



The Abdus Salam  
**International Centre  
for Theoretical Physics**



## International Workshop on Singularities and Topological Structures of Light

Cosponsor(s): the Optical Society of America, OSA  
Organizer(s): E. Karimi (U. of Ottawa, Canada) ICTP Local Organizer: J. Niemela  
Trieste - Italy, 08 - 12 July 2013

**Venue: Adriatico Guest House Kastler Lecture Hall**

### Programme

**Monday, July 8** (Room:Adriatico Guest House Kastler Lecture Hall)

**8 July 2013**

- 09:00 - 10:00** (Room: Adriatico Guest House - Kastler Lecture Hall Area (Lower Level 1))  
--- Registration ---  
After you have Registered: Administrative Formalities (daily living allowances/travel reimbursements, bank transactions, etc.) at the E. Fermi Building - just above the Leonardo Da Vinci Bldg. - Meal coupons: balance will be issued by the Guesthouse Receptions one day after the on-line registration is completed according to the following timetables: GALILEO Guesthouse: Tuesday to Friday 10.00-12.00 & 13.00-15.00 ADRIATICO Guesthouse: Tuesday To Friday 13.00-15.00
- 10:00 - 10:30** **Prof. E.Karimi\* & J. Niemela\*\*** / \*University of Ottawa, \*\*ICTP  
**Opening session**
- 10:30 - 11:15** **Miles Padgett** / *University of Glasgow & OSA Committee Member*  
**Orbital Angular Momentum, light'a twist**
- 11:15 - 11:35** (Room: Adriatico Guest House (Terrace))  
--- Coffee Break ---
- 11:35 - 12:20** **Andrea Aiello** / *Max Planck Institute for the Science of Light, Erlangen*  
**Spin and Orbital Angular Momentum Separation for Light Beams and spin-orbit coupling**
- 12:20 - 12:40** **Andrey Nehrych** / *Chernivtsi National University*  
**Singular-optical coloring of regularly scattered white light**

- 12:40 - 14:30** (Room: Adriatico Guest House Cafeteria)  
--- Lunch ---
- 14:30 - 15:30** **Sir Michael Berry** / *University of Bristol*  
**The singularities of light: intensity, phase, polarization,**
- 15:30 - 15:50** **Giovanni Milione** / *City University and College of New York*  
**Encoding Information with Vector Vortex Beams**
- 15:50 - 16:10** (Room: Adriatico Guest House (Terrace))  
--- Coffee Break ---
- 16:10 - 16:55** **Peter Banzer** / *Max Planck Institute for the Science of Light, Erlangen*  
**Observing optical polarization Moebius strips**
- 16:55 - 17:30** **Poster Flash Talks - Short presentation: The talk must be maximum 3 pages and the maximum time of presenting is 2 minutes.**
- 17:30 - 19:00** (Room: Adriatico Guest House - Kastler Lecture Hall Area (Lower Level 1))  
ICE-BREAKER: refreshments and snacks will be served during the poster session  
--- Poster session (names in alphabetical order (unless added after the list had already been compiled) with respective titles & abstracts below) ---  
Poster board sizes and location at the Adriatico Guesthouse: Outside Kastler Lec. Hall (Workshop venue): - 8 wall-mounted boards, size of each board mts. 1.75 (width) x 1.90 (height) for total 26.60 sq.mts.  
Dynamics of Spin to Orbit Coupling in Silver Ion Exchanged Soda Lime Glasses Resulted from Interaction of an Intense Ar<sup>+</sup> Laser Beam and the Glass Matrix, the Optical Hysteresis (Aliakbar Ahangary - Iran)  
Generation of Vectorial and Polarization Singular Beams using a q-plate (Filippo Cardano - Italy)  
X-rays carrying orbital angular momentum at the SXFEL (Jianhui Chen - P.R. China)  
The evolution of OAM entanglement in turbulence (Alpha Hamadou Ibrahim - South Africa)  
Electron Vortex Diffraction (Roeland Juchtmans - Belgium)  
Monstardom Sphere (Vijay Kumar - India)  
Topological transport in an optical Möbius ring resonator ( Shilong Li - Germany)  
Cartesian derivatives of elegant Laguerre-Gaussian beams (Lopez Mago, Dorilian - Switzerland)  
Non-cyclic geometric phase in asymmetric optical microcavities (Libo Ma - Germany)  
1)Pattern formation for composite materials under elliptically polarized incoming field & 2)Pattern orientation due to longitudinal fields in a ring cavity (Daniel Alejandro Martin - Argentina)  
Characterization of aspheric surfaces using transport of intensity equation (Moradi Koshkabadi, Alireza - Iran)  
Radially and Azimuthally Polarized Non Paraxial Bessel Beams (Marco Ornigotti - Germany)  
Photoalignment-based liquid crystal q-plate technology (Slussarenko, Sergej - Italy)  
Deformations of the vortex light beams by thick holographic elements (Svitlana Sviridova - Ukraine)  
The role of spin in electron vortex states (Ruben Van Boxem - Belgium)  
Fresnel diffraction of a Gaussian laser beam by helical lens (Suzana Topuzoski - Macedonia)  
The influence of the Poynting vector spatial distribution on controlling the particles of the Rayleigh light scattering mechanism (Claudia Zenkova - Ukraine)  
Revealing of antibacterial effects on membrane morphology of optically trapped E. coli using digital holographic microscopy (Ali Mohebi - Iran)  
Instability of Higher-order Optical Vortices ( Francesco Ricci - Italy)  
Fabrication and Characterization of High-Quality Phase Masks for Optical Applications (Michele Gintoli - Italy)  
1) Recording a beam with integer orbital angular momentum into a photorefractive crystal BGO 2) Sagnac interferometer based generation of control cylindrical vector beams (Cristian Acevedo Caceres - Colombia)  
Double-link and Lorentzian-type similaritons in graded-index nonlinear waveguide with cubic-quintic nonlinearity (Amit Goyal - India)

Tuesday, July 9 (Room:Adriatico Guest House Kastler Lecture Hall)

9 July 2013

- 09:00 - 09:45 **Konstantin Bliokh** / *Advanced Science Institute RIKEN*  
**Extraordinary spin and momentum in evanescent waves**
- 09:45 - 10:05 **Dipti Banerjee** / *Vidyasagar College for Women*  
**Quantifying phases in homogenous twisted birefringent medium,**
- 10:05 - 10:25 **Claudia Zenkova** / *Chernivtsy National University*  
**The influence of the Poynting vector spatial distribution on controlling the particles of the Rayleigh light scattering mechanism**
- 10:25 - 10:45 (Room: Adriatico Guest House (Terrace))  
--- Coffee Break ---
- 10:45 - 11:30 **Taco D. Visser** / *Delft University of Technology*  
**Topological Reactions in Partially Coherent Electromagnetic Beams**
- 11:30 - 12:15 **Mark Dennis** / *University of Bristol*  
**The Poincare? sphere for optical angular momentum: Variations on a theme**
- 12:15 - 12:35 **Miguel Angel Bandres Motola** / *Instituto Nacional de Astrofisica*  
**Closed-form propagation of any paraxial beam through misaligned ABCD optical systems**
- 12:35 - 14:30 (Room: Adriatico Guest House Cafeteria)  
--- Lunch ---
- 14:30 - 15:15 **Robert W. Boyd** / *University of Rochester & University of Ottawa*  
**Quantum Aspects of Light Beams Carrying Orbital Angular Momentum**
- 15:15 - 15:35 **Filippo Miatto** / *University of Ottawa*  
**Efficiency of OAM detection by phase-flattening**
- 15:35 - 15:55 (Room: Adriatico Guest House (Terrace))  
--- Coffee Break ---
- 15:55 - 16:40 **Filippus Stefanu Roux** / *CSIR National Laser Centre*  
**The decay of orbital angular momentum entanglement in atmospheric turbulence**
- 16:40 - 17:00 **Filippo Romanato** / *Universita' degli Studi di Padova*  
**Nanoscale control of orbital angular momentum of light**
- 17:00 - 17:20 **Alexander John Taylor** / *University of Bristol*  
**Topology of quantised vortices in disordered fields**
- 20:30 - 23:00 (Room: Adriatico Guest House (Terrace))  
--- Social dinner ---

Wednesday, July 10 (Room:Adriatico Guest House Kastler Lecture Hall)

10 July 2013

- 09:00 - 09:45 **Sir Michael Berry** / *University of Bristol*  
**Seeing small things using superoscillations: mathematical exploration of a possible scheme**

- 09:45 - 10:30**     **Grover Swartzlander** / *University of Rochester*  
**Navigating the Heavens with Radiation Torque**
- 10:30 - 10:50**     **Sayantana Ghosh** / *The University of St Andrews*  
**Micro-manipulation of multiple particles in vacuum**
- 10:50 - 11:10**     (Room: Adriatico Guest House (Terrace))  
--- Coffee Break ---
- 11:10 - 11:55**     **Lorenzo Marrucci** / *Universita' di Napoli 'Federico II'*  
**Orbital angular momentum from a spin rotation: the optical and electron-beam cases**
- 11:55 - 12:15**     **Giulio Guzzinati** / *University of Antwerp, EMAT*  
**Electron Vortices in a Magnetic Field: Observation of the Larmor and Gouy Rotations**
- 12:15 - 12:35**     **Vincenzo Grillo** / *Istituto Nanoscienze, S3 CNR*  
**Quantum simulation of a spin polarization device in an electron microscope**
- 12:35 - 12:35**     --- FREE AFTERNOON ---

**Thursday, July 11** (Room:Adriatico Guest House Kastler Lecture Hall)

**11 July 2013**

- 09:15 - 10:00**     **Daniele Sanvitto** / *University of Salento, NNL*  
**Quantum Fluids of Polariton Condensates**
- 10:00 - 10:20**     **Rocio Jauregui** / *Universidad Nacional Autonoma de Mexico*  
**Scattering of dilute thermal atom clouds on optical Weber beams**
- 10:20 - 10:40**     (Room: Adriatico Guest House (Terrace))  
--- Coffee Break ---
- 10:40 - 11:25**     **Sonja Franke-Arnold** / *University of Glasgow*  
**Angular momentum of light and atoms**
- 11:25 - 11:45**     **Alexander Yakimenko** / *Taras Shevchenko National University of Kyiv*  
**Optical tweezers for vortex rings in atomic Bose-Einstein condensates**
- 11:45 - 12:05**     **Asmita Mukherjee** / *Universitaet Tuebingen*  
**Atomic Excitation by Twisted Photons**
- 12:05 - 14:30**     (Room: Adriatico Guest House Cafeteria)  
--- Lunch ---
- 14:30 - 15:15**     **Enrico Santamato** / *Universita' di Napoli 'Federico II'*  
**Liquid crystal topological plates for photon SAM and OAM entanglement**
- 15:15 - 15:45**     **Lorenzo Marrucci**  
**Spiral photolithography of azopolymers**
- 15:45 - 16:05**     (Room: Adriatico Guest House (Terrace))  
--- Coffee Break ---
- 16:05 - 16:50**     **Nicolo' Spagnolo** / *Universita' degli Studi di Roma 'La Sapienza'*  
**The photonics gear: from alignment free quantum communication to super-sensitive quantum correlations**

**16:50 - 17:35**      **Christoph Marquardt / *Max Planck Institute for the Science of Light***  
**Vectorial modes in continuous variable quantum optics**

**17:35 - 17:55**      **Antonio Zelaquett Khoury / *Universidade Federal Fluminense***  
**Quantum information protocols with spin-orbit photonic modes**

**Friday, July 12** (Room:Adriatico Guest House Kastler Lecture Hall)

**12 July 2013**

**09:00 - 09:45**      **Mark Dennis**  
**Reflections on reflected light beams: classical weak values and singularimetry**

**09:45 - 10:30**      **Jonathan Leach / *Heriot Watt University***  
**The duality relationship in the presence of post-selection**

**10:30 - 10:50**      (Room: Adriatico Guest House (Terrace))  
--- Coffee Break ---

**10:50 - 11:35**      **Gabriel Molina-Terriza / *Macquarie University***  
**Helicity and Angular Momentum in Nanophotonics**

**11:35 - 11:55**      **Saifollah Rasouli / *Institute for Advanced Studies in Basic Sciences(IASBS), Iran***  
**Wavefront distortions and singularities measurement using moiré deflectometry**

**11:55 - 12:25**      **Miles Padgett / *University of Glasgow***  
**Imaging Ghosts with structured light**

**12:25 - 12:45**      **Closing session and awards**