12th International Conference
on
Education and Training in Optics and Photonics
Faculty of Sciences of the University of Porto, Portugal
July 23 to 26, 2013

ABSTRACTS' BOOKLET
12th International Conference on Education and Training in
Optics and Photonics

ETOP 2013

July 23 to 26, 2013
Faculty of Sciences of the University of Porto
Porto, Portugal.

Chairpersons:
Manuel Filipe P. C. M. Costa (Universidade do Minho, Portugal)
Mourad Zghal (University of Carthage, Tunisia)

Honorary Chairs:
Zohra Ben Lakhdar (Faculty of Sciences Tunis -STO-, Tunisia)
Vasudevan (Vengu) Lakshminarayanan (University of Waterloo, Canada)

International Scientific Committee:
Zohra Ben Lakhdar (Faculty of Sciences Tunis -STO-, Tunisia) - Chairperson
Abdenbi Bouzid (Université Moulay Ismail Présidence Meknès, Morocco)
Ahmadou Wagué (Faculté des Sc.& Tech.-Université Cheikh Anta Diop, Senegal)
Ajay Ghatak (Indian Institute of Technology-Delhi, India)
Alan Shore (Photonics Academy for Wales and Bangor University, United Kingdom)
Alex Mazzolini (Swinburne University of Technology, Australia)
Ángela M. Guzmán (CREOL, College of Optics & Photonics, UCF / USA)
Anna Consortini (Università degli Studi di Firenze, Italy)
Ari Friberg (Royal Institute of Technology, KTH, Stockholm, Sweden)
Armando Dias Tavares (Federal University of Rio de Janeiro, Brazil)
Astacio Vargas (CEFOP, Chile)
Barry Shoop (US Military Academy & Worcester Polytechnic Institute, USA)
Carlos Ferreira (University of Valencia, Spain)
Daniel Malacara Hernández (CIO-Center for Optics Research, Mexico)
David Sokoloff (University of Oregon, USA)
Elizabeth Simmons (Michigan State University, USA)
Eric Rosas (CENAM and RIAO, Mexico)
Fernando Mendoza (CIO, Mexico)
François Flory (Faculty of Sci. & Tech. Marseille, France)
Imrana Ashraf (Quaid-I-Azam University, Pakistan)
Ivan Culuba (Ateneo de Manila University, Philippines)
Javier Sanchez Mondragon (INAOE & Univ. Autonoma del Estado de Morelos, Mexico)
Gonçalo Figueira (Instituto Superior Técnico, Portugal)
Hector Rabal (CIOP-Center for Optics Research, Argentina)
Humbertus Bergman (Stellenbosch University, South Africa)
Humberto Michinel (University of Vigo, Spain)
Joaquin Campos Acosta (Instituto de Óptica, CSIC, & SEDOPTICA, Spain)
Joe Niemela (ICTP-Trieste, Italy)

Joel Maquiling (Ateneo de Manila University, Philippines)
John Love (Australian National University-Canberra, Australia)
José Manuel de Nunes Vicente (Rebordão New University of Lisbon, Portugal)
Khalid Berrada (Cadi Ayyad University-Marrakech, Morocco)
Liu Xu (Zhejiang University, China)
Luc Owonou (Douala University, Cameroon)
Lucília Cesca (University of Campinas, Brazil)
Luis Miguel Bernardo (University of Porto, Portugal)
Kathleen Robinson (SPIE, USA)
Katrina Svanberg (University of Lund, Sweden)
Manuel Filipe Costa (University of Minho, Portugal)
Manuel Melgosa Latorre (University of Granada, Spain)
Marc Nantel (University of Toronto, Canada)
María Josefa Yzel Giménez (Universitat Autònoma de Barcelona, Spain)
<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Authors</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Teaching methodologies to promote creativity in the professional skills related to optics knowledge</td>
<td>Alicia Fernández-Oliveras*, Paz Fernández*, Antonio Peña-García*, María Luisa Oliveras*</td>
<td>Departamento de Óptica, Universidad de Granada, Spain</td>
</tr>
<tr>
<td>15</td>
<td>Slip lamp management in Contact Lens laboratory classes; learning upgrade with monitor visualization of webcam video recordings</td>
<td>Justo Aríñez, Ana Gargallo*</td>
<td>Departamento de Física Aplicada (Área de Óptica), Universidad de Santiago de Compostela, Spain</td>
</tr>
<tr>
<td>16</td>
<td>MATLAB GUI (Graphical User Interface) for the design of GRIN components for optical systems as an educational tool</td>
<td>C. Bao Varela* and A. I. Gómez Varela</td>
<td>Grupo de Microptóica y Óptica GRIN, Facultad de Física y, Facultad de Óptica y Optometría, Universidad de Santiago de Compostela, Campus Vida s/n 15782, Santiago de Compostela</td>
</tr>
<tr>
<td>17</td>
<td>Development of Matlab GUI Educational Software to Assist a Laboratory of Physical Optics</td>
<td>Elena Fernández*, Rosa Puentes, Celia García and Inmaculada Pascual</td>
<td>Departamento de Óptica, Farmacología y Anatomía, Instituto Universitario de Física Aplicada a las Ciencias y las Tecnologías, Universidad de Alicante, Apartado 99, E-03080 Alicante, Spain</td>
</tr>
<tr>
<td>18</td>
<td>NEMO Educational Kit on Micro-Optics at the Secondary School</td>
<td>M.T. Flores-Arias*, C. Bao</td>
<td>&quot;Microoptics and Optics Group&quot;, Applied Optics Department, Faculty of Physics, Campus Vida, University of Santiago de Compostela, E15701, Santiago de Compostela, Spain</td>
</tr>
<tr>
<td>19</td>
<td>Optics in the Physics Degree at the USC: The use of the Moodle platform</td>
<td>María Teresa Flores-Arias*</td>
<td>Departamento de Física Aplicada (Área de Óptica), Facultad de Física, Campus Vida, Universidad de Santiago de Compostela, 15782 Santiago de Compostela</td>
</tr>
<tr>
<td>20</td>
<td>Master on &quot;Photonics and Laser Technologies&quot;: online teaching experience</td>
<td>Ángel Paredes*, Humberto Michiné*, José Ramón Salgueiro*, Benito Vazquez-Dorrotó*, Armando Yáñez*, Justo Aríñez*, M. Teresa Flores Arías*</td>
<td>1: Departamento de Física Aplicada, Universidad de Vigo, Facultad de Ciencias, Campus de As Lagoas, 32004 Ourense, Spain 2: Applied Physics Department, University of Vigo, Campus Universitario, 36310 Vigo, Spain 3: Departamento de Ingeniería Industrial II, Universidad de Coruña, Escuela Politécnica Superior, Campus de Esteiro s/n, 15403 Ferrol, Spain 4: Departamento de Física Aplicada (Área de Óptica), Facultad de Física, Campus Vida, Universidad de Santiago de Compostela, Santiago de Compostela, Spain</td>
</tr>
<tr>
<td>21</td>
<td>Incorporating active-learning techniques into the photonics-related teaching in the Erasmus Mundus Master in &quot;Color in Informatics and Media Technology&quot;</td>
<td>Antonio M. Pozo*, Manuel Rubilio, Javier Hernández-Andrés, Juan Luis Nieves</td>
<td>Departamento de Óptica, Facultad de Ciencias, Universidad de Granada, Granada 18071, Spain</td>
</tr>
<tr>
<td>22</td>
<td>Measuring the image quality of digital-camera sensors by a ping-pong ball</td>
<td>Antonio M. Pozo*, Manuel Rubilio, José J. Castro, Carlos Salas, Francisco Pérez-Ocón</td>
<td>Departamento de Óptica, Facultad de Ciencias, Universidad de Granada, Granada 18071, Spain</td>
</tr>
<tr>
<td>23</td>
<td>A proposal on teaching methodology, cooperative learning by peer tutoring based on the case method</td>
<td>Antonio M. Pozo*, Juan José Durán, Carlos Salas, Mª del Mar Lázaro</td>
<td>Departamento de Óptica, Facultad de Ciencias, Universidad de Granada, Granada 18071, Spain</td>
</tr>
<tr>
<td>24</td>
<td>Naked-eye Astronomy: Optics of the starry night skies</td>
<td>Salvador Bará*</td>
<td>Universidad de Santiago de Compostela, Óptics Area, Applied Physics Dept, Faculty of Optics and Optometry, 15782 Santiago de Compostela, Galicia</td>
</tr>
</tbody>
</table>
Development of Matlab GUI Educational Software to Assist a Laboratory of Physical Optics

Elena Fernández¹², Rosa Fuentes¹², Celia García¹² and Inmaculada Pascual¹²,

¹Departamento de Óptica, Farmacología y Anatomía
²Instituto Universitario de Física Aplicada a las Ciencias y las Tecnologías
¹,²Universidad de Alicante, Apartado 99, E-03080 Alicante, Spain

Physical optics is one of the subjects in the Grade of Optics and Optometry in Spanish universities. The students who come to this degree often have difficulties to understand subjects that are related to physics. For this reason, the aim of this work is to develop optics simulation software that provides a virtual laboratory for studying the effects of different aspects of physical optics phenomena. This software can let optical undergraduates simulate many optical systems for a better understanding of the practical competences associated with the theoretical concepts studied in class. This interactive environment unifies the information that brings the manual of the practices, provides the visualization of the physical phenomena and allows users to vary the values of the parameters that come into play to check its effect. So, this virtual tool is the perfect complement to learning more about the practices developed in the laboratory. This software will be developed through the choices which have the Matlab to generate Graphical User Interfaces or GUis. A set of knobs, buttons and handles will be included in the GUis in order to control the parameters of the different physics phenomena. Graphics can also be inserted in the GUis to show the behavior of such phenomena. Specifically, by using this software, the student is able to analyze the behavior of the transmittance and reflectance of the TE and TM modes, the polarized light through of the Malus'Law, degree of polarization or study of the behavior of the retarder waveplates.