



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



## Advanced Workshop on Nonlinear Photonics, Disorder and Wave Turbulence

Cosponsor(s): In collaboration with: Aston Institute of Photonic Technologies, European Laboratory for Non-Linear Spectroscopy, Novosibirsk State University, Institute of Automation and Electrometry of Russian Academy of Science.  
Organizer(s): V. Zakharov (USA), Y. Kivshar (Australia), D. Wiersma (Italy), S. Turitsyn (UK). ICTP Local Organizer:

J. Niemela

Trieste - Italy, 15 - 19 July 2013

**Venue: Leonardo da Vinci Building Euler Lecture Hall**

### Programme

**Monday, 15 July** (Room:Leonardo da Vinci Building Euler Lecture Hall)

**15 July 2013**

- 08:15 - 09:15** (Room: Leonardo da Vinci Building, Lobby)  
**Registration**
- 09:15 - 09:30** **Welcome and opening remarks**
- 09:30 - 10:30** **M. BERRY / *University of Bristol, UK***  
**Statistics of singularities in linear random waves**
- 10:30 - 11:00** (Room: Leonardo da Vinci Building Terrace)  
--- Coffee break ---
- 11:00 - 12:00** **M. SEGEV / *Israel Institute of Technology, Israel***  
**Anderson Localization of Light and Disorder-Enhanced Transport**
- 12:00 - 14:00** --- Lunch ---
- 14:00 - 15:00** **H. CAO / *Yale University, USA***  
**Random lasers - past, present, future**

15:00 - 15:30 (Room: Leonardo da Vinci Building Terrace)  
--- Coffee break ---

15:30 - 16:30 **G. FALKOVICH** / *Weizmann Institute of Science, Israel*  
**Turbulence and condensate**

19:00 - 21:00 (Room: Adriatico Guest House (Terrace))  
--- Welcome reception ---

**Tuesday, 16 July** (Room:Leonardo da Vinci Building Euler Lecture Hall)

16 July 2013

09:00 - 10:00 **D. WIERSMA** / *LENS - Universita' di Firenze, Florence, Italy*  
**Disordered Photonics**  
CANCELLED

10:00 - 10:30 **N. BERLOFF** / *University of Cambridge, UK*  
**Seeing quantum mechanics by the naked eye: Pattern formation in exciton-polariton condensates**

10:30 - 11:00 (Room: Leonardo da Vinci Building Terrace)  
--- Coffee break ---

11:00 - 11:30 **C. CONTI** / *University Sapienza, Roma, Italy*  
**About the effect of nonlinearity on disorder induced localization in Hamiltonian and dissipative systems**

11:30 - 12:00 **S. SKIPETROV** / *University of Grenoble, France*  
**Emission and capture of light in random media: Euclidean random matrix theory**

12:00 - 14:00 --- Lunch ---

14:00 - 14:45 **S. FISHMAN** / *Israel Institute of Technology, Israel*  
**Spreading in potentials random in space and time**

14:45 - 15:15 **B. RUMPF** / *Southern Methodist University, Dallas, USA*  
**From dawn to decadence: Creation and decay of coherent pulses in one dimensional wave turbulence**

15:15 - 15:30 (Room: Leonardo da Vinci Building Terrace)  
--- Coffee break ---

15:30 - 16:15 **A. NEWELL** / *University of Arizona, Tucson, USA*  
**And now for something completely different ... Fibonacci and Optics?**

**Wednesday, 17 July** (Room:Leonardo da Vinci Building Euler Lecture Hall)

17 July 2013

09:00 - 09:45 **E. KUZNETSOV** / *Landau Institute for Theoretical Physics, Russia*  
**How to use wave collapse to get short pulses in fibers**

09:45 - 10:30 **I. GABITOV** / *University of Arizona, Dallas, USA*  
**Nonlinear effects in transient metamaterials**

- 10:30 - 11:00** (Room: Leonardo da Vinci Building Terrace)  
--- Coffee break ---
- 11:00 - 11:30** **S. GREDESKUL** / *Ben-Gurion University of the Negev, Israel*  
**Anderson Localization in Multilayered Metamaterials**
- 11:30 - 12:00** **V. FREILIKHER** / *Bar-Ilan University, Ramat-Gan, Israel*  
**Charge transport in graphene superlattices and light propagation in dielectric structures: a comparative study**
- 12:00 - 14:00** --- Lunch ---
- 14:00 - 14:45** **S. A. MUJUMDAR** / *Tata Institute of Fundamental Research, Mumbai, India*  
**Frequency and intensity fluctuations in random lasers**
- 14:45 - 15:00** (Room: Leonardo da Vinci Building Terrace)  
--- Coffee break ---
- 15:00 - 15:45** **V. ZAKHAROV** / *University of Arizona, Tucson, USA*  
**Nonlinear stage of modulational instability**  
CANCELLED
- 19:00 - 21:00** --- Workshop dinner ---  
Those who wish to go to the workshop dinner should sign up with the secretary (room 138) by 12 noon on Tuesday, 16 July.

**Thursday, 18 July** (Room: Leonardo da Vinci Building Euler Lecture Hall)

**18 July 2013**

- 09:00 - 09:45** **S. GALTIER** / *Université Paris-Sud, Institut d'Astrophysique Spatiale, Paris, France*  
**Wave turbulence in astrophysics and geophysics**
- 09:45 - 10:30** **N. VLADIMIROVA** / *University of New Mexico, USA*  
**Review of optical turbulence in focusing and defocusing media**
- 10:30 - 11:00** (Room: Leonardo da Vinci Building Terrace)  
--- Coffee break ---
- 11:00 - 11:30** **D. CHURKIN** / *Aston University, Birmingham, UK*  
**Laminar-turbulent transition in fibre laser**
- 11:30 - 12:00** **A. PICOZZI** / *University de Bourgogne, Dijon, France*  
**Optical wave turbulence**
- 12:00 - 14:00** --- Lunch ---
- 14:00 - 14:30** **E. PODIVILOV** / *Institute of Automation and Electrometry SB RAS, Novosibirsk, Russia*  
**Description of fiber laser spectra by wave kinetic theory**
- 14:30 - 15:00** **P. SURET** / *Université Lille, France*  
**Wave Turbulence and non gaussian statistics in 1D Nonlinear Schrodinger Equation**
- 15:00 - 15:15** (Room: Leonardo da Vinci Building Terrace)  
--- Coffee break ---

**15:15 - 16:00**     **P. SEBBAH** / *Institut Langevin, Paris, France*  
**Taming random lasers: Turning a random laser into a tunable singlemode laser by active pump shaping**

**Friday, 19 July** (Room:Leonardo da Vinci Building Euler Lecture Hall)

**19 July 2013**

**09:00 - 09:30**     **S. NAZARENKO** / *Warwick University, UK*  
**Wave turbulence, Bose-Einstein condensation and Berezinski-Kousterlitz-Thouless transition in 2D NLS system**

**09:30 - 10:00**     **P. LUSHNIKOV** / *University of New Mexico, USA*  
**Logarithmic scaling of critical collapse and strong collapse turbulence**

**10:00 - 10:30**     **I. KOLOKOLOV** / *Landau Institute for Theoretical Physics, Russia*  
**Two-dimensional turbulence in a finite box: fluctuations and coherent structures**

**10:30 - 11:00**     (Room: Leonardo da Vinci Building Terrace)  
--- Coffee break ---

**11:00 - 11:30**     **D. SHEPELYANSKY** / *The Institute of Research on Complex Atomic and Molecular Systems, Toulouse, France*  
**Kolmogorov turbulence facing Anderson localization and KAM integrability**

**11:30 - 12:00**     **V. LEBEDEV** / *Landau Institute for Theoretical Physics, Russia*  
**Passive Scalar Transport in Peripheral Regions of Random Flows**

**12:00 - 12:15**     **Closing remarks**

**12:15 - 14:00**     --- Lunch ---