTIALLY TRANSPARENT RADIATIVE WINDOWS, COMPARISON TO THE RADIATIVE COOLERS</td>
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<td>Bernd C. Meyer^1, Gabriel V.</td>
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<td>J. L. Domínguez-Juárez^1,^2, R. Quintero-Torres^1, J. L. Aragón^1</td>
<td>1Centro de Física Aplicada y</td>
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</tr>
<tr>
<td>1Universidad Autónoma de Aguascalientes, Mexico.</td>
<td>2Centro de Investigaciones en Óptica, A.C., León, Guanajuato, México.</td>
<td>1Centro de Física Aplicada y</td>
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X Ibero American Optics Meeting, XIII Latin American Meeting on Optics, Lasers and Applications, and Mexican Optics and Photonics Meeting, Cancun, Mexico, 23-27 September 2019
### DETECTION

Ariel Fernández¹, Juan M. Llaguno¹, Jorge L. Flores², Julia R. Alonso¹, José A. Ferrari¹
¹Instituto de Física, Facultad de Ingeniería (UdelaR), Montevideo, Uruguay
²Departamento de Electrónica, Universidad de Guadalajara, Jalisco, México

Claudiano, Regis S. de Oliveira, Lucas M. Volpe, Renan R. Geraldes, Artur C. Pinto, Sergio A. L. Luiz, Flavio A. Borges
Laboratório Nacional de Luz Síncrotron, Campinas, Brazil

Tecnología Avanzada, UNAM, Querétaro, México.

Erjun Zhang¹, Christophe Caloz², Maksim Skorobogatiy¹
¹Engineering Physics, Polytechnique Montréal, Québec, Canada
²Électrical Engineering, Polytechnique Montréal, Québec, Canada

| OTh_1.10 | 17:00-17:15 | SURGICAL SPECTACLES: TUNABLE MAGNIFICATION | Cristina M. Gómez-Sarabia¹, Jorge Ojeda-Castañeda²
1Departamento de Artes Digitales, Universidad de Guanajuato, Salamanca, Guanajuato, México
2Departamento de Electrónica, Universidad de Guanajuato, Salamanca, Guanajuato, México |
| --- | --- | --- | --- |
| OTh_3.8 | 17:00-17:15 | ADVANCES AND CHALLENGES IN NANOMANUFACTURING GRATING MASTERS FOR EXTREME APPLICATIONS | Subhalakshmi Kumar¹, Samuel Gleason¹, Erik Huemiller¹, Cody Jensen¹, Jonathan Manton¹, Peter Abbamonte¹
²Inprentus, Inc., Champaign, IL, USA
³Materials Research Laboratory, University of Illinois at Urbana-Champaign, Urbana, IL, USA |
| OTh_4.10 | 17:00-17:30 (INVITED) | IMAGING SELECTED SHG-ACTIVE BIOLOGICAL TISSUES | Pablo Loza Álvares, ICFO-The Institute of Photonic Sciences, Barcelona, Spain |
| OTh_5.9 | 17:00-17:15 | ANNUAL APERTURES WITH HIGH LIGHT THROUGHPUT | Cristina M. Gómez-Sarabia¹, Luis Ledesma-Carrillo², Jorge Ojeda-Castañeda³ |
³Departamento de Artes Digitales, Universidad de Guanajuato, Salamanca, Guanajuato, México |
| OTh_3.9 | 17:15-17:45 (INVITED) | DIAMOND DIFFRACTIVE X-RAY OPTICS FOR FREE ELECTRON LASERS | C. David, G. Seniutinas, B. Rösner, F. Döring, V.A. Guzenko |
| OTh_5.10 | 17:15-17:30 | NUEVOS DISEÑOS PARA LA MEJORA DEL CONTRASTE DE LA IMAGEN RETINIANA EN SOLUCIONES ÓPTICAS PARA LA PRESBICIA Y |

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X Ibero American Optics Meeting, XIII Latin American Meeting on Optics, Lasers and Applications, and Mexican Optics and Photonics Meeting, Cancun, Mexico, 23-27 September 2019
<table>
<thead>
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<th>Session</th>
<th>Title</th>
<th>Authors</th>
</tr>
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<tbody>
<tr>
<td>3</td>
<td>PHASE CONJUGATE PAIRS: TUNABLE DEVICES</td>
<td>Jorge Ojeda-Castañeda, Cristina M. Gómez-Sarabia</td>
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<td>4.11</td>
<td>COHERENT RAMAN SCATTERING: A SIMPLE METHOD TO EXTRACT THE SPECTRAL INFORMATION FROM MULTIPLEXED SIGNALS</td>
<td>Adrian E. Villanueva Luna, Yryx Luna Palacios, Jacob Licea Rodriguez, Israel Rocha Mendoza</td>
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<td>5.1</td>
<td>CORNEAL TOPOGRAPHER USING A HARTMANN-PATTERNED NULL SCREEN</td>
<td>M. I. Rodríguez, Alessandra Carmichael Martins, Brian Vohnsen, R. Díaz-Uribe, D. Malacara-Hernandez</td>
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OTROS ERRORES REFRATIVOS
J-Miguel Olvera Angeles, Enrique González-Amador, Justo Arines, Eva Acosta

1Departamento de Física Aplicada, Facultad de Óptica y Optometría, Universidad de Santiago de Compostela, Santiago de Compostela, A Coruña, España
2Departamento de Física Aplicada, Facultad de Física, Universidad de Santiago de Compostela, Santiago de Compostela, A Coruña, España
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<td>POSTER AWARD AND GALILEI AWARD</td>
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<td>PMo_1</td>
<td>ONE YEAR OF CONTINUOUS MONITORING OF PLANETARY BOUNDARY LAYER</td>
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<td>IN THE COLOMBIAN SOUTHWEST</td>
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<td>ROOM TEMPERATURE QUANTUM COHERENCE VS. ELECTRON TRANSFER IN A</td>
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<td>PMo_3</td>
<td>TRANSPORT AND OPTICAL PROPERTIES OF D-Π-A MOLECULAR COMPLEXES</td>
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<td>PMo_4</td>
<td>TOWARDS A QUANTUM MONTE CARLO FOR LATTICE SYSTEMS</td>
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<td>PMo_5</td>
<td>STUDY OF THE SU-SCHRIEFFER-HEEGER MODEL USING AN APPROPRIATE</td>
</tr>
<tr>
<td></td>
<td>MOMENTUM REPRESENTATION</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>PMo_6</td>
<td>EXPERIMENTO DE STERN-GERLACH CON ESPÍN ARBITRARIO: EVOLUCIÓN TEMPORAL</td>
</tr>
<tr>
<td></td>
<td>Y ENREDAMIENTO</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>PMo_7</td>
<td>MAGNETIC PROPERTIES OF SPINOR BOSON GASES IN OPTICAL LATTICES: A</td>
</tr>
<tr>
<td></td>
<td>GUTZWILLER VARIATIONAL APPROACH</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>PMo_8</td>
<td>DETERMINACIÓN DE PARÁMETROS ÓPTICOS PARA LA MANIPULACIÓN DE OPSINAS</td>
</tr>
<tr>
<td></td>
<td>APLICABLES EN OPTOGENÉTICA</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**PMo_9** EFFECTS OF PHOTOTHERAPY AS AN OSSEOUS REGENERATOR ON FRACTURES OF THE FIRST DEGREE IN RAT MODEL FEMALE.
Brenda Lizbeth Arroyo Reyes¹, Carolina Morán Raya¹, Plácido Zaca Morán¹, Juan Pablo Padilla Martínez¹, Rúben Ramos García¹, Jorge Cerna¹
¹Instituto de Ciencias, Benemérita Universidad Autónoma de Puebla, Puebla, México

**PMo_10** ROLE OF VAN DER WAALS INTERACTIONS IN ENCAPSULATION OF ORGANIC MOLECULES INTO BORON NITRIDE NANOTUBES
R. A. Vázquez-Nava¹, R. V. Salazar-Aparicio¹, G. H. Cocoletzi²
¹Centro de Investigaciones en Óptica A. C., División de Fotónica, León, Guanajuato, México
²Instituto de Física, Benemérita Universidad Autónoma de Puebla, Puebla, México

**PMo_11** LOCALIZACIÓN Y VISUALIZACIÓN DE VASOS SANGUÍNEOS A TRAVÉS DE ANÁLISIS DE TEXTURA Y VALORES DE CURTOSIS DE IMÁGENES DE SPECKLE
C. E. Perez-Corona, H. Peregrina-Barreto, J. C. Ramirez-San-Juan
Instituto Nacional de Astrofísica, Óptica y Electrónica, Puebla, México.

**PMo_12** GENERACIÓN DE CHORROS LÍQUIDOS MEDIANTE ENFOCAMIENTO DE ONDAS ACÚSTICAS
N.E. González-Sierra¹, J.M. Pérez-Corte¹, Rafael Zaca-Morán², J.P. Padilla-Martínez², Carla Berrospe Rodríguez³, Rúben Ramos García¹
¹Instituto de Astrofísica, Óptica y Electrónica, Tonantzintla, Puebla, México.
²Instituto de Ciencias ICUAP, Puebla, México.
³Mechanical Engineering, University of California Riverside.

**PMo_13** VISUALIZACIÓN Y ANÁLISIS ESPECTRAL DE NANOPARTÍCULAS PLASMÓNICAS
Gabriel Efrain Villatoro Pérez¹, Ruben Ramos García¹, Joel Villatoro²
¹Instituto Nacional de Astrofísica, Óptica y Electrónica, Tonantzintla, Puebla, México.
²Escuela de Ingeniería de Bilbao, UPV/EHU, Bilbao, España

**PMo_14** DESARROLLO DE UN BIOSENSOR DE FIBRA ÓPTICA PARA APLICACIONES EN ONTOGENÉTICA
Karina González León¹, Georgina Beltrán Pérez², Raúl Delgado Macuí², Severino Muños Aguirre³, Juan Castillo Mixcoati¹, Valentín López Gayou²
¹Facultad de Ciencias Físico Matemáticas, Benemérita Universidad Autónoma de Puebla, Puebla, Pue.
²Instituto Politécnico Nacional, Centro de Investigación en Biotecnología Aplicada, Tlaxcala, Tlax., México

**Diffraction and gratings**

**PMo_15** REFLECTIVE SEMITRANSPARENT OPTICAL ELEMENTS CONTAINING WAVELIKE FILMS
Anatoly M. Smolovich¹, Valery Chernov²
¹Kotel’nikov Institute of Radio Engineering and Electronics of the Russian Academy of Sciences, Moscow, Russia
²Universidad de Sonora, Hermosillo, Sonora, México

**PMo_16** GENERACIÓN DE HACES VECTORIALES POLARIZADOS
Aarón Cofré¹, Asticio Vargas¹, Fabián A. Torres-Ruíz¹, María del Mar Sánchez-López², Ignacio Moreno³
¹Departamento de Ciencias Físicas, Universidad de La Frontera, Temuco, Chile.
²Instituto de Bioingeniería, Departamento Física y Arquitectura de Computadores, Universidad Miguel Hernández de Elche, Elche, España.
³Departamento de Ciencia de Materiales, Óptica y Tecnología Electrónica, Universidad Miguel Hernández de
PMo_17 FABRICACIÓN DE UNA ESTRUCTURA PERIÓDICA DIFRACTIVA USANDO LA TÉCNICA DE NANOLOGRÁFIA DE OXIDACIÓN LOCAL POR MICROSCOPÍA DE FUERZA ATÓMICA
C. Mendoza¹, A. Plata¹, Z. Lizarazo⁵, H. Estupiñan⁷, C. Chacón⁷
¹Escuela de Física, Universidad Industrial de Santander, Bucaramanga Colombia
²Facultad de Minas, Universidad Nacional de Colombia, Medellín Colombia

PMo_18 DERIVACIÓN ITERATIVA DE FRENTE DE ONDA USANDO EL PROCESADOR ÓPTICO DE FOURIER
Cecilbet Mendoza Rodríguez¹, Carlos I. Robledo Sánchez¹, Rigoberto Juárez Salazar⁷
¹Facultad de Ciencias Físico Matemáticas, Benemérita Universidad Autónoma de Puebla, Ciudad Universitaria Puebla, México
²CONACYT, Instituto Politécnico Nacional, CITEDI, Tijuana Baja California, México

PMo_19 ZnO-SiO₂ GRATING COUPLER FOR PHOTONIC CRYSTAL WAVEGUIDES
Evelyn Yamel González Ramírez, José Antonio Medina Vázquez, José Guadalupe Murillo Ramírez
Centro de Investigación en Materiales Avanzados S. C. Chihuahua, México

PMo_20 INTERFERÓMETRO DE YOUNG DE N-RENDIJAS EN TRES CONTORNO GEOMÉTRICOS REGULARES
M. Flores-Sandoval¹, C. Meneses-Fabian³, V. H. Cabrera Peláez², A. Serrano Ricardo¹
¹Facultad de Ciencias Físico Matemáticas, Benemérita Universidad Autónoma de Puebla
²Universidad Politécnica de Tlaxcala, México

Digital Holography

PMo_21 SPECKLE NOISE REDUCTION IN DIGITAL FRESNEL HOLOGRAPHY BY USE OF DIFFERENT RECONSTRUCTION DISTANCES
Miguel León-Rodríguez¹, Juan Antonio Rayas², Amalia Martínez-García², Alejandra Cruz-Bernal¹, Karen Reyes², Alejandro Almanza-Jaral¹
¹Universidad Politécnica de Guanajuato, Cortázar, Guanajuato, Mexico
²Centro de Investigaciones en Óptica, A.C., León, Guanajuato, Mexico

PMo_22 Modulación vectorial óptica mediante dos campos de referencia
Augusto Flores-Meneses, Cruz Meneses-Fabian
Facultad de Ciencias Físico Matemáticas, Benemérita Universidad Autónoma de Puebla, Puebla, México

Fiber optics, sensors and optical communications

PMo_24 PASSIVELY MODE-LOCKED YB-DOPED ALL POLARIZATION-MAINTAINING FIBER LASER
C. Cuadrado-Laborde¹,²,³, A. Carrascosa¹, A. Diez¹, J. L. Cruz¹, and M. V. Andrés⁴
¹Departamento de Física Aplicada, ICMUV, Universidad de Valencia, Spain
²Instituto de Física Rosario (CONICET-UNR), Rosario, Argentina,
³Pontificia Universidad Católica Argentina, Facultad de Química e Ingeniería, Rosario, Argentina

PMo_25 THERMAL AND MECHANICAL SENSITIVITY OF CLADDING RESONANCES IN BRAGG GRATINGS MADE IN BORON CODEPOTED GERMANOSILICATE FIBERS
Germán R. Fernández¹,², José L. Cruz³, Miguel V. Andrés⁴ Pablo A. Costanzo Caso¹,²,³
¹Laboratory of Applied Research in Telecommunications, CNEA, Bariloche, Argentina
Pmo_26 Interferometric characterization of microbubbles growth on fiber tips
J. G. Ortega-Mendoza, J. Muñoz-Pérez, J. L. Cruz, M.V. Andrés
1 División de Ingenierías, Universidad Politécnica de Tulancingo, Hidalgo, México
2 Departamento de Física Aplicada y Electromagnetismo, Universidad de Valencia, España

Pmo_27 Birefringence characterization of single-mode optical fibers
Adriana Rojas Sánchez, Diana Tentori Santa Cruz, Alfonso García Weidner
División de Física Aplicada, Centro de Investigación Científica y de Educación Superior de Ensenada, B. C., México

Pmo_28 On the birefringence evaluation of solid nucleus microstructured fibers
Marco Cortez, Diana Tentori, Alfonso García-Weidner
Centro de Investigación Científica y de Educación Superior de Ensenada, Baja California, México

Pmo_29 Vibration sensing setup based on a Mach-Zehnder interferometer with a photonic crystal fiber
Departamento de Ingeniería Electrónica, División de Ingenierías, Campus Irapuato-Salamanca, Universidad de Guanajuato, Gto., México

Pmo_30 Breaking the no cross-coupling condition of polarization-maintaining optical fibers
Nestor Lozano-Crisóstomo, Julio C. Garcia-Melgarejo, Jesus I. Espinoza-Blanco, Daniel A. May-Arrioja, J. Javier Sanchez-Mondragón
1 Facultad de Ingeniería, Mecánica y Eléctrica, Universidad Autónoma de Coahuila, Torreón, Coahuila, México
2 Instituto Nacional de Astrofísica, Óptica y Electrónica, Santa María Tonantzintla, Puebla, México
3 Centro de Investigaciones en Óptica, Aguascalientes, México

Pmo_31 In fiber acousto-optic interaction for the measurement of UV-induced core refractive index increase
Saúl A. Rosales-Mendoza, Martina Delgado-Pinar, Emmanuel Rivera-Perez, Jose Luis Cruz, Antonio Díez, Miguel V. Andrés
1 Departamento de Física Aplicada y Electromagnetismo-ICMUV, Universitat de València, Burjassot, España
2 Departamento de Física-División de Ciencias e Ingenierías, Universidad de Guanajuato, Campus León, Guanajuato, México

Pmo_32 A low cost architecture of an optical fiber bundle for solar light collection
1 Universidad Autónoma de Nuevo León, FCFM, Cd. Universitaria, San Nicolás de los Garza, Nuevo León, México
2 Centro de Investigaciones en Óptica, León, Gto., México

Pmo_33 Técnica de generación de nuevas formas, unicás, de criptogramas imagen, usando procesamiento digital
M. Alejandra Guerrero V., Jorge E. Rueda-Parada
Grupo Óptica Moderna, Departamento de Física, Universidad de Pamplona, Pamplona, Colombia
<table>
<thead>
<tr>
<th>PMo_34</th>
<th>STUDY OF A GENERALIZED QUASI-4F OPTICAL SYSTEM GENERATING CARRIER FREQUENCY VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

**Geometric optics**

<table>
<thead>
<tr>
<th>PMo_35</th>
<th>MÉTODO DE TRAZADO DE RAYOS A PARTIR DE UNA FORMULACIÓN EXPLICÍTA DE SUPERFICIES RIGUROSAMENTE ESTIGMÁTICAS TANTO REFRACTIVAS COMO REFLECTIVAS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Alberto Silva, Rafael Torres</td>
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</tr>
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</table>

<table>
<thead>
<tr>
<th>PMo_36</th>
<th>LOS MAPAS DE SUPERFICIES ÓPTICAS Y LOS FRENTEDE ONDA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Daniel Malacara Doblando, Daniel Malacara Hernández, Zacarías Malacara Hernández</td>
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<td>Centro de Investigaciones en Óptica, A. C. León, Gto. México</td>
</tr>
</tbody>
</table>

**Image processing, vision and artificial intelligence**

<table>
<thead>
<tr>
<th>PMo_38</th>
<th>CORRELATION BY ONE-DIMENSIONAL SIGNATURES INVARIANT TO ROTATION, POSITION, AND SCALE USING RADIAL HILBERT TRANSFORM OPTIMIZED</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Alfredo Castro-Valdez, Josué Álvarez-Borrogo, Selene Solorza-Calderón</td>
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<td>¹Physics Division, Optics Department, Centro de Investigación Científica y de Educación Superior de Ensenada, Ensenada, Mexico</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PMo_39</th>
<th>FRACTIONAL FOURIER CORRELATION FOR PCE MAXIMIZATION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Luis Felipe López-Avila, Josué Álvarez-Borrogo</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PMo_40</th>
<th>FRACTIONAL FOURIER-RADIAL TRANSFORM FOR DIGITAL IMAGE RECOGNITION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

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<thead>
<tr>
<th>PMo_41</th>
<th>ECHOCARDIOGRAPHY IMAGE ANALYSIS BY USING VORTEX METROLOGY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Astrid L. Villamizar Amado, Silvana Gallo, Nelly Cap, Hector Rabal, Myrian Tebaldi</td>
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<td>²Departamento de Ciencias Básicas, Facultad de Ingeniería, Universidad Nacional de La Plata, Argentina</td>
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<td>¹UID OPTIMO, Departamento de Ciencias Básicas, Facultad de Ingeniería, Universidad Nacional de La Plata, Argentina</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PMo_42</th>
<th>SIMPLIFICACIÓN DE IMÁGENES DE PROFUNDIDAD UTILIZANDO UN SISTEMA ESTEREOSCÓPICO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>V. Hernández Arreola, F. J. Renero Carrillo, R. Díaz Hernández</td>
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<td>Título</td>
</tr>
<tr>
<td>-------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>PMo_43</td>
<td>SISTEMA OPTOMECATRÓNICO PARA GRABADO LASER Y SEPARACIÓN POR VISIÓN ARTIFICIAL UTILIZANDO LabVIEW</td>
</tr>
<tr>
<td>PMo_44</td>
<td>SYMMETRIC CONVOLUTION OVER FINITE FIELD FOR IMAGE FILTERING USING THE DISCRETE COSINE TRANSFORM</td>
</tr>
<tr>
<td>PMo_45</td>
<td>DISCRETE SINE TRANSFORM OVER FINITE FIELD APPLIED TO THE IMAGE ENCRYPTION</td>
</tr>
<tr>
<td>PMo_46</td>
<td>GENETIC ALGORITHM APPLIED TO THE ARRANGEMENT OF CUTTING PATTERNS IN FINITE MATERIALS</td>
</tr>
<tr>
<td></td>
<td><strong>Imaging systems</strong></td>
</tr>
<tr>
<td>PMo_47</td>
<td>MEJORA DE UN SISTEMA PARA TOMOGRAFÍA OPTOACÚSTICA 2-D USANDO UN SENSOR ULTRASÓNICO DE MUY BAJO RUIDO EQUIVALENTE DE PRESIÓN</td>
</tr>
<tr>
<td>PMo_48</td>
<td>THREE-DIMENSIONAL OPTICAL CONSTRUCTION OF AN IPSF, FOR ITS USE ON IMAGE RESTORATION IN MICROSCOPY</td>
</tr>
<tr>
<td>PMo_49</td>
<td>PHASE-SHIFTING DIGITAL HOLOGRAPHY WITH SINGLE-PIXEL DETECTOR</td>
</tr>
<tr>
<td>PMo_50</td>
<td>TRIPLE CORRELATIONS OF ANGULARLY CODED MASKS</td>
</tr>
<tr>
<td>PMo_51</td>
<td>LOW F-NUMBER MULTIORDER DIFFRACTIVE LENSES</td>
</tr>
<tr>
<td>PMo_52</td>
<td>TUNABLE DIFFRACTION ATENUATORS</td>
</tr>
</tbody>
</table>

X Ibero American Optics Meeting, XIII Latin American Meeting on Optics, Lasers and Applications, and Mexican Optics and Photonics Meeting, Cancun, Mexico, 23-27 September 2019
<table>
<thead>
<tr>
<th>PMo_53</th>
<th>OPTICAL NANOSCOPY: IMAGING REGIONS OF SUBDIFFRACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>L. J. C. Vilchis-Martínez¹², A. M. López-Rodríguez¹², R. Hinojosa-Nava¹², Oleg Kolokoltsév², R. Y. Sato-Berrú², E. V. Mejía-Uriarte²</td>
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<thead>
<tr>
<th>PMo_54</th>
<th>LAU VISIBILITY SENSOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cristina M. Gómez-Sarabia¹, Arlette Mejía-Arredondo², Luis M. Ledesma-Carrillo, Jorge Ojeda-Castañeda²</td>
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</tbody>
</table>

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<thead>
<tr>
<th>PMo_55</th>
<th>FLOW WATER BEHAVIOR IN A CHANNEL OBSTRUCTED BY A PIER VISUALIZED BY PARTICLE IMAGE VELOCIMETRY</th>
</tr>
</thead>
<tbody>
<tr>
<td>José Elías Villa-Herrera¹, Cornelio Álvarez-Herrera¹, José Guadalupe Murillo Ramírez², Evelyn Yamel González Ramírez³, José Antonio Medina Vázquez³</td>
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<thead>
<tr>
<th>Instrumentation, measurement, and metrology</th>
</tr>
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</table>

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<thead>
<tr>
<th>PMo_56</th>
<th>TESTING LENSES AND OPTICAL SURFACES WITH THE KNIFE EDGE INTERFEROMETER (KEI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efren Santamaría Juárez, Fermín Salomón Granados Agustín and Alejandro Cornejo Rodríguez</td>
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</table>

<table>
<thead>
<tr>
<th>PMo_57</th>
<th>MACH-ZEHNDER INTERFEROMETER COUPLED TO A MICHELSON CONFIGURATION AND A CUBE BEAM SPLITTER SYSTEM FOR APPLICATIONS IN SINGLE HOT PHASE SHIFTING INTERFEROMETRY</th>
</tr>
</thead>
<tbody>
<tr>
<td>G. Reséndiz López¹, A. Montes Pérez², J. G. Ortega-Mendoza³, J. M. Islas Islas³, A. Guzmán Barraza³, V. H. Flores-Muñoz⁴, Benito Canales Pacheco⁵, N. I. Toto-Arellano⁶</td>
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<td>¹Cuerpo Académico de Ingeniería Ciencias e Innovación Tecnológica. Centro de Tecnologías Ópticas y Fotónicas, Universidad Tecnológica de Tulancingo, Hgo., México</td>
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<td>⁶Universidad Tecnológica de la Sierra Hidalguense, Hgo., México</td>
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</tr>
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</table>

<table>
<thead>
<tr>
<th>PMo_58</th>
<th>DIRECT COLOR FRINGE IDENTIFICATION PROFILOMETRY TECHNIQUE WITH AN ORTHOGONAL SETUP AND A ROTARY STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nadia Tornero Martínez, Gerardo Trujillo Schiaffino, Marcelino Anguiano Morales, Didia Patricia Salas Peimbert, Luis Francisco Corral Martínez, Paloma Guadalupe Mendoza Villegas</td>
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<td></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>PMo_59</th>
<th>INTERFEROMETRY AND LAGRANGE DYNAMICS FOR THE ANALYSIS OF PERIODIC PERTURBATIONS OVER AN HOLOGRAPHIC TABLE</th>
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<td>Luis Elías Piña-Villapando, Edgar Saucedo-Casas, Mariana Alfaro</td>
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<td>Departamento de Matemáticas y Física, Universidad Autónoma de Aguascalientes, Aguascalientes, Ags., México</td>
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<tr>
<th>PMo_60</th>
<th>DYNAMIC TRIANGULATION PROFILOMETRY FOR STATIC OBJECTS</th>
</tr>
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<tbody>
<tr>
<td>Edgar Zendejas Hernández, Carlos Ivan Quiroz García, Gerardo Trujillo Schiaffino, Marcelino Anguiano</td>
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</table>

X Ibero American Optics Meeting, XIII Latin American Meeting on Optics, Lasers and Applications, and Mexican Optics and Photonics Meeting, Cancun, Mexico, 23-27 September 2019
Morales, Didia Patricia Salas Peimbert, Luis Francisco Corral Martínez
Tecnológico Nacional de México / I. T. Chihuahua, Chihuahua, México

**PMo 61** MEASUREMENT OF RETARDANCE VARIATIONS OVER THE APERTURES OF LCVR
Claudio Ramirez¹, Neil C. Bruce¹, Juan Manuel Lopez-Tellez², Oscar Rodriguez-Herrera¹, Martha Rosete-Aguilar¹
¹Instituto de Ciencias Aplicadas y Tecnología, Universidad Nacional Autónoma de México, Ciudad Universitaria, Ciudad de México, México
²College of Optical Sciences, University of Arizona, Tucson, Arizona, USA

**PMo 62** ANALYSIS OF INTERFEROMETRIC SENSITIVITY TO OUT-OF-PLANE OPTICAL SYSTEM
Ana Karen Reyes, Juan Antonio Rayas, Amalia Martínez-García
Centro de Investigaciones en Óptica, León, Gto. México

**PMo 63** DESIGN AND DEVELOPMENT OF AN ASTIGMATIC AUTO-FOCUS SYSTEM BASED ON A SI-CMOS IMAGE SENSOR FOR FEMTOSECOND LASER PULSES
Jesús Delgado-Aguillón¹, Jesús Garduño-Mejía¹, Camilo Ruiz³, Martha Rosete-Aguilar¹, Carlos Jesús Román-Moreno¹, Alfredo A. Bravo Hernández²
¹Instituto de Ciencias Aplicadas y Tecnología, Universidad Nacional Autónoma de México, Mexico
²Instituto Universitario de Física Fundamental y Matemáticas y Departamento de Didáctica de la Matemática y de las Ciencias Experimentales, Universidad de Salamanca, Patio de las Escuelas s/n, Salamanca, Spain

**PMo 64** PORTABLE TERAHERTZ TOMOGRAPHY SYSTEM
M. A. Briseño-Carmona1, G. Paz-Martínez4, C-G Trevino-Palacios2, R. Vallejo-Mendoza1, L. Altamirano-Robles1
¹CyTE, INAOE, Tonantzintla, Puebla, México
²CO, INAOE, Tonantzintla, Puebla, México
³CCC, INAOE, Tonantzintla, Puebla, México
⁴Departamento de Física, Universidad de Salamanca, España

**PMo 65** MEDICIÓN SIMULTÁNEA DE VELOCIDAD DEL SONIDO E ÍNDICE DE REFRACCIÓN EN LÍQUIDOS
E. Oreglia¹, P.M.E. Vazquez¹, C.L. Matteo, P.A.¹,², Sorichetti¹, F.E. Veiras¹,², L. Ciocci Brazzano¹,²
¹Universidad de Buenos Aires, Facultad de Ingeniería, Grupo de Láser, Óptica de Materiales y Aplicaciones Electromagnéticas, Buenos Aires, Argentina.
²Consejo Nacional de Investigaciones Científicas y Técnicas, Buenos Aires, Argentina

**PMo 66** OPTICAL SWITCHES FOR CONTROLLING VORTICES
Cristina M. Gómez-Sarabia³, Diego López-Gazca², Luis M. Ledesma-Carrillo³, Jorge Ojeda-Castañeda²
¹Departamento de Artes Digitales, Universidad de Guanajuato, Salamanca, Guanajuato 36885, México
²Departamento de Electrónica, Universidad de Guanajuato, Salamanca, Guanajuato 36885, México
³Departamento de Estudios Interdisciplinarios, Universidad de Guanajuato, Yuriria, Guanajuato, México
### Tuesday 24: Poster Session 2

**Fiber optics, sensors and optical communications**

#### PTu_1 TUNING OF THE OUTPUT OPTICAL FIBER LASER BY A MODAL MICHELSON INTERFEROMETER
G. Salceda-Delgado¹, A. Martínez-Ríos², V. C. Rodríguez-Carreon¹, R. Selvas-Aguilar², A. Castillo-Guzman¹, R. I. Álvarez Tamayo², D. Toral-Acosta³

¹Facultad de Ciencias Físico Matemáticas, Universidad Autónoma de Nuevo León, San Nicolás de los Garza, N. L., México
²Centro de Investigaciones en Óptica, León, Gto., México
³CONACYT-Facultad de Ciencias Físico Matemáticas, Universidad Autónoma de Nuevo León, San Nicolás de los Garza, N. L., México

#### PTu_2 MEASUREMENT OF THERMO-OPTIC COEFFICIENT OF LIQUID SAMPLES BASED ON AN OPTICAL FIBER DEVICE
P. M. Velazco-Bolom, V. I. Ruiz-Perez, S. Mendoza-Vázquez, A. Flores-Rosas

¹Facultad de Ciencias en Física y Matemáticas, Universidad Autónoma de Chiapas, Tuxtla Gutiérrez, México

#### PTu_3 OPTICAL FIBER PROCESSING TECHNIQUES FOR MODAL FIELD ADAPTERS IN SINGLE-MODE AND LMA FIBERS, AND FATTENED MULTIMODE FIBERS FOR SOLAR COLLECTION
D. Toral-Acosta¹, A. Martínez-Ríos², A. G. Domínguez-Maldonado³, R. Robledo-Fava³, V. Guzman³, R. Selvas-Aguilar¹, F. Chavez-Gutierrez²

¹CONACYT-Universidad Autónoma de Nuevo León, Facultad de Ciencia Físico Matemáticas, San Nicolás de los Garza N. L., México
²Centro de Investigaciones en Óptica, León, Gto., México
³Universidad Autónoma de Nuevo León, Facultad de Ciencia Físico Matemáticas, San Nicolás de los Garza N. L., México

#### PTu_4 IMPLEMENTACIÓN Y DESARROLLO DE UN BIOSENSOR BASADOS EN UN INTERFEROMETRO INTERMODAL MACH-ZEHNDER
Paloma González-Enriquez1, Juan Manuel Sierra-Hernandez1, Javier Antonio Martín-Vela¹, Daniel Jauregui-Vazquez¹, Julián Estudillo-Ayala¹, E. Gallegos Arellano², Roberto Rojas-Laguna³

¹Departamento de Ingeniería Electrónica, División de Ingenierías, Universidad de Guanajuato, Salamanca Gto., México
²Departamento de Ingeniería Mecatrónica, Universidad Tecnológica de Salamanca, Salamanca Gto., México

#### PTu_5 TUNABLE PHOTONIC CRYSTAL FIBER MODE CONVERTER WITH A THERMO-RESPONSIVE LIQUID CRYSTAL CORE
J. Montoya-Cardona¹, N. Gomez-Cardona¹, E. González-Valencia³, P. Torres³, Erick Reyes-Vera¹⁴

¹Department of Electronic and Telecommunications Engineering, Instituto Tecnológico Metropolitano, Medellín, Colombia
²Escuela de Física, Universidad Nacional de Colombia - Sede Medellín, Medellín, Colombia
³Department of Electrical and Electronic Engineering, Universidad Nacional de Colombia, Bogotá, Colombia

#### PTu_6 Application of an Artificial Neural Network (ANN) Approach for Modeling the Localization of Mechanical Surface Deformations using FBG Sensors
Melissa Aguilar, Jorge L. Galvis, Pedro Torres

Escuela de Física, Universidad Nacional de Colombia, Medellín, Colombia
<table>
<thead>
<tr>
<th>PTu_7</th>
<th>INTERFEROMETRY OF FIBER OPTIC SPECKLE PATTERNS</th>
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<tbody>
<tr>
<td>Mauro Lomer$^{1,2}$, Guillermo Baldwin$^3$</td>
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<td>$^1$Grupo de Ingeniería Fotónica, Universidad de Cantabria, Santander, España</td>
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<td>$^2$CIBER-BBN, Instituto de Salud Carlos III, Madrid, Spain</td>
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<td>$^3$Pontificia Universidad Católica del Perú, Lima, Perú</td>
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<th>PTu_8</th>
<th>FIBER OPTIC FABRY-PEROT INTERFEROMETER SENSOR FOR SIMULTANEOUS MEASUREMENT OF PRESSURE AND TEMPERATURE BASED ON A POLYMERIC MICRO-BUBBLE</th>
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<td>Ricardo Daniel Defas-Brucí, Mildred S. Cano-Velázquez, Juan Hernández Cordero</td>
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<th>TUNABLE NARROW-BAND OPTICAL FILTER USING SPECTRAL ISO-INDEX POINTS.</th>
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<td>A. Garcia-Weidner, Diana Tentori</td>
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<th>PTu_10</th>
<th>AN IMAGE FUSION APPROACH BASED ON THE HERMITE TRANSFORM: APPLICATION TO SPECT AND CT IMAGE ANALYSIS</th>
</tr>
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<tr>
<td>Leiner Barba$^{1,2}$, Lorena Vargas-Quintero$^{1,2}$, Jose Alberto Calderon$^2$, Cesar Torres Moreno$^1$</td>
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<tr>
<td>$^1$Optic and Computer Science Lab., Universidad Popular del Cesar, Valledupar, Colombia</td>
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<th>A HERMITE-BASED APPROACH TO BONE SEGMENTATION IN CT IMAGES</th>
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<tr>
<td>Lorena Vargas-Quintero$^{1,2}$, Leiner Barba-J$^{1,2}$, Jose Alberto Calderon$^2$, Cesar Torres Moreno$^1$</td>
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<th>PREDIAGNOSTICO DE CANCER DE MAMA A TRAVÉS DEL ANÁLISIS Y PROCESAMIENTO DE IMÁGENES TERMOGRÁFICAS</th>
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<th>PTu_13</th>
<th>OPTICAL REFLECTION OF THE UROSAURUS ORNATUS LIZARD SKIN OBTAINED FROM HIGH-RESOLUTION DIGITAL IMAGE PROCESSING</th>
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<td>José Guadalupe Murillo Ramírez$^1$, Cornello Alvarez-Herrera$^2$, Héctor Gadsden$^3$, José Antonio Medina Vázquez$^2$, Evelyn Yamel González Ramírez$^2$</td>
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<td>$^1$Centro de Investigación en Materiales Avanzados S.C. Chihuahua, Chih. México</td>
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<td>$^2$Facultad de Ingeniería, Universidad Autónoma de Chihuahua, México</td>
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<td>$^3$Instituto de Ecología, A.C., Centro Regional del Bajío, Pátzcuaro, Michoacán, México</td>
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<th>ESTIMACION DE MISSINg INFORMATION IN RANGE IMAGES FROM SINGLE IMAGE</th>
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<tr>
<td>Enrique Chavira Calderón, Alejandra Cruz Bernal</td>
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<th>CLASSIFICATION OF CANCER AND PRE-CANCER SKIN IMAGES USING 1D TEXTURE SIGNATURES</th>
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<td>Edgar O. Molina-Molina$^1$, Selene Solorza-Calderón$^1$, Josué Álvarez-Borrego$^2$</td>
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<td>$^1$Facultad de Ciencias, Universidad Autónoma de Baja California, Ensenada, Baja California, México</td>
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<td>$^2$Departamento de Óptica, Centro de Investigación Científica y de Educación Superior de Ensenada, Ensenada, Baja California, México</td>
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<th>PERFORMANCE ANALYSIS OF TWO METHODOLOGIES BASED ON BINARY MASK OBTAINED FROM THE FRACTIONAL FOURIER TRANSFORM WITH IMAGES AFFECTED BY NOISE</th>
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<td>Esbanyely Garza-Flores$^1$, Josué Álvarez Borrego$^2$</td>
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* Image processing, vision and artificial intelligence
Instrumentation, measurement, and metrology

**PTu_17** ENTANGLED TWO PHOTON ABSORPTION SPECTROSCOPY OF CESIUM ATOMS: CURRENT STATUS
Matthieu Pellaton, Alejandra Valencia, Mayerlin Nuñez Portela
Laboratorio de Óptica Cuántica, Universidad de los Andes, Bogotá D.C., Colombia

**PTu_18** CALIBRACIÓN DE GAUGE BLOCKS USANDO MÉTODOS INTERFEROMÉTRICOS
William Gómez, Alejandra Valencia, Mayerlin Nuñez
Laboratorio de Óptica Cuántica, Universidad de los Andes, Bogotá – Colombia

**PTu_19** ANÁLISIS DE LA LONGITUD DE COHERENCIA DE FUENTES DE LUZ LED PARA APLICACIONES EN INTERFEROMETRÍA.
P. Cebran-Xochihuila, C. J. Román-Moreno
Departamento de Óptica, Microondas y Acústica, Instituto de Ciencias Aplicadas y Tecnología, Universidad Nacional Autónoma de México UNAM, Ciudad de México, México

**PTu_20** DIGITALIZACIÓN TRIDIMENSIONAL DE OBJETOS CON ALTA VARIACIÓN DE REFLECTANCIA A PARTIR DE LA TÉCNICA DE PROYECCIÓN DE FRANJAS: APLICACIÓN A PLACAS ORTOPÉDICAS PARA LA RECUPERACIÓN ÓSEA
Jaime Meneses, Daniel Agudelo
Grupo de óptica y tratamiento de señales, Universidad Industrial de Santander, Bucaramanga, Colombia

**PTu_21** HYBRID CALIBRATION STRATEGY TO REDUCE THE RESIDUAL ERRORS IN A STEREO-VISION MODEL FOR FRINGE PROJECTION PROFILOMETRY
Raúl Vargas¹, Jhacson Meza¹, Jesús Pineda¹, Lenny A. Romero², , Andrés G. Marrugo¹
¹Facultad de Ingeniería, Universidad Tecnológica de Bolívar, Cartagena, Colombia
²Facultad de Ciencias Básicas, Universidad Tecnológica de Bolívar, Cartagena, Colombia

**PTu_22** WHITE LIGHT INTERFEROMETRY FOR ESTIMATING THE SURFACE GEOMETRY OF INTRAOCULAR LENSES
Hernando Altamar-Mercado¹, Fidel Vega², Alberto Patiño-Vanegas¹, Andrés G. Marrugo³, María S. Millán²
¹Facultad de Ciencias Básicas, Universidad Tecnológica de Bolívar - UTB, Cartagena, Colombia
²Facultad de Óptica y Optometría, Universidad Politécnica de Cataluña-BARCELONA TECH, Terrassa, España
³Facultad de Ingeniería, Universidad Tecnológica de Bolívar - UTB, Cartagena, Colombia

**PTu_23** ANÁLISIS DEL SECADO DE PINTURAS EMPLEANDO HISTORIAS TEMPORALES DE DIAGRAMAS DE SPECKLE Y VORTEICES ÓPTICOS
Astrid Lorena Villamizar Amado¹, Daniel Sierra-Sosa², Eduardo Grumel¹, Hector Rabal¹,², Myrian Tebaldi¹,²,³
¹Centro de Investigaciones Ópticas (CONICET La Plata-CIC-UNLP)
²UID OPTIMO, Departamento de Ciencias Básicas, Facultad de Ingeniería, Universidad Nacional de La Plata, Argentina
³Department of Computer Engineering and Computer Science, Duthie Center for Engineering, University of Louisville, Louisville, KY, USA

**PTu_24** OPTICAL ACTIVITY MAPS OF SLOW-VARYING PROCESSES. AN ATTEMPT TO CHARACTERIZE THE DEGRADATION OF ARCHAEOLOGICAL SAMPLES
Edward Mosso, Fernando R. Humire
<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
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<tbody>
<tr>
<td><strong>Tu 25</strong></td>
<td>ANALYSIS AND ADJUST OF A FRINGE PATTERNS EXPONENTIAL MODEL TO REDUCE THE PHASE ERROR DUE TO NONLINEARITY OF THE PROJECTOR IN FRINGE PROJECTION PROFILOMETRY</td>
<td>Andrés L. González, Jaime E. Meneses Groupo de Óptica y Tratamiento de Señales, Universidad Industrial de Santander, Bucaramanga, Santander, Colombia</td>
</tr>
<tr>
<td><strong>Tu 26</strong></td>
<td>ANÁLISIS DE POSICIÓN Y PERFIL DE REJILLA EN SISTEMA DE PROYECCIÓN DE FRANJAS PARA RECONSTRUCCIÓN 3D UTILIZANDO DESPLAZAMIENTO DE FASE</td>
<td>Miguel S. Soriano-García, R. Sevilla-Escoboza, Miguel Mora-Gonzalez Departamento de Ciencias Exactas y Tecnología, Centro Universitario de los Lagos, Universidad de Guadalajara, Lagos de Moreno, Jal., México</td>
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**Integrated optics**

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<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tu 27</strong></td>
<td>GRAPHENE DEPOSITED ON LASER WRITTEN WAVEGUIDES FOR BIOLOGICAL SENSORS</td>
<td>E. Rodríguez-Sevilla(^1), G. V. Vázquez(^2), G. López-Farfán(^2), E. Morales-Narváez(^2), J. L. Pichardo(^2) (^1)Area de Química Analítica, Departamento de Química, Universidad Autónoma Metropolitana-Iztapalapa, Iztapalapa CDMX (^2)Centro de Investigaciones en Óptica, León, Gto. México</td>
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**Laser and laser optics**

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<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
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<tbody>
<tr>
<td><strong>Tu 29</strong></td>
<td>ACTIVE LONG-RANGE SURFACE PLASMON-POLARITON STRUCTURE</td>
<td>N. Cuando-Espitia(^1), I. Hernandez-Romano(^3), M. A. Fuentes-Fuentes(^3), J. R. Guzman-Sepulveda(^3), D. A. May-Arriola(^3), M. Torres-Cisneros(^3) (^1)CONACyT Catedra at Applied Physics group, DICIS, Univ. of Guanajuato, Salamanca, Gto, Mexico (^3)Centro de Investigaciones en Óptica, Ags., México</td>
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**Tu 30** TUNABLE MULTIWAVELENGTH ERBIUM-DOPED FIBER RING LASER SELECTIVE BY CURVATURE | E Delacruz-Mendoza\(^1\), Y Lopez-Dieguez\(^1\), L A Herrera-Piad\(^1\), J M Estudillo-Ayala\(^1\), D Jauregui-Vazquez\(^1\), J M Sierra-Hernandez\(^1\), J C Hernandez-Garcia\(^1\), R Rojas-Laguna\(^1\) \(^1\)Departamento de Electrónica, División de Ingenierías Campus Irapuato-Salamanca, Universidad de Guanajuato, Salamanca, Mexico \(^2\)Catedrático CONACYT, Consejo Nacional de Ciencia y Tecnología, Mexico |

**Tu 31** MULTIVARIABLE ANALYSIS ON THE TRANSMISSION OF A NOLM FOR ITS APPLICATION IN THE GENERATION OF COMPLEX DYNAMIC PULSES | L. M. Gonzalez-Vidal\(^1\), J. C. Hernandez-García\(^1\), J. D. Filoteo-Razo\(^1\), J. M. Estudillo-Ayala\(^1\), O. Pottiez\(^2\), J.P. Lautero-Cruz\(^2\), R. Rojas-Laguna\(^2\), J. R. Reyes-Ayona\(^2\) \(^1\)Departamento de Electrónica, División de Ingenierías CIS, Universidad de Guanajuato, Salamanca, Gto., Mexico \(^3\)Consejo Nacional de Ciencia y Tecnología, Mexico \(^3\)Centro de Investigaciones en Óptica, León, Gto., Mexico |

**Tu 32** THERMAL CONDUCTIVITY REDUCTION IN HIGHLY DOPED MESOPOROUS SILICON: THE EFFECT OF NANO-CRYSTAL FORMATION |
<table>
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<th>Title</th>
<th>Authors</th>
<th>Affiliations</th>
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<tbody>
<tr>
<td><strong>IMAGE CORRELATION USING FRACTIONAL HERMITE TRANSFORM</strong></td>
<td>Alfredo Castro-Valdez, Josué Álvarez-Borrego</td>
<td>Applied Physics Division, Optics Department, CICESE, Ensenada, Mexico</td>
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<tr>
<td><strong>NANOCRISTALES DE Si Y SIO2 POR ABLACIÓN LÁSER EN LÍQUIDO COMO MATERIAL LUMINISCENTE</strong></td>
<td>A. Nuñez-Cristobal, A. M. López-Rodríguez, R. Hinojosa-Nava, E.V. Mejía Uriarte</td>
<td>¹Posgrado de Ingeniería Eléctrica, UNAM, Ciudad de México, México; ²Laboratorio de Fotónica de Microondas, Departamento de Óptica, Microondas y Acústica, UNAM, Ciudad de México, México</td>
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<td><strong>BI@C NANOPOWDER SYNTHESIS BY LASER ABLATION OF SOLIDS IN LIQUIDS (LASL)</strong></td>
<td>Angela Marin-Gómez, Y. Esqueda-Barrón, L. F. Devia-Cruz, S. Camacho-López</td>
<td>¹Centro de Investigación Científica y Educación Superior de Ensenada – CICESE; ²CNyN – UNAM</td>
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<tr>
<td><strong>EFECTO EN LOS ESFUERZOS RESIDUALES OBTENIDOS A TRAVÉS DEL USO DE LA TECNICA LSP EN ALUMINIO 6061-T6 CON DIFERENTES CONDICIONES INICIALES DE PREPARACIÓN DE LA MUESTRA</strong></td>
<td>G. Gómez-Rosas, E. Castañeda, J. Marolleau, O. Blanco, C. Carlos-Rubio, J. G. Quiñones-Galván, M. A. Santana-Aranda</td>
<td>¹Departamento de Física, Centro Universitario de Ciencias Exactas e Ingenierías, Universidad de Guadalajara, Guadalajara, Jalisco México; ²Departamento de Ingeniería Mecánica, Centro Universitario de Ciencias Exactas e Ingenierías, Universidad de Guadalajara, Guadalajara, Jalisco México; ³Polytech Nantes, La Tardiere, Francia; ⁴Centro de Ingeniería y Desarrollo Industrial, Santiago de Querétaro, Querétaro, México</td>
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<tr>
<td><strong>PTu_40 EFECTO DEL CENTRADO DE RETINOGRAFÍAS EN LOS INDICES DE TORTUOSIDAD DE LOS VASOS SANGUÍNEOS</strong></td>
<td>N. Ramírez Cano, M. Ralló, M. S. Millán</td>
<td>Departamento de Electrónica, Universidad de Guadalajara, Guadalajara, Jalisco, Mexico</td>
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<tr>
<td><strong>Microscopy</strong></td>
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<tr>
<td><strong>PTu_41 THE LIGHT SHEET FLUORESCENCE MICROSCOPE AT CICESE: CURRENT STUDIES</strong></td>
<td>Jacob Licea Rodríguez, Yryx Yanet Luna Palacios, Israel Rocha Mendoza</td>
<td>Instituto Nacional de Astrofísica, Óptica y Electrónica, Sta. Ma. Tonantzintla, Pue., México</td>
</tr>
<tr>
<td><strong>Nano photonics and metamaterials</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PTu_42 LOW-LOSS POROUS COMPONENTS AT TERAHERTZ FREQUENCIES: LENS AND VORTEX GENERATOR</strong></td>
<td>Hichem Guerboukha, Kathirvel Nallappan, Yang Cao, Mohamed Seghili, Jose Azana, Maksim Skorobogatyyv</td>
<td>Centro de Investigaciones en Óptica, León, Gto. 37150, México</td>
</tr>
<tr>
<td><strong>PTu_43 ANÁLISIS DE LA EMISIÓN DEL $\text{(Sr}_4\text{Al}<em>14\text{O}</em>{25}x%\text{Cr}$ (X=1,2,3,4 y 5 wt%) y SrAl2O4:1%Eu, 1%Er, 2%Dy PARA APLICACIONES DE MARCAJE BIOLÓGICO</strong></td>
<td>M. Guzman-Rocha, E. Montes, L. A. Diaz-Torres</td>
<td>Centro de Investigaciones en Óptica, León, Gto. 37150, México</td>
</tr>
<tr>
<td><strong>PTu_44 CASIMIR FORCE BETWEEN LARGE PARALLEL DIELECTRICS MEDIATED BY A COATING OF DOPED TOPOLOGICAL INSULATOR</strong></td>
<td>J. C. Granada E., J. L. Huila Portillo, D. F. Rojas Vallecilla</td>
<td>Universidad de los Andes, Cali, Colombia</td>
</tr>
<tr>
<td><strong>PTu_45 ORGANIZACIÓN DE NANOMATERIALES MEDIANTE INSCRIPCIÓN DE REDES DE RELIEVE EN AZOPOLÍMEROS</strong></td>
<td>R. Falcione, M. G. Capeluto, N. Pellegrí, M. V. Roldán, S. Goyanes, S. Ledesma</td>
<td>Laboratorio de Procesado de Imágenes, Departamento de Física, Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires, IFIBA, CONICET, Pab I Ciudad Universitaria, Buenos Aires, Argentina</td>
</tr>
<tr>
<td><strong>PTu_46 AMPLIFICACIÓN DE LOS CAMPOS ELECTROMAGNÉTICOS BAJO CONDICIONES DE ONDA ESTACIONARIA DE PLASMONES DE SUPERFICIE</strong></td>
<td>Jorge A. Gaspar Armenta, J. M. Gutierrez Villarreal</td>
<td>Departamento de Investigación en Física, Universidad de Sonora, Hermosillo, Son., México</td>
</tr>
</tbody>
</table>
Nonlinear optics

**PTu_47** VALIDACIÓN DEL MODELO DE ENLACE DE HIPERPOLARIZABILIDAD SIMPLIFICADO EN LA GENERACIÓN DE SEGUNDO ARMÓNICO PARA CRISTALES TIPO WURTZITA
A. Alejo-Molina\(^1\), K. Hingerl\(^2\)
\(^1\)Centro de Investigación en Ingeniería y Ciencias Aplicadas, Universidad Autónoma del Estado de Morelos, Cuernavaca, México
\(^2\)Center for Surface- and Nanoanalytics, Johannes Kepler University, Altenbergerstr, Linz, Austria

**PTu_48** GENERAL STUDY OF THE CLASSICAL AND NONCLASSICAL CONTRIBUTIONS OF THE TWO PHOTON ABSORPTION PROCESS IN ORGANIC MOLECULES
Freiman E. Triana, Roberto Ramirez, Gabriel Ramos-Ortiz
Centro de Investigaciones en Óptica A.C, León, Guanajuato, México

**PTu_49** ASYMMETRIC VORTEX SOLITONS IN NONLOCAL MEDIA
I. Arce\(^1\), R. Gomez-Escoto\(^1\), S. Lopez-Aguayo\(^2\)
\(^1\)Escuela de Física, Universidad de El Salvador, San Salvador, El Salvador
\(^2\)Escuela de Ingeniería y Ciencias, Tecnológico de Monterrey, Monterrey, N. L., México

**PTu_50** EXPERIMENTAL GENERATION OF ONE AND TWO SPATIAL SOLITONS USING PHASE JUMP
Marcela Maribel Méndez Otero\(^1\), Antonio Morales Hernández\(^1\), Emma Vianey García Ramírez\(^1\), Maximino Luis Arroyo Carrasco\(^1\), Marcelo David Iturbe Castillo\(^2\)
\(^1\)Facultad de Ciencias Físico Matemáticas, Benemérita Universidad Autónoma de Puebla, Ciudad Universitaria, Puebla, Puebla, México
\(^2\)Instituto Nacional de Astrofísica Óptica y Electrónica, Santa María Tonantzintla, Puebla, México

**PTu_51** THIRD ORDER NONLINEAR PROPERTIES OF GOLD NANORODS
García Ramírez E. V.\(^1,2\), Arroyo Carrasco M. L.\(^1\), Méndez Otero M. M.\(^2\), Baldovino Pantaleón O.\(^3\), Méndez Rodríguez J.J.\(^2\)
\(^1\)Catedrático CONACYT, Consejo Nacional de Ciencia y Tecnología, México City, México
\(^2\)Facultad de Ciencias Físico-Matemáticas, Benemérita Universidad Autónoma de Puebla, Puebla, México
\(^3\)Universidad Autónoma de Tamaulipas, Unidad Académica Multidisciplinaria Reynosa-Rhode, Reynosa, Mexico

Novel optical materials and 3D printing

**PTu_52** CONSTRUCTION AND CHARACTERIZATION OF AN INTEGRATING SPHERE IN A 3D PRINTER WITH PLA
May Yah Pedro\(^1\), Mario Pérez Cortés\(^1\), Jorge Castro Ramos\(^2\), Jorge Lugo Jiménez\(^1\), Mauricio Ortiz Gutiérrez\(^3\)
\(^1\)Universidad Autónoma de Yucatán, Campus de ciencias e ingenierías, Mérida, Yucatán
\(^2\)Instituto Nacional de Astrofísica, Óptica y Electrónica, Tonantzintla, Puebla, Mex.

Optical data storage

**PTu_53** DIFFRACTION EFFICIENCY IN A PHOTOREFRACTIVE MATERIAL WHEN THE GRATINGS VECTOR K MAKES AN ANGLE WITH THE EXTERNAL ELECTRIC FIELD
Braiyans Barrera\(^1\), Astrid Lorena Villamizar Amado\(^2\), Néstor Alonso Arias Hernández\(^1\), MyrianTeibaldi\(^1\), Martha Lucía Molina Prado\(^1\)
\(^1\)Grupo de Óptica Moderna, Departamento de Física y Geología, Universidad de Pamplona, Pamplona, Colombia
\(^2\)Centro de Investigaciones Ópticas (CONICET La Plata, CIC) and Universidad Nacional de La Plata, Argentina.
\(^3\)Centro de Investigaciones Ópticas (CONICET La Plata, CIC) and UIDET OPTIMO, Facultad Ingeniería, Universidad Nacional de La Plata, Argentina.
### Optical devices

**PTu_54** OPTICAL SENSING OF THE KINETICS OF HEMOLYSIS IN ERYTHROCYTES DILUTIONS  
Roberto Márquez-Islas\(^1\), Argelia Pérez-Pacheco\(^1\), Laura Beatriz Salazar-Nieva\(^2\), Anays Acevedo Barrera\(^3\), Emma Mendoza-García\(^3\), Augusto García Valenzuela\(^3\)  
\(^1\)Unidad de Investigación y Desarrollo Tecnológico, Hospital General de México Dr. Eduardo Liceaga, México  
\(^2\)Facultad de Ciencias, Universidad Nacional Autónoma de México, Ciudad de México, México.  
\(^3\)Instituto de Ciencias Aplicadas y Tecnología, Universidad Nacional Autónoma de México, Ciudad de México, México.  

### Optical micro and nano manipulation including optofluidics and microfluidics

**PTu_55** 3D MANIPULATION OF OPTOTHERMALLY-INDUCED MICROBUBBLES BY A NANOSECOND PULSED LASER  
J. A. Sarabia-Alonso\(^1,2\), J. G. Ortega-Mendoza\(^2\), J. C. Ramírez-San-Juan\(^1\), J. Ramírez-Ramírez\(^1\), R. Ramos-García\(^1\)  
\(^1\)Departamento de Óptica, Instituto Nacional de Astrofísica, Óptica y Electrónica, Puebla, México  
\(^2\)División de Ingenierías, Universidad Politécnica de Tulancingo, Ingenierías 100, Tulancingo, Hidalgo, México  

**PTu_56** Formación de fases cristalinas y par electrón-hueco en semiconductores usando radiación solar  
N. Bautista-Elívar\(^1\), Jaime Barrera Rodríguez\(^2\), Martha Angélica Calva Ramirez\(^2\)  
\(^1\)Departamento de Ingeniería Industrial, Instituto Tecnológico de Pachuca, Pachuca, Hidalgo, México  
\(^2\)Departamento de Química y bioquímica, Instituto Tecnológico de Pachuca, Pachuca, Hidalgo, México  

**PTu_57** ANALYSIS OF THE TRANSVERSE FORCE IN THE RAYLEIGH AND MIE APPROXIMATIONS FOR A CAPTURE BEAM \(\text{TEM}_{00}\) AND \(\text{TEM}_{01}^*\) IN AN OPTICAL TWEEZER  
Darby Páez Amaya\(^1\), Frederic Català Castro\(^2\), Martha Lucía Molina Prado\(^1\), Mario Montes-Usategui\(^2\), Néstor Alonso Arias Hernández\(^2\)  
\(^1\)Grupo de Óptica Moderna, Departamento de Física y Geología, Universidad de Pamplona, Pamplona, Colombia.  
\(^2\)Optical Trapping Lab – Grup de Biofotònica, Departament de Física Aplicada, Universitat de Barcelona  

### Spectroscopy

**PTu_58** ELECTROQUÍMICA DE LAS NANOPARTÍCULAS DE PLATA BAJO EL RÉGIMEN DE BAJA CORRIENTE  
M. Navarrete\(^1\), R Mayen-Mondragon\(^2\), R. Sato-Berrú\(^3\), E. V. Mejía-Uriarte\(^3\), D. Aguirre-Aguirre\(^3\), J. Genescá\(^2\)  
\(^1\)Instituto de Ingeniería, 2Facultad de Química, 3Instituto de Ciencias Aplicadas y Tecnología, Polo Universitario de Tecnología Avanzada, PUNTA-UNAM, PIIT-Monterrey, Apodaca, N. L., México  
\(^3\)Instituto de Ciencias Aplicadas y Tecnología, Universidad Nacional Autónoma de México, Circuito Exterior S/N, Ciudad Universitaria, CDMX, México.  

**PTu_59** DETERMINACION Y CUANTIFICACIÓN DE METALES PESADOS EN MATRIZ LÁCTEA UTILIZANDO TECNICAS ESPECTROSCÓPICAS Y QUIMIOMETRICAS  
Alfredo C. Benítez-Rojas\(^1,2\), Raúl J. Delgado-Macuil\(^1\), Abdu Orduña Díaz\(^1\)  
\(^1\)Departamento de Nanobiotecnología e Instrumentación, Centro de Investigación en Biotecnología Aplicada, Instituto Politécnico Nacional, Tlaxcala, MEXICO  
\(^2\)Departamento de Ciencias Biológicas, Universidad Popular Autónoma del Estado de Puebla, Pue., México  

**PTu_60** DETERMINACIÓN DE METALES PESADOS EN PRODUCTOS MARINOS POR ESPECTROSCOPIA DE INFRARROJO  
Raul J. Delgado Macuil, Abdu Orduña Díaz, Marlon Rojas Lopez, Valentín López Gayou, Orlando Zaca Moran
Fe de erratas:

Instrumentation, measurement, and metrology

PTu_64 CÁLCULO DE ABERRACIONES EN LA PRIMERA SUPERFICIE DE LA CÓRNEA UTILIZANDO IMÁGENES DE PURKINJE Y LA PRUEBA DE HARTMANN
Uriel Calderón Uribe, Geovanni Hernández Gómez
Departamento de Estudios Multidisciplinarios, Universidad de Guanajuato

PTu_65 FIBER-OPTIC FABRY-PEROT INTERFEROMETERS FOR HIGH-SENSITIVITY MEASUREMENTS
Carmen E. Domínguez-Flores, Osvaldo Rodríguez-Quiroz, David Monzón-Hernández
Centro de Investigaciones en Óptica, A. C. León, Guanajuato, México
### Optical design and fabrication

**PWe_1** GENERAL FORMULA TO DESIGN LENS FREE OF SPHERICAL ABERRATION: THE ANALYTICAL SOLUTION OF THE WASSERMANN-WOLF PROBLEM  
Rafael G. González-Acuña, Julio C. Gutiérrez-Vega  
Photonics and Mathematical Optics Group, Tecnológico de Monterrey, Monterrey, México

**PWe_2** CÁLCULO EXACTO DE LAS CONSTANTES DE CONICIDAD Y BAFLES DE UN TELESCOPIO APLANÁTICO DE DOS ESPEJOS  
Andrea Paola Rodríguez Cortés, Alberto Cordero Dávila, Sergio Vázquez y Montiel  
1Facultad de Ciencias Físico Matemáticas, Benemérita Universidad Autónoma de Puebla, Puebla, México  
2Universidad Interserrana del Estado de Puebla-Ahuacatlán, Ahuacatlán, Puebla, México

**PWe_3** DESIGN OF NULL-SCREENS FOR AN ARRAY OF FOUR OLED FOR A VERY DENSE DYNAMIC SHIFT OF SPOTS FOR THE EVALUATION OF ASPHERIC SURFACES  
Carlos Enrique Valderrama-Juárez, Rufino Díaz-Uribe  
Instituto de Ciencias Aplicadas y Tecnología, Universidad Nacional Autónoma de México, Mexico City, México

**PWe_4** NUMERICAL VALIDATION OF EXACT EQUATIONS TO MEASURE HIGHLY ABERRATED WAVEFRONTS  
Oliver Huerta-Carranza, Rufino Díaz-Uribe, Maximino Avendano-Alejo  
Instituto de Ciencias Aplicadas y Tecnología, Universidad Nacional Autónoma de México, México

**PWe_5** EVALUACIÓN DE UNA LENTE RÁPIDA DE FRENSÉL CON PANTALLAS NULAS TIPO RONCHI  
Osvaldo Ponce-Hernandez, Maximino Avendaño-Alejo  
Instituto de Ciencias Aplicadas y Tecnología, Universidad Nacional Autónoma de México, D.F., México

**PWe_6** COMPARISON OF DIFFERENT APPROXIMATIONS OF THE WAVEFRONT TO EVALUATE FAST SIMPLE LENSES  
I. Velazquez-Gómez, A. R. Sánchez-Montes and M. Avendaño-Alejo  
Instituto de Ciencias Aplicadas y Tecnología, Universidad Nacional Autónoma de México, D. F., México

### Optics and photonics in the industry

**PWe_7** CARACTERÍSTICAS DE TRANSMISIÓN Y REFLEXIÓN DE CRISTALES METÁLICOS FOTÓNICOS FINITOS  
J. Sumaya-Martínez, P. D. Rosendo-Francisco  
Departamento de Física, Facultad de Ciencias, Universidad Autónoma del Estado de México, Toluca, Estado de México

**PWe_8** ENGRAVING AND LASER CUTTING CONTROL IN EVA POLYMERS USING AN XY MOTORIZED PLATFORM ECONOMIC SYSTEM  
Miroslava Cano Lara, Quetzalcóatl Enrique Saavedra Arroyo, Higinio Juárez Rios, Santiago Camacho López  
1Dep. de Mecatrónica, ITESI-TecNM, Irapuato, Gto., México  
2Dep. de Materiales, ITESI-TecNM, Irapuato, Gto., México  
3Dep. de Formación Genéricas, UPIIG-IPN, Silao, Gto., México  
4Dep. de Óptica, Física Aplicada-CICESE, Ensenada, B.C., México

**PWe_9** DESARROLLO DE ALGORITMOS PREDICTIVOS PARA LA MEDICIÓN DE GRADOS BRIX EN EL MELÓN MEDIANTE ESPECTROSCOPIA NIR  
A. Solis-Ventura, R. Cabrera-Alonso, Y. Carmona-Montana, C. Espinosa-Cortez  
SolexVintel S.A. de C.V., Ciudad de México, México
<table>
<thead>
<tr>
<th>PWe_10</th>
<th>DETERMINACIÓN DE RUGOSIDAD EN VÁLVULAS DE ALUMINIO MEDIANTE TÉCNICAS DE SPECKLE</th>
</tr>
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<tbody>
<tr>
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<td>Edgardo Enrique Brizuela¹, Fernando Perez Quintián²,²</td>
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<td>¹Facultad de Ingeniería, Universidad Nacional del Comahue, Buenos Aires, Neuquén Argentina</td>
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<td>²IITCI, CONICET, Buenos Aires, Neuquén Argentina</td>
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</table>

**Optics at surfaces**

<table>
<thead>
<tr>
<th>PWe_11</th>
<th>TRANSPARENT CONDUCTING OXIDES IN PHOTOVOLTAICS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>J. O. Carneiro, Manuel F. M. Costa, V. Teixeira</td>
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<td>Centro de Física, Universidad do Minho, Portugal</td>
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</table>

<table>
<thead>
<tr>
<th>PWe_12</th>
<th>ALGORITMO COMPUTACIONAL PARA ANALIZAR INTERFEROGRAMAS CON DEFORMACIONES LOCALES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Benito Canales Pacheco¹, Esteban Rueda Soriano², Pedro Cebrian Xochihuila³, Noel Ivan Toto Arellano⁴, Luis Alberto Ruíz Aguilar⁵, Luz Angelina Albores Villatoro⁶</td>
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<td>¹Cuerpo Académico de Tecnología de Información y Telecomunicaciones, Universidad Tecnológica de la Sierra Hidalgoense, Hidalgo, México</td>
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<td></td>
<td>²Área Académica de Computación, Universidad Autónoma del Estado de Hidalgo, Pachuca, Hidalgo, México</td>
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<td>³Instituto de Ciencias Aplicadas y Tecnología, Universidad Nacional Autónoma de México, Coyoacán, CDMX, México</td>
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<td>⁴Cuerpo Académico de Ingeniería Ciencias e Innovación Tecnológica, Universidad Tecnológica de Tulancingo, Hidalgo, México</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>PWe_13</th>
<th>HACES GAUSSIANOS: UN TRATAMIENTO SENCILLO DE LOS EFECTOS NO GEOMÉTRICOS GAUSSIAN BEAMS: A SIMPLER APPROACH FOR NON-GEOMETRIC EFFECTS</th>
</tr>
</thead>
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<tr>
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<td>Ligia Ciocci Brazzano¹,², Eduardo Omar Acosta¹, Liliana Inés Perez¹,³</td>
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<td>¹Grupo de Láser, Óptica de Materiales y Aplicaciones Electromagnéticas, Departamento de Física, Facultad de Ingeniería - Universidad de Buenos Aires, Buenos Aires, Argentina</td>
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<td>²Consejo Nacional de Investigaciones Científicas y Técnicas, Buenos Aires, Argentina</td>
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<td>³Universidad de Buenos Aires, Consejo Nacional de Investigaciones Científicas y Técnicas, Instituto de Tecnologías y Ciencias de la Ingeniería &quot;Hilario Fernández Long&quot;, Facultad de Ingeniería, Buenos Aires, Argentina</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>PWe_14</th>
<th>OPTICAL CHARACTERIZATION OF ASPHALT MIXTURES IMPROVED WITH PHOTOCALYTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I. Rocha Segundo¹, E. Freitas¹, J. O. Carneiro², Manuel F. M. Costa²</td>
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<td>Civil Engineering Department¹, Centro de Física², Universidade do Minho, Portugal</td>
</tr>
</tbody>
</table>

**Optics in computing**

<table>
<thead>
<tr>
<th>PWe_15</th>
<th>DESCRIPTION OF A JOINT TRANSFORM CORRELATOR-BASED ENCRYPTION SYSTEM USING NEW IMAGE PROCESSING OPERATORS DEFINED IN THE GYRATOR DOMAIN</th>
</tr>
</thead>
<tbody>
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</tr>
</tbody>
</table>

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<tr>
<th>PWe_16</th>
<th>INTEGRATION OF THE PHOTON-COUNTING TECHNIQUE AND A JOINT TRANSFORM CORRELATOR TO ENCRYPT AND AUTHENTICATE IMAGES</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Juan M. Vilardy¹, María S. Millán¹, Elisabet Pérez-Cabré¹</td>
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<td>¹Grupo GIFES, Faculty of Basic and Applied Sciences, Universidad de La Guajira, Riohacha (La Guajira), Colombia</td>
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<td>²Applied Optics and Image Processing Group, Universitat Politècnica de Catalunya Barcelona Tech, Terrassa, Spain</td>
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Barcelona, Spain

Optoelectronics, Detectors and Sources

**PWe_17** MEMBRANAS FOTOLUMINISCENTES ELABORADAS POR ELECTROHILADO PARA DETECCIÓN UVA
M. Navarrete¹, J. Gutiérrez², R. Mayén-Mondragón³, J. Naude³
¹Lab. Pruebas No Destructivas, Instituto de Ingeniería, Polo Universitario de Tecnología Avanzada, PUNTA-UNAM, Apodaca, N. L., México
Grupo de electroquímica y corrosión computacional, Polo Universitario de Tecnología Avanzada, PUNTA-UNAM, Apodaca, N. L., México
²Facultad de Ingeniería, Universidad Nacional Autónoma de México, Ciudad Universitaria, CDMX, México.

**PWe_18** DISEÑO DE UN SENSOR OPTOELECTRÓNICO DE SF6 PARA APLICACIONES EN SUBESTACIONES ELÉCTRICAS
E. Gallegos-Arellano¹, J. M. Sierra-Hernández², M. I. Estrada-Pintor³, D. Jauregui-Vázquez², J. Manjarrez-Mendoza³, H. Ramírez-Gasca⁴, J. R. Reyes-Ayona⁵
¹Departamento de Mecatrónica, Universidad Tecnológica de Salamanca, Salamanca Gto., México.
²Departamento de Ingeniería Electrónica, División de Ingenierías, Campus Irapuato-Salamanca, Universidad de Guanajuato, Salamanca, Gto., C.P., México

**PWe_19** SISTEMA DE AUTOCONFIGURACIÓN PARA UN CIRCUITO INTEGRADO FOTODETECTOR PROGRAMABLE
L. Mombello¹, N. Calarco¹,², F. Perez Quintián¹,³
¹Laboratorio de Ingeniería Óptica, Universidad Nacional del Comahue, Buenos Aires, Neuquén Capital, Argentina
²Facultad de Ingeniería, Universidad de Buenos Aires, Buenos Aires, Argentina
³Comisión Nacional de Investigaciones Científicas y Técnicas, Argentina

**PWe_20** PROPIEDADES ÓPTICAS Y ELECTRÓNICAS DE NANOTUBOS DE FLUOROGRAFENO
Jorge Enrique Mejía Sánchez, Viviana Matilde Mesa Cornejo, María del Rayo Ángeles Aparicio Fernández
Centro Universitario de Los Lagos, Universidad de Guadalajara, Lagos de Moreno, México

**PWe_21** LED IRRADIATION EQUATION AT NEAR ZONE
Ivan Moreno¹,²
¹Unidad Académica de Física, Universidad Autónoma de Zacatecas, Zacatecas, México
²Unidad Académica de Ciencia y Tecnología de la Luz y la Materia, Universidad Autónoma de Zacatecas, Zacatecas, México

Organic and hybrid optoelectronics

**PWe_22** GRAPHENE DERIVATIVES FOR THE ASSEMBLY OF ORGANIC SOLAR CELLS
Yaily Fernández-Artega¹, Daniel Romero-Borja¹,², Juan Nicasio-Collazo¹, José Luis Maldonado¹
¹Research Group of Optical Properties of Materials, Centro de Investigaciones en Óptica, León, Gto., México
²Current postdoctoral fellow at Center for Polymers and Organic Solids, Department of Chemistry and Biochemistry, University of California Santa Barbara, CA, USA

**PWe_23** WHITE OLEDs BASED IN A SIMPLE ARCHITECTURE WITH INTERFACE EXCIPLEX
Wilson Bernal¹, Michelle Sánchez², Alejandra Mercado³, Antonio Meneses¹, José-Luis Maldonado¹, Alfonso Lastras⁴, Oracio Barbosa García¹
¹Research Group of Optical Properties of Materials, Centro de Investigaciones en Óptica, León, Gto. México
²División de Ingenierías de la Universidad de Guanajuato, campus Irapuato Salamanca DICIS, Valle de Santiago, Gto. México
³Tecnológico de Estudios Superiores de Jocotitlán, Toluca-Atlacomulco, Jocotitlán, Edo. Mex, México
PWe_24 INTERFACE STUDY OF THE ELECTRON TRANSPORT LAYER AND COUNTER ELECTRODE IN AN INVERTED PEROVSKITE SOLAR CELL
Diana Marcela Montoya, E. Pérez-Gutiérrez, Wilson Bernal, M.A. Meneses-Nava, J. L. Maldonado, A. Lastras-Martínez, O. Barbosa-García
1Research Group of Optical Properties of Materials (GPOM), Centro de Investigaciones en Óptica A. C., León Gto., México
2Unidad de Polímeros y Electrónica Orgánica, Instituto de Ciencias, Benemérita Universidad Autónoma de Puebla, Puebla, México
3Instituto de Investigación en Comunicación Óptica de la Universidad Autónoma de San Luis Potosí, San Luis Potosí, S. L. P. México

PHOTOACOUSTIC AND OPTICAL CHARACTERIZATION OF PEROVSKITES IN THE VISIBLE SPECTRUM
Jorge Andrés Ramírez Rincón, Alejandra María Castro Chong, Juan José Becerril González, Diecenia Peralta-Domínguez, Mareny Guadalupe Fernadez-olaya, Gerko Oskam, Juan José Alvarado Gil
Departamento de Física Aplicada, Cinvestav-Unidad Mérida, Mérida, Yucatán, México

PRE-HEALING PARA RECUPERACIÓN DE FASE
Teresa Cerda, Ulises Ruiz, Víctor Arrizon
Instituto Nacional de Astrofísica, Óptica y Electrónica, Santa María Tonanzintla, Puebla, México

GENERACIÓN DE REVIVIMIENTOS ÓPTICOS CON DISTRIBUCIÓN DE AMPLITUDES ALEATORIAS
I. Cazares-Aguilar, G. Martinez-Niconoff
Instituto Nacional de Astrofísica, Óptica y Electrónica, Dpto. De Óptica, Puebla, México

ESPECTRO DE TRANSMITANCIA EN UN CRISTAL FOTÓNICO 1D CUASIPERIÓDICO SUPERCONDUCTOR-SEMICONDUCTOR
Francis Segovia-Chaves, Herbert Vinck-Posada
1Grupo de Superconductividad y Nanotecnología, Departamento de Física, Universidad Nacional de Colombia, Bogotá, Colombia
2Grupo de Física Teórica, Programa de Física, Universidad Surcolombiana, Neiva-Huila, Colombia

LIGHT IN A SPACE WITH TORSION – MODELED BY TWO TWISTED SLITS
E. Frins, B. Hils, D. Dietrich, W. Dultz, H. Schmitzer
1Departamento de Física, Universidad de la República, Montevideo, Uruguay
2Fakultät für Physik, J. W. v. Goethe Universität, Frankfurt a.M., Germany
3Physics Department, Xavier University, Cincinnati, USA

EVOLUCIÓN NO-LINEAL DE CAMPOS DE SPECKLE
E. Alvarado-Letechipia, G. Martinez-Niconoff
Instituto Nacional de Astrofísica, Óptica y Electrónica, Dpto. de Óptica, Puebla, México

SPECTRAL CORRELATIONS OF PHOTON-PAIRS GENERATED IN LIQUID-FILLED PHOTONIC CRYSTAL

Physical optics

Quantum optics
FIBERS
L. Velázquez-Ibarra1, A. Díez2, E. Silvestre3, M. V. Andrés2, J. L. Lucio1
1Departamento de Física, Universidad de Guanajuato, León, México
2Departamento de Física Aplicada y Electromagnetismo-ICMUV, Universidad de Valencia, Burjassot, España
3Departamento de Óptica-ICMUV, Universidad de Valencia, Burjassot, España

PWe_33 PULSE PROPAGATION IN A MEDIUM WITH 2 TWO-LEVEL ATOMS
J. C. García-Melgarø1, N. Lozano-Crisóstomo1, A. G. Esmeralda1, J. G. Cordero de los Santos1, J. Sánchez-Mondragón2
1Facultad de Ingeniería Mecánica y Eléctrica, Universidad Autónoma de Coahuila, Torreón, Coahuila, México
2Departamento de Óptica, Instituto Nacional de Astrofísica, Óptica y Electrónica, Puebla, México

PWe_34 KOLMOGOROV COMPLEXITY OF BELL’S EXPERIMENT TIME SERIES
Marcelo Kovalsky, Alejandro Hnilo and Mónica Agüero
Centro de Investigaciones en Láseres y Aplicaciones, UNIDEF (MINDEF-CONICET), Buenos Aires, Argentina

Remote sensing and sensors

PWe_38 DETECCIÓN DE HIELO FRAZIL-PANCAKE EN IMÁGENES SAR
E. S. Mendoza1, G. González1, B. Escalante-Ramírez2, F. Parmiggiani2, J. Olveres1, E. Carbajal-Degante1
1Facultad de Ingeniería, Universidad Nacional Autónoma de México, Cd. de México, México
2Departamento de Satellite Meteorology, ISAC-CNR, Bologna, Italy

Spectroscopy

PWe_39 WATER SURFACE DELINEATION FROM SENTINEL -1 DATA: A TEXTURAL APPROACH BASED ON GLCM
Alejandra A. López-Caloca 1,2, Boris Escalante-Ramírez2, Pilar Henao1
1Centro de Investigación en Ciencias de Información Geoespacial, Sede CdMx, Ciudad de México, México
2Facultad de Ingeniería, Universidad Nacional Autónoma de México, Cd. de México, México

PWe_40 IDENTIFICATION OF FLAVONOIDS USING SURFACE ENHANCED RAMAN SPECTROSCOPY
Catalina Reyes, Francisca Fuenzalida, Elard Dauelsberg, Alvaro Aliaga
Departamento de Química, Universidad de Chile, Santiago, Chile

**PWe.41** EFECTO DEL CAMPO MAGNÉTICO EN EL TAMAÑO Y FORMA DE NANOPARTÍCULAS DE ORO OBTENIDAS POR ABLACIÓN LÁSER

Henry F. Agreda-Delgado, Osvaldo Alvarado-Paiva, M. A. A. Valverde-Alva, W. Aldama-Reyna
1Laboratorio de Óptica y Láseres, Departamento Académico de Física, Universidad Nacional de Trujillo, Trujillo-Perú
2Departamento Académico de Física, Facultad de Ciencias, Universidad Nacional de Piura, Piura-Perú

**PWe.42** ESTUDIO RAMAN Y APLICACIÓN DE ANÁLISIS DE COMPONENTES PRINCIPALES EN LA TRANSICIÓN DE FASE DEL AMONIO-BORANO

R. Hinojosa N., E. V. Mejía-Uriarte, R. Y. Sato-Berrú
1Programa de Maestría y Doctorado en Ingeniería, Universidad Nacional Autónoma de México, CDMX, México
2Instituto de Ciencias Aplicadas y Tecnología, Universidad Nacional Autónoma de México, Ciudad Universitaria, CDMX, México
3Facultad de Ciencias, Universidad Nacional Autónoma de México, Ciudad Universitaria, D.F. México

**PWe.43** Análisis Elemental de Cerámicas Teotihuacanas por Medio de Espectroscopia de Rompimiento Inducido por Láser (LIBS)
Mitzi J. Amador Mejía, Hugo Sobral
Instituto de Ciencias Aplicadas y Desarrollo Tecnológico, Universidad Nacional Autónoma de México, Ciudad de México, México

**PWe.44** ANÁLISIS DE LA RESPUESTA FOTOLUMINISCENTE DE DIFERENTES CLASES COMERCIALES DE ARROZ

1Programa de Física, Universidad del Quindío, Armenia, Colombia
2Grupo de Óptica y Tratamiento de Señales, Escuela de Física, Universidad Industrial de Santander, Colombia

**PWe.45** THE INFLUENCE OF DIFFERENT LIGHT WAVELENGTHS ON SHAPE CONTROL OF SILVER NANOPARTICLES

A. M. López-Rodríguez, R. Hinojosa-Nava, L. J. C. Vilchis-Martínez, B.A. Núñez-Cristobal, R. Y. Sato-Berrú, E.V. Mejía-Uriarte
1Posgrado en Ingeniería Eléctrica-Sistemas Electrónicos, Universidad Nacional Autónoma de México, México
2Instituto de Ciencias Aplicadas y Tecnología, Universidad Nacional Autónoma de México, México

**Thin films**

**PWe.46** MONITOR AND CONTROL OF REFRACTIVE INDEX WITH OPTICAL EMISSION SPECTROSCOPY IN SPUTTERING PROCESS

Noemi Abundiz Cisneros, Roberto Sangines de Castro, Juan Aguilá, Ramón Rodriguez, Miriam Peralta, Julio Cruz, Roberto Machorro Mejía
1CONACyT, Centro de Nanociencias y Nanotecnología UNAM, Ensenada, Baja California
2Maestría en Nanotecnología, Centro de Investigación Científica y de Educación Superior de Ensenada, Ensenada, Baja California
3Centro de Nanociencias y Nanotecnología UNAM, Ensenada, Baja California

**PWe.47** INDIRECT CHARACTERIZATION OF TRANSMITTANCE OF THIN FILMS THOUGH ORBITAL ANGULAR MOMENTUM AND CONVOLUTIONAL NEURAL NETWORKS

Joseph Vergel, Zayda Reyes, Leonardo Pachón, Yezid Torres
1Grupo de Física Teórica y Matemática Aplicada, Instituto de Física, Universidad de Antioquia, Medellín, Colombia
2Grupo de Óptica y Tratamiento de Señales, Escuela de Física, Universidad Industrial de Santander,
GOLD NANOLAYER THICKNESS DETERMINATION BY OPTICAL REFLECTION MEASUREMENTS: A FAST AND PRECISE OPTICAL TOOL

V. Solis-Tinoco1,2, Anays Acevedo-Barrera1, Luis. F. Olguin2 and A. Garcia-Valenzuela*,1
1Instituto de Ciencias Aplicadas y Tecnología, Universidad Nacional Autónoma de México,
2Laboratorio de Biofisicoquímica, Facultad de Química, Universidad Nacional Autónoma de México, Ciudad de México, México

THz, microwaves and millimeter-waves photonics

ESTRUCTURACIÓN DE TERAHERTZ EN ONDA CONTINUA SOBRE VAPOR DE AGUA MEDIANTE LA IMPLEMENTACIÓN DE UN SISTEMA MULTIHETERODINO

José Carlos Flores Servin1, Abdiel Ulises Beltrán Aranda1, Sergio Romero-Servín1, David F. Plusquellic2
1División de Ciencias e Ingenierías, Universidad de Guanajuato, León, Guanajuato México
2Physical Measurements Laboratory, National Institute of Standards and Technology, Boulder Colorado, USA

MEDICIÓN EN EL RANGO DE LAS MICROONDAS DEL PORCENTAJE DE HUMEDAD EN PRODUCTOS ORGÁNICOS DE CONSUMO HUMANO

Andrés Toledo López1, José Roberto Reyes Ayona2, Eloísa Gallegos Arellano3
1Departamento de Mecatrónica, DICIS, Universidad de Guanajuato, Salamanca, México
2Departamento de Electrónica, DICIS, Universidad de Guanajuato, Salamanca, México
3Facultad de Mecatrónica, Universidad Tecnológica de Salamanca, Salamanca, México

DEVELOPMENT OF PHOTOCONDUCTIVE ANTENNAS ON SI-GaAs FOR APPLICATIONS IN THE TERAHERTZ SPECTRUM BAND

Eric Cervantes García, Gaudencio Paz Martínez, Carlos Gerardo Treviño Palacios, Leopoldo Altamirano Robles, Oscar Aponte Bravo, Ignacio Juárez Ramírez
Instituto Nacional de Astrofísica Óptica y Electrónica, Puebla, México

Ultrafast optics

ULTRASHORT PULSE CHARACTERIZATION WITH THE SPIDER TECHNIQUE

Ramiro Contreras Martinez, Jesús Garduño Mejía, Martha Rosete Aguilar, Carlos J. Román Moreno
Instituto de Ciencias Aplicadas y Tecnología, UNAM, Cd. Universitaria, México

RECUPERACIÓN DE LA FASE ESPECTRAL DE PULSOS LÁSER DE FEMTOSEGUNDO APLICANDO LA TRANSFORMADA WAVELET

Adrián Aupart-Acosta1, Lucía Medina-Gómez2, Jesús Garduño-Mejía3, Naser Quresi1, Ramiro Contreras-Martínez1, Martha Rosete-Aguilar1, Carlos J. Roman-Moreno1
1Instituto de Ciencias Aplicadas y Tecnología, UNAM, México
2Facultad de Ciencias UNAM, México

FEMTOSECOND OPTICAL PARAMETRIC OSCILLATOR FOR ULTRAFAST SPECTROSCOPY

I. Reyna-Morales4, I. Rocha-Mendoza5, J. Garduño-Mejía1, M. Rosete-Aguilar1, G. Castro-Olvera5
1Departamento de Óptica, Microondas y Acústica, Instituto de Ciencias Aplicadas y Tecnología - UNAM, CDMX, México
2Departamento de Óptica, Centro de Investigación Científica y de Educación Superior de Ensenada, Ensenada,
<table>
<thead>
<tr>
<th>Page 91</th>
</tr>
</thead>
<tbody>
<tr>
<td>México</td>
</tr>
<tr>
<td>5Super-resolution Light Microscopy &amp; Nanoscopy Facility, Instituto de Ciencias Fotónicas, Castelldefels, España</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Vision, color, and visual optics</strong></td>
</tr>
<tr>
<td><strong>PWe_56</strong> MEASUREMENT OF THE TANGENTIAL CURVATURE IN A CALIBRATION SPHERE FOR CORNEAL TOPOGRAPHY</td>
</tr>
<tr>
<td><strong>PWe_57</strong> TOWARD AN OPHTHALMIC IMAGING SYSTEM WITH EXTENDED DEPTH OF FOCUS USING THE ASYMMETRIC PHASE MASK</td>
</tr>
<tr>
<td><strong>PWe_58</strong> COMPARACIÓN DE DOS MÉTODOS PARA LA MEDIDA DE LA AGUDEZA VISUAL A DIFERENTES DISTANCIAS</td>
</tr>
<tr>
<td><strong>PWe_59</strong> EVALUACIÓN NUMÉRICA DE UNA NUEVA LENTE INTRAOCULAR. INFLUENCIA DEL MODELO DE OJO TEÓRICO</td>
</tr>
<tr>
<td><strong>PWe_60</strong> DIFFRACTIVE CORNEAL INLAYS: RAY TRACING ANALYSIS IN A MODEL EYE</td>
</tr>
<tr>
<td><strong>PWe_61</strong> MEASUREMENT OF THE HUMAN ANTERIOR CORNEAL PROFILE USING LASER TRIANGULATION</td>
</tr>
</tbody>
</table>
Local Information

CANCÚN, MÉXICO

Located on the state of Quintana Roo, México, in the Yucatán Peninsula, the City of Cancún is bordered by the Caribbean Sea and is one of the most important and modern touristic resorts in the country. The natural beauty of Cancún, with wonderful beaches characterized by the white sand and clear water with many shades of blue, a great hotel infrastructure, nightclubs, shops, restaurants and world-class services, have made a city of choice for tourists and to organize, weddings, conventions, musical concerts, and of course conferences and symposiums.

This great venue is conveniently situated near the Mayan city of Chichen Itza and other important sites of this great civilization that can make a pleasant cultural visit.

Chichen Itza archeological site

Tulum

The cenotes

The Cancun underwater museum

Isla Mujeres

Spend a day at Xcaret Park
AUTHOR INDEX

Abbamonte Peter OTh_3.8
Aboites V. PTu_33
Abundiz Cisneros Noemi PWe_46
Acevedo-Barrera Anays PWe_48, OMo_4.3, OMo_2.2
Acosta D. Toral PMo_32
Acosta Eduardo Omar PWe_13, OWe_4.10
Acosta Eva OTh_5.10, OTh_1.8
Acosta Santamaría V.A. OWe_1.1
Afanador-Delgado S.M. PTu_33
Agnus G. OWe_5.8
Agreda Delgado Jhenry F. PWe_41
Acosta D. Toral PMo_32
Acosta Eduardo Omar PWe_13, OWe_4.10
Acosta Eva OTh_5.10, OTh_1.8
Acosta Santamaría V.A. OWe_1.1
Afanador-Delgado S.M. PTu_33
Agnus G. OWe_5.8
Agreda Delgado Jhenry F. PWe_41
Arroyo Reyes Brenda Lizbeth PMo_9
Arzate N. PMo_48
Arzola A. V. PWe_4
Aupart-Acosta Adrián PWe_54
Avendano-Alejo Maximino PWe_5, OTh_4.6, OWe_1.15, PWe_4, OTh_4.4, OTh_4.3
Avendaño-Alejo M. PWe_6
Avignon Thierry OMo_1.3
Avila Y. P. OWe_5.8
Avil S. OWe_1.1
Aymerich María OMo_5.1
Azana Jose PTu_42
Azor Juan Antonio OWe_4.9
Balbuena Ortega A. OMo_5.3
Baldwin Guillermo PTh_7, OTu_3.6, OTh_3.4
Bao-Varela Carmen OMo_5.1
Barake Jorge Castillo OMo_5.5
Barba Leiner PMo_45, PMo_44
Barba-Barba Rodrigo Misael OTu_5.5, OMo_5.2
Barba-J Leiner OTu_11, PTu_10
Barbosa-García O. PWe_23, PWe_24
Barcelata-Pinzón A OTh_2.4, OWe_1.4
Barclay Paul E OTh_2.1
Baroñas-Gutiérrez Erika PMo_34
Barón Erik Navarro OTh_1.1
Barraza A. Guzmán PMo_57
Barrera Anays Acevedo PTu_54
Barrera Braian PTu_53
Barrera J. F. OWe_2.3
Barrera Ramírez John Fredy OWe_2.2, OWe_2.4
Barrera Rodríguez Jaime PTu_56
Barrios Juan José OWe_1.6, OWe_1.2
Batista Leyva A. J. OWe_2.1
Baudot C. OWe_5.8
Bautista-Castillo Alejandro OWe_1.4
Bautista-Elivar N. PTu_56
Beaupre Guillaume OTu_5.7
Becerrell González Juan José PWe_25
Bello-Jiménez Miguel OWe_1.1
Beltrán Aranda Abdiel Ulises PWe_51, PWe_49
Beltrán-González A. PTu_38, OWe_4.6
Benitez J.L OTu_4.6
Benitez-Martínez J.A. OTh_2.3
Benitez-Rojas Alfredo C. PTu_59
Benlliure J. OTh_4.7
Bernal Santiago OWe_1.14
Bernal Wilson PWe_24, PWe_23
Berriel-Valdés L. R. PMo_48
Berrospe Rodríguez Carla PMo_12
Beye M. OTh_3.3
Bharadwaj Vibhav PleMo_2
Bischoff Joerg OMo_1.1
Blanco Manuel OMo_5.1
Blanco O. PTu_37
Boeote A. PWe_36
Boeuf F. OWe_5.8
Bolliani Monica PleMo_2
Bordakevich S. OWe_36
Borges Flavio A. OTh_3.7
Bormacelli J. OMo_5.4
Bravo Hernández Alfredo A. PMo_63
Bravo Oscar Aponte PWe_52
Bravo-Medina B. OWe_4.6
Bravo-Mendoza Kimberly OWe_5.6
Brazzano L. Ciocci PWe_13, OWe_4.10, PMo_65, PMo_47
Briseño-Carmona M. A. PMo_64
Brizuela Edgardo Enrique PWe_10
Bruce Neil C. OMo_4.1, PMo_61, OWe_1.5
Bryant Diane OTh_3.5
Bujdud-Pérez Juan OTu_4.3
Caballero-Quintana I. OWe_5.4
Cabal-Yépez Eduardo OWe_2.12
Cabanzo R. OMo_3.9
Cabaños-Marín Alma Rocío OWe_2.9
Cabrera Peláez V. H. PMo_20
Cabrera-Alfonso R. PWe_9
Calarco N. PWe_19
Calderón Chavira Enrique PTu_14
Calderón José Alberto PTu_11, PTu_10
Calixto Sergio OTu_2.5
Caloz Sergio OTh_5.8
Calva Ramírez Martha Angélica PTu_56
Camacho-López M. OMo_2.3, OMo_3.7, OMo_3.6
Camacho-López S. PTu_36, OMo_3.7, OMo_3.6
Camacho-López Santiago OWe_2.5, PWe_8
Camarena Chávez V. A. OWe_5.9
Cambronero Ferran OMo_5.1
Canales Pacheco Benito PWe_12
Cano Lara Miroslava  PWe_8  Chammam Marwa  OMo_5.2
Cano-Velázquez Mildred S.  PTu_8, OTu_1.6  Chamorro-Cañón J. D.  PWe_37
Cao Yang  PTu_42, OTh_5.5, OTh_5.3  Chan-Ley Mariana  OMo_3.3, OMo_3.2, OMo_3.1
Cap Nelly  PMo_41  Chauvin Remi  OMo_5.2
Capeluto M. G.  PTu_45  Chavarrío-Mesa Edisson  OWe_5.6
Carbajal-Degante E.  PWe_38  Chávez-Gutiérrez F.  PTu_3
Cárdenas-Díaz T.  OWe_2.1  Cheang-Wong J. C.  OMo_5.4
Carhuancho C.  OWe_5.5  Chen6 Feng  OTu_5.1
Carlos-Rubio C.  PTu_37  Chernov Valery  PMo_15
Carmen Cortés Flor del  OMo_2.9  Chiappini Andrea  PWe_2
Carmona  PMo_41  Chirinós Juan  OTu_4.2
Carneiro J. O.  PWe_11  Chiu-Zarate Roger  OTu_2.7
Carrascosa A.  PMo_24  Chubar O.  OWe_3.6
Carreño Sandra J.  OTu_5.6  Cipparrone G.  OTu_3.2
Carrellas Ramón  OTh_4.8  Cisneros-Martínez J. Antonio  OTu_2.7
Casaballe Nicolás  OMo_3.5  Claudiano Gabriel V.  OTh_3.7
Casillas Nayeli  OTu_1.7  Clavé Laura  OWe_58
Casillas Rodríguez F. J.  OWe_1.3  Climent Vicent  PWe_61
Casillas-Álvarez Moisés I.  OMo_5.6  Cocco Daniele  OTh_3.6, OTh_3.1
Cassan E.  OWe_5.8  Coletzki G. H.  PMo_10
Castán-Ricaño Diana  OTh_4.6  Coello V.  OMo_4.2
Castañeda E.  PTu_37  Cofré Aarón  PMo_16
Castañeda Román  PWe_26  Colín García Marco Polo  OMo_2.9
Castaño Nicolás  OTu_4.7  Collin S.  OWe_5.8
Castillo Priscilla  OTu_4.3  Contreras José  PTu_61
Castillo-Guzmán A A  OTu_5.5  Contreras Ricardo  OWe_1.6, OWe_1.2
Castillo-Guzmán A.  OTu_1  Contreras Víctor  OTu_4.5
Castillo-Luna M  PMo_23  Contreras-Martínez Ramiro  PWe_53, PWe_54
Castillo-Santiago Gabriel  OTh_4.4, OTh_4.3  Cordero De los Santos J. G.  PWe_33
Castro Chong Alejandra María  PWe_25  Cordero-Dávila A.  OTu_3.10
Castro Frederic Català  PTu_57  Córdova Darwin  OTu_3.6
Castro-Beltrán R.  OWe_5.9  Cornejo-Rodríguez Alejandro  OTh_4.6
Castro-Camus Enrique  OTh_5.6  Corral Martínez Luis Francisco  PWe_56, PMo_60, PMo_58
Castro-Valdez Alfredo  PTu_34, PMo_38  Cortes R.  OMo_4.2
Castro-Olvera G G.  PWe_55  Cortez Marco  PMo_28
Cazares-Aguilar I.  PWe_28  Cortina M.D.  OTh_4.7
Ceballos-Herrera D. E.  OTh_1.2, OTu_3.9  Costa MFM  PWe_61
Cebrian-Xochihuitl P.  PTu_19, PWe_12  Costanzo Caso Pablo A.  PMo_25
Cerda T.  OTu_3.2  Crémer S.  OWe_5.8
Cerda Teresa  PWe_27  Cremona M.  OWe_5.5
Cerna Jorge  PMo_9  Cruz Bernal Alejandra  PTu_14
Cervantes-Álvarez F.  PTu_32  Cruz Félix Angel S.  OTh_4.5
Cervantes-Lozano Francisco J.  PTu_38  Cruz J. L.  PMo_26, PMo_24
Céspedes Jonnathan  PMo_1  Cruz José Luis  PMo_25
Chacón C.  PMo_17  Cruz Jose Luis  PMo_31
Figueroa-Manrique Santiago  PMo_4  García-Llamas Raúl  OMo_3.10
Filoteo-Razo J. D.  PTu_31  García-López J. H.  PTu_33
Flechsig U.  OWe_3.12  García-Melgarejo J. C.  PMo_30, PWe_33
Flores Jorge L.  PTu_39, OTh_1.9, OWe_1.9  García-Méndez M  OTh_5.5
Flores Servín José Carlos  PWe_51, PWe_49  García-salcedo A. J.  PWe_37
Flores-Arias M.T.  OMo_5.1  Garduño Mejía Jesús  PWe_53
Flores-Meneses Augusto  PMo_22  Garduño-Mejía J.  PWe_54, PMo_63, OTh_5.2, PWe_55
Flores-Moreno J. M.  OMo_1.8  Garza-Flores Esbanyely  PTu_16, OWe_4.5
Flores-Muñoz V. H.  PMo_57  Garzón Johnson  OTu_2.4
Flores-Rosas A.  PTu_2  Garzón N.  OTh_5.9
Flores-Sandoval M.  PMo_20  Gaspar Armenta Jorge A.  PTh_46
Fluerasu A.  OWe_3.6  Gastelum-Acűña Sandra L.  OMo_3.10
Follath R.  OWe_3.12  Gayou V. López  OMo_5.3
Fonseca Karen  PWe_62  Gayou Valentín López  PTu_60, PMo_14
Fonthal G.  PWe_44  Genescá J.  PTu_58
Fracchia Jeanette  OMo_3.5  Geraldes Renan R.  OTh_3.7
Franco S.  PWe_61  Gervais Thomas  OTh_5.5
Franco-Escobar J. F.  PWe_44  Gharbi Tijani  OTu_2.4
Franco-Ortega J. A.  OMo_4.1  Giakoumaki Argyro  PleMo_2
Frins E.  PWe_30  Gibson Ursula  PleTu_3, PaTh_1
Frins Erna  OMo_3.5  Gigena N.  PWe_36
Fuentes-Fuentes M. A.  PTu_29, OTu_1.8  Gil-Londoño Jessica  OMo_4.4
Fuenzalida Francisca  PWe_40  Gleason Samuel  OTh_3.8
Furlan Walter D.  PWe_60, PWe_59  Gómez Ángela Marin  PTu_36
Gadsden Héctor  PTu_13  Gómez M.  OWe_2.3
Galíndez-Jamioy Carlos A.  OTu_4.1  Gómez William  PTu_18
Gallegos-Arellano E.  PWe_18  Gómez-Cardona N.  PTu_5, OTh_5.7
Gallo Silvana  PMo_41  Gómez-Correa J. E.  OWe_4.4
Galvis Jorge L.  PTu_6  Gómez-Escoto R.  PTu_49
Gao Lidan  OWe_3.3  Gómez-Méndez Gustavo A.  OWe_1.8
García Eric Cervantes  PWe_52  Gómez-Rosas G.  PTu_37
García M. Flechas  OWe_1.1  Gómez-Sarabia Cristina M.  PMo_66, PMo_54, PMo_52, PMo_50, OTh_1.12, OTh_1.11, OTh_1.10
García Ramírez E. V.  PTu_51  Gómez Valencia Melisa  OWe_2.4
García Ramírez Emma Vianey  PTu_50  Gonzales Franco  OTh_3.6
García -Sucerquia J.  OMo_1.5, OWe_2.7  González Franco  OWe_1.11
García -Torales G.  OWe_1.9, PTu_38, PTu_39, OWe_4.6  González Andrés  PTu_25
García -Valenzuela A.  OMo_4.3, OMo_2.2, PWe_48  González Andrés L.  OTh_4.7
García Valenzuela Augusto  PTu_54  González D.  OTh_4.7
García -Weidner A.  PMo_28, PTu_9  González -Díaz Víctor R.  OWe_1.4
García Weidner Alfonso  PMo_27  González Edgardo Balderrama  OTh_3.3
García-Fernández T.  OTu_4.6  González F  OMo_3.9
García-Jomaso Angélica Y.  OTh_5.2  González G.  PWe_38
García-Juárez A.  OTh_1.4  González -Gutiérrez K.  OTu_1.8
González -Herraez Miguel  OTu_1.1
Lozano-Crisóstomo N. PMo_30, PWe_33
Lucio J. L. PWe_32
Luna O. de OTu_3.7
Luna Palacios Yryx Yanet PTu_41
Lunazzi José Joaquín OWe_1.13, OWe_1.12
Lureau François OTu_5.7
M. Costa Manuel F. PWe_14, PWe_11
MacDowell Alastair OTu_3.5
Macías D. OTu_3.8
Macías-Montero Manuel OTu_5.2
Machorro Mejía Roberto PWe_46
Madriagal B. OTu_5.4
Madrid-Úsuga Duvalier PMo_3, PMo_2
Mahne N. OWe_3.10
Malacara Doblado Daniel PMo_37, PMo_36
Malacara-Hernández D. OTh_5.11, PMo_37, PMo_36
Malacara Hernández Zacarías PMo_37, PMo_36
Maldonado J. L. PWe_23, OWe_5.4, PWe_22, PWe_24
Manfredda M. OWe_3.10
Manjarrez-Mendoza J. PWe_18
Manske Eberhard OMo_1.1
Manton Jonathan OTu_3.8
Maraval Valerie OMo_5.2
Marcaud G. OWe_5.8
Marín-Alvarado Gustavo PMo_7, OMo_4.4
Marolleau J. PTu_37
Maroutian T. OWe_5.8
Márquez-Islas Roberto PTu_54
Marrugo Andrés G. PWe_57, PTu_22, PTu_21, OWe_4.2
Marrugo Javier OWe_4.2
Martín L. OTu_4.7
Martínez Horacio OTu_4.5
Martínez -Niconoff G. PWe_31, PWe_28
Martínez-García Amalia PMo_62, PMo_21, OWe_1.10, OWe_1.8
Martínez-Hernández H. D. PWe_44
Martínez-León Lluís PMo_49
Martínez Núñez Marcelino PTu_62
Martínez-Peláez Rafael OWe_1.7
Martinez-Rios A. PTu_29, OTu_1.8, PTu_3, PTu_1, PMo_32
Martins Alessandra Carmichael OTh_5.11
Martins Hugo F. OTu_1.1
Martins-López Sonia OTu_1.1
Martin-Vela Javier Antonio PTu_4
Marulanda J. I. OWe_1.14
Masajada Jan OMo_1.4
Mastyro Rostyslav OMo_1.1
Mateos Xavier OTu_5.1
Matras Guillaume OTu_5.7
Matsuyama S. OWe_3.4
Matteo C.L. PMo_65
Matzen S. OWe_5.8
May Yah Pedro PTu_52
May-Arrioja D. A. PMo_30, PTu_29, OTu_1.8
Mayen-Mondragón R PWe_17, PTu_58
Mayer Rafael OTh_3.1
Medina Vázquez José Antonio PTu_13, PMo_55, PMo_19
Medina-Gómez Lucia PWe_54
Medinal Jaziel Salazar PMo_43
Medina-Melendrez Modesto OMo_1.8
Mejía- Martínez Mayra A. OTu_4.1
Mejía Sánchez Jorge Enrique PWe_20
Mejía-Arredondo Arlette PMo_54
Mejía-Cortes Cristian OMo_5.5
Mejía-Uriarte E. V. PWe_45, PWe_42, PTu_58, PMo_5, PTu_35
Melo-Luna Carlos A. PMo_1, PMo_3
Méndez Aníbal OTu_4.2
Méndez Otero M. M. PTu_51
Méndez Otero Marcela Maribel PTu_50
Méndez Rodríguez J.J. PTu_51
Mendieta Brian OTu_5.8
Mendoza B. S. OWe_3.8, PTu_63
Mendoza C. PMo_17
Mendoza E. S. PWe_38
Mendoza Fierro Julio Abraham PMo_6
Mendoza Israel Rocha PTu_41, OTh_4.11
Mendoza Villegas Paloma Guadalupe PMo_58
Mendoza-Castro J. H. OTu_1.9
Mendoza-García Emma PTu_54
Mendoza-Nava Héctor OMo_2.3
Mendoza Rodríguez Ceciibet PMo_18
Mendoza-Vázquez S. PTu_2
Mendoza-Villegas Guadalupe Paloma PWe_56
Meneses Antonio PWe_23
Ojeda-Castañeda Jorge  
PMo_66, PMo_54,  
PMo_52, PMo_50,  
OTH_1.12,  
OTH_1.11, OTh_1.10

Olague Gustavo  
OMo_3.3, OMo_3.2,  
OMo_3.1

Olguín Luis F.  
PWe_48

Oliver J.  
OMo_3.1

Olvera-Ángeles J-Miguel  
OTh_1.8

Olguín Luis F.  
OMo_2.9, OMo_2.8

Oreglia E.  
PMo_65

Ormachea Omar  
OTO_5.8

Ortega-Mendoza J. G.  
PTu_55, PMo_29,  
PMo_57, PMo_26

Ortiz Daniel  
OTO_4.4

Ortíz Gutiérrez Mauricio  
PTu_52

Ortíz-Sosa R.  
PMo_48

Osaka T.  
OWe_3.4

Oskam Gerko  
PWe_25

Osorio Matías  
OMo_3.5

Ospina Jhon F.  
OTO_4.7

Ospina R.  
OMo_3.9

Otero Díaz Luis Jesús  
OMo_3.4

Pabón D.  
PWe_36

Pachón Leonardo  
PWe_47

Padilla Martínez Juan Pablo  
PMo_12

Padilla-Martínez J.P.  
PMo_10

Padmore Howard  
OTh_3.5

Padrón-Godínez Alejandro  
PWe_35

Páez Amaya Darby  
PTu_57

Pagliusi P.  
OTO_3.2

Palacios Yryx Luna  
OTh_4.11

Parmiggiani F.  
PWe_38

Parra-Escamilla Geliztle A.  
PTu_38

Parra-Michel Jorge R.  
OWe_1.7

Patiño-Vanegas Alberto  
PTu_22

Patrick Hadden John  
PleMo_2

Patthey L.  
OWe_3.12

Paz-Martínez G.  
PMo_64

Paz Martínez Gaudencio  
PWe_52

Pech-May N.W.  
PTu_32

Pellaton Matthieu  
PTu_17

Pellegrini N.  
PTu_45

Penner Alexandra  
OMo_3.5

Peña J.  
OTh_4.7

Peña Lecona F. G.  
OWe_1.3

Peralta Jairo  
OTO_4.5

Peralta Miriam  
PWe_46

Peralta-Domínguez Diecena  
OWe_25

Percino-Zacarias Elizabeth  
OTh_4.6

Peregrina-Barreto H.  
PMo_11

Pereira Hugo  
OWe_5.3

Pérez Cortés Mario  
PTu_52

Pérez Georgina Beltrán  
PMo_14, PMo_8,  
OTO_1.3

Pérez Liliana Inés  
PWe_13, OWe_4.10

Pérez-Aguilar H.  
OMo_4.2

Pérez-Cabré Elisabet  
PWe_16, PMo_51

Pérez-Corona C. E.  
PMo_11

Pérez-Corona J. M.  
PMo_12

Pérez-García Benjamín  
OTO_3.1

Pérez-Gutiérrez E.  
PWe_24

Pérez-Pacheco Angelia  
PTu_54, OMo_2.9

Pérez-Sánchez G.G.  
PTu_3.7

Pichardo J. L.  
PTu_27

Pimentel-Domínguez R.  
OTh_2.3

Pineda Jesús  
PTu_21, OWe_4.2

Pineda-Castro Jesús  
OWe_5.6

Pinto Artur C.  
OTh_3.7

Pinzón Sebastián  
PWe_62

Piña-Villapando Luis Elias  
PMo_59

Piponnier Martin  
OWe_3.11

Plascencia Gabriel  
OWe_4.8

Plata A.  
PMo_17

Plusquellic David F.  
PWe_51, PWe_49

Polo-Parada Luis  
OXe_4.3

Pomeo-Moreno Richar Y.  
OTO_4.1

Ponce-Hernández Osvaldo  
PWe_5

Popiołek-Masajda Agnieszka  
OMo_1.4

Porras-Aguilar Rosario  
OMo_1.7, OMo_1.6

Portela Mayerlin Nuñez  
PTu_17

Pottiez O.  
PTu_39, PTu_31

Prieto-Cortés P  
OTu_5.5

Q. Maia Lauro J.  
OTO_5.6

Quintero Iosvani Moré  
OWe_2.6

Quintero-Rodríguez L. J.  
OTh_1.3

Quintero-Torres R.  
OTh_4.9

Quintián Pérez F.  
PWe_19

Qureshi Naser  
PWe_54, OTh_5.2

R. Pincheira Pablo I.  
OTO_5.6
<table>
<thead>
<tr>
<th>Name</th>
<th>Code(s)</th>
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<tbody>
<tr>
<td>Vázquez-Nava R.A.</td>
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<td>Vázquez-Navarrete Edith G.</td>
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<td>Villamizar Amado Astrid L.</td>
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<td>Vivo Amparo</td>
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<td>Vohnsen Brian</td>
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<td>Wagner U.</td>
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<td>Wang Huirong</td>
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<td>Wang Tianyi</td>
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<td>Warnes-Lora J. R.</td>
<td>OTh_1.3, OTh_1.6</td>
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<td>Wiegart L.</td>
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<td>Williams K.</td>
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<td>Wong-Gutiérrez A.</td>
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<td>Won-Lee Min</td>
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<td>Wu Li-Yang</td>
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<td>Yabashi M.</td>
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</tr>
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<td>Yamauchi Kazuto</td>
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</tr>
</tbody>
</table>