

**Session XII: Workshop (room AF4)**

09:00 12:45 Workshop Workshop on teaching with the gallelescope Stephen M. Pompea National Optical Astronomy Observatory, USA

**Parallel session, Session XIII: Training and laboratory demonstrations I (room AF1)** Chair: Manuel Joaquim Marques

09:00 09:15 Oral New Frontiers in Color Management by using modern Spectrometers Oliver Vauderwange, Heinz-Hermann Wielage, Ulrich Haiss, Paul Drefler, Dan Curticapean Offenburg University of Applied Sciences

09:15 09:30 Oral Teaching Optics with the centennial universal lantern M. João Carvalhal<sup>1</sup>, Marisa Monteiro<sup>1</sup>, and Manuel B. Marques<sup>2</sup> 1- Museu de Ciência da Universidade do Porto, Reitoria da Universidade, Portugal; 2- Faculdade de Ciências da Universidade do Porto – DFA and INESC Porto, Portugal

09:30 09:45 Oral Development of an undergraduate optics laboratory based on the analysis of digital images A. Ramil<sup>1</sup>, A. J. López<sup>1</sup>, M.P. Fiorucci<sup>1</sup>, F. Vincitorio<sup>2</sup> 1- Centro de Investigacións Tecnolóxicas (CIT), Universidade da Coruña, España. 2- Facultad Regional Paraná, Universidad Tecnológica Nacional, Almafuerde 1033, Paraná -Entre Ríos – Argentina

09:45 10:00 Oral A Laboratory Module on Radiometry, Photometry and Colorimetry for an Undergraduate Optics Laboratory Course Robert Polak Loyola University Chicago

10:00 10:15 Oral Pre-design and implementation of spectrometers in Peru R. Sánchez, G. Baldwin, R. Coello Pontificia Universidad Católica del Perú Departamento de Ciencias, Sección Física

**Parallel session, Session XIV: Conceptual understanding assessment (room AF2)** Chair: Joe Niemela

09:00 09:15 Oral Lighting the way: Photonics Leaders II (PL2) optics and photonics teacher professional development Pamela Olivia Gilchrist<sup>1</sup>, Joyce Hilliard-Clark<sup>1</sup>, Tuere Bowles<sup>2</sup>, Eric Carpenter<sup>3</sup> 1-The Science House, North Carolina State University, 909 Capability Dr., Raleigh, NC USA 2-Dept. Of Leadership, Policy, and Adult Higher Education, North Carolina State University, Raleigh, NC USA 3-Dept. Of Psychology, North Carolina State University, Raleigh NC USA

09:15 09:30 Oral Student Reactions to Problem-Based Learning in Photonics Technician Education Nicholas Massa<sup>1</sup>, Judith Donnelly<sup>2</sup> and Fenna Hanes<sup>3</sup> 1- Springfield Technical Community College, One Army Square, Springfield, MA 2- Three Rivers Community College, 7 Mahan Drive, Norwich, CT 3- New England Board of Higher Education, 45 Temple Place, Boston, MA

09:30 09:45 Oral Light & Optics Conceptual Evaluation Findings From First Year Optometry Students Damber Thapa<sup>1</sup> and Vasudevan Lakshminarayanan<sup>1,2,3</sup> 1- School of Optometry and Vision Science, 2- Department of Physics, 3- Department of Electrical & Computer Engineering, University of Waterloo, Waterloo, Ontario, Canada.

09:45 10:00 Oral Misconceptions about optics: an effect of misleading explanations? Favale F.<sup>1</sup> and Bondani M.<sup>1,2</sup> 1- Dipartimento di Scienza e Alta Tecnologia – Università degli Studi dell'Insubria, Como, Italy 2- Istituto di Fotonica e Nanotecnologie – CNR, Como, Italy

10:00 10:15 Oral Active learning in optics & photonics: sustaining its benefits Minella C. Alarcon\*, Ivan B. Culaba, Patricio T. Dailisan, Nofel DLC. Lagrosas, Joel T. Maquiling Department of Physics, School of Science and Engineering, Ateneo de Manila University, Quezon City, Philippines 1108

Thursday 25 July

**Parallel session, Session XV: Computer assisted learning I (room AF3)**

Chair: Alan Shore

09:00	09:15	Oral	Learning about light and optics in on-line general education classes using at-home experimentation	Mark F. Masters, Jacob Millspaw, and Gang Wang	Department of Physics Indiana University Purdue University Fort Wayne (IPFW) Fort Wayne IN, USA
09:15	09:30	Oral	An internet-based, post-graduate course in Spectacle Lens Design.	Mo Jalie	University of Ulster
09:30	09:45	Oral	HoloNet: a network for training holography	Pedro Pombo <sup>1,2</sup> , and Emanuel Santos <sup>1</sup>	1- Physics Department, University of Aveiro 2- Fábrica Ciência Viva Science Center
09:45	10:00	Oral	Interdisciplinary Education in Optics and Photonics based on Microcontrollers	Heinz-Hermann Wielage, Oliver Vauderwange, Ulrich Haiss, Paul Dreßler, and Dan Curticepean*	Offenburg University of Applied Sciences
10:00	10:15	Oral	Laws of Reflection and Snell's Law revisited by Video Modeling	M. Rodrigues <sup>1,2</sup> , and P. Simeão Carvalho <sup>2,3</sup>	1- Middle and High School Rodrigues de Freitas, Porto, Portugal 2- IFIMUP, University of Porto, Rua do Campo Alegre s/n, Porto, Portugal 3- Department of Physics and Astronomy, Faculty of Sciences, University of Porto, Rua do Campo Alegre s/n, Porto, Portugal
10:15	10:30	Oral	A correlation of thin lens approximation to thick lens design by using context based method in optics education	O. Faruk FARSAKOGLU <sup>1</sup> , Ipek ATIK <sup>2</sup> , Hikmet KOCABAS <sup>3</sup>	1,2- Kilis 7 Aralik University, Faculty of Engineering and Architecture, Electrical Electronics Engineering Department, Kilis, Turkey 3- Istanbul Technical University. Faculty of Mechanical Engineering, CAD CAM Center, Gumussuyu, Istanbul, Turkey

---

**Session XVI: Invited Session (room AF1)**

Chair: Vanderlei Bagnato

11:00	11:25	Keynote	Advantages and disadvantages of using computers in education and research	Anna Consortini	Universita' degli Studi di Firenze Dipartimento di Fisica e Astronomia, Italy
11:25	11:50	Keynote	m-Learning and holography: compatible techniques?	Maria L. Calvo	Departamento de Óptica, Facultad de Ciencias Físicas, Universidad Complutense de Madrid (UCM), Spain
11:50	12:15	Keynote	Phase derivative estimation in digital holographic interferometry	Pramod Rastogi	Swiss Federal Institute of echnology Lausanne, Switzerland
12:15	12:40	Keynote	Photonics And Scientoonics: We Can Create A New Light	Pradeep K. Srivastava	Council of Scientific & Industrial Research, India
12:40	13:05	Keynote	Evolution of the Centre for Optical and Laser Engineering in Singapore	Anand Asundi	COLE, Nanyang Technological University Singapore

---

**Session XVII: Invited Session (room AF1)**

Chair: Angela M. Guzmán

14:45	15:10	Keynote	Developing The Critical Thinking, Creativity And Innovation Skills Of Undergraduate Students	Barry L. Shoop	Department of Electrical Engineering and Computer Science U.S. Military Academy West Point, New York, USA
15:10	15:35	Keynote	CApability Matrix for Photonics Up-Skilling – CAMPUS	Alan Shore,	Photonics Academy of Wales, Bangor University, School of Electronic Engineering, Bangor, Wales, UK
15:35	16:00	Keynote	Hands-On Physics Displays for Undergraduates	Carl W. Akerlof	Physics Department, University of Michigan, Ann Arbor, Michigan, USA
16:00	16:25	Keynote	Hands-on optics for active and cooperative learning	Jose Benito Vazquez Dorrió	University of Vigo, Spain

**Session XVIII: Hands-On Session (room AF4)**

17:00	18:45	Hands-On	Student Activity : Verification on Malus's Law of Polarization at low cost	Shahrul Kadri	Photonics Laboratory, Faculty of Science and Technology, Universiti Pendidikan Sultan Idris, Malaysia
-------	-------	----------	--	---------------	---

**Parallel session, Session XIX: Training and laboratory demonstrations II (room AF1)**

Chair: Dan Curticaean

17:00	17:15	Oral	Learning to teach Optics through experiments and demonstrations	Jesús Lancis, Mercedes Fernández-Alonso, Lluís Martínez-León, Enrique Tajahuerce, and Gladys Mínguez-Vega	Physics Department / Institute of New Imaging Technologies, Universitat Jaume I, Castelló de la Plana, SPAIN
17:15	17:30	Oral	Multicolour LEDs in Educational Demonstrations of Physics and Optometry	Paulis Paulins <sup>1</sup> , and Maris Ozolinsh <sup>2</sup>	1- Faculty Physics and Mathematics, University of Latvia, Riga, Latvia 2- Institute of Solid State Physics University of Latvia, Riga, Latvia
17:30	17:45	Oral	Laser Spectroscopy Education and Development in Biophotonics Research at Nairobi	K. H. Angeyo, A. Dehayem-Massop and K. A. Kaduki.	Department of Physics, University of Nairobi, Nairobi, Kenya.
17:45	18:00	Oral	Visualization of light beams in liquid crystal layers for demonstration of basic optical phenomena.	Pasechnik S.V., and Shmeliova D.V.	Moscow State University of Instrument Engineering and Computer Science, Moscow, Russia
18:00	18:15	Oral	Optical demonstrations with spatial light modulators	Andrew Forbes	1-CSIR National Laser Centre, South Africa; 2-Stellenbosch University, South Africa; 3-School of Physics, University of KwaZulu-Natal, South Africa
18:15	18:30	Oral	Variable retarders by modified twisted nematic liquid crystal keychain for education purpose	D.Prapertchob, and R. Chitaree	Department of Physics, Faculty of Science, Mahidol University, Bangkok, Thailand

**Parallel session, Session XX: Computer assisted learning II (room AF2)**

Chair: Paulo Simeão

17:00	17:15	Oral	Learning in the cloud: A new challenge for a global teaching system in optics and photonics	Andreas Christ <sup>1</sup> , Markus Feisst <sup>2</sup> , Razia Sultana <sup>1</sup> , and Dan Curticaean <sup>1</sup>	1- University of Applied Sciences Offenburg, Germany 2-University of Nottingham, UK
17:15	17:30	Oral	Web based interactive educational software introducing semiconductor laser dynamics: Sound Of Lasers (SOL)	Antonio Consoli, Jorge Rodero Sanchez, Paloma R. Horche and Ignacio Esquivias	ETSI Telecomunicación - Universidad Politécnica de Madrid, Spain
17:30	17:45	Oral	Design, development, testing and validation of a Photonics Virtual Laboratory for the study of LEDs	Francisco L. Naranjo <sup>1</sup> , Guadalupe Martínez <sup>2</sup> , Ángel Luis Pérez <sup>1</sup> , and Pedro J. Pardo <sup>3</sup>	1- Dept. of Physics, Faculty of Sciences, University of Extremadura, Avda. de Elvas s/n, Badajoz, Spain; 2- Dept. of Didactic of Experimental Sciences and Mathematics, Faculty of Education, University of Extremadura, Badajoz, Spain; 3- Dept. of Computer and Networks Systems Engineering, Merida University Center, University of Extremadura, C/ Santa Teresa de Jornet, Spain
17:45	18:00	Oral	Graphical User Interfaces for Teaching and Research in Optical Communications	Telmo Almeida, Rogério Nogueira, and Paulo André	Instituto de Telecomunicações, Campus Universitário de Santiago, Aveiro, Portugal, and Departamento de Física, Universidade de Aveiro, Campus Universitário de Santiago, Aveiro, Portugal
18:00	18:15	Oral	Diversity of devices along with diversity of data formats as a new challenge in global teaching and learning system	Andreas Christ <sup>1</sup> , Patrick Meyrueis <sup>2</sup> , and Razia Sultana <sup>1</sup>	1- University of Applied Sciences Offenburg, Germany 2- Strasbourg University, France