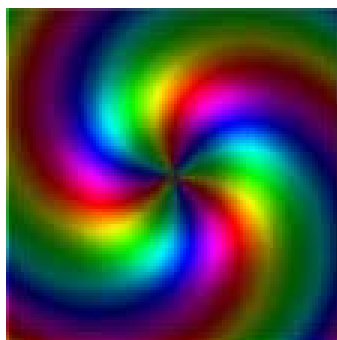


NATO Advanced Research Workshop
SINGULAR OPTICS 2003



June 24-29, Kiev, Ukraine

TIMETABLE



Bogolyubov Institute



Hotel "Feofania"

Organizing Committee

ARW Co-Directors

Prof. M. V. Berry	Bristol University, Bristol, UK
Prof. M. S. Soskin	National Academy of Sciences, Kyiv, Ukraine

International Organizing Committee

Prof. M. V. Berry	Bristol University, Bristol, UK
Prof. M. S. Soskin	National Academy of Sciences, Kyiv, Ukraine
Prof. V. Volostnikov	Lebedev Physics Institute, Russian Academy of Sciences (Samara branch), Samara, Russia
Prof. J. P. Woerdman	Huygens Laboratory, Leiden, the Netherlands

Scientific Secretaries

Dr. M. R. Dennis	Bristol University, Bristol, UK
Dr. M. V. Vasnetsov	National Academy of Sciences, Kyiv, Ukraine

The NATO Advanced Research Workshop “**Singular Optics 2003**” is organized in co-operation with and co-sponsored by:

National Academy of Science of Ukraine

SPIE – The International Society for Optical Engineering Ukrainian Chapter

Institute of Physics NAS of Ukraine

(Key speaker lectures designated *, coffee breaks by CB)

24 June (Tue)

Arrival

8:00 – 9:00	Breakfast
13:00 – 14:00	Lunch
18:00 – 19:00	Dinner
19:00 – 21:00	Informal welcome to Workshop participants and observers by Co-Directors. Information about the Workshop timetable. General discussion.

25 June (Wed)

9:00 – 9:45	Opening ceremony by First Vice-President of the National Academy of Sciences of Ukraine acad. A. P. Shpak and Member of NATO PST panel Prof. O. M. Ivasishin.
9:50 – 10:40	M. V. Berry Colours and crystals. <i>HH Wills Physics Laboratory, Bristol University, Bristol, UK</i>
CB	
11:20 – 12:10	*G. A. Swartzlander Coherence and optical vortices. <i>University of Arizona, Tucson, USA</i>
12:10 – 12:30	P. V. Polyanskii Partially coherent vortex beams with a separable phase. <i>Chernovtsy National University, Chernovtsy, Ukraine</i>
12:30 – 12:50	J. Courtial Measuring the angular uncertainty principle in beam-

rotating ring resonator, *University of Glasgow, Glasgow, UK*

Lunch

- 14:00 – 14:50 ***M. S. Soskin** **Singularities in vector light fields.** *Institute of Physics, National Academy of Sciences of Ukraine, Kyiv, Ukraine*
- 14:50 – 15:10 **I. V. Veshneva** **The classification of singular Kaurhunen-Loeve modes for the description of the polarization transverse patterns dynamics in vertical-cavity surface-emitting lasers.** *Saratov State University, Saratov, Russia*
- 15:10 – 15:30 **P. Kohns** **Achromatic Liquid Crystal Phase Retarders** *RheinAhrCampus, Fachhochschule Koblenz, Remagen, Germany*
- 15:30 – 15:50 **I. I. Mokhun** **Polarization singularities and angular momentum of electromagnetic field.** *Chernovtsy National University, Chernovtsy, Ukraine*

CB

- 16:20 – 17:10 ***I. Freund** **Generalized optical Lissajous figures.** *Bar-Ilan University, Ramat Gan, Israel*
- 17:10 – 18:00 ***I. Bialynicki-Birula** **Motion of vortex lines of the electromagnetic field.** *Center for Theoretical Physics, Polish Academy of Sciences, Warsaw, Poland*

Dinner

- 19:00 – 21:00 Posters I
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26 June (Thu)

- 9:00 – 9:50 ***V. G. Volostnikov** **Generalized Gaussian beams.** *P N Lebedev Physical Institute (Samara branch), Samara, Russia*
- 9:50 – 10:10 **K. Dholakia** **Advanced experimental studies of the transfer of optical angular momentum to trapped particles.** *University of St Andrews, North Haugh, St Andrews, UK*
- 10:10 – 10:30 **K. Regelskis** **Free-space propagation of second harmonic singular beams.** *Vilnius University, Vilnius, Lithuania*
- 10:30 – 10:50 **E. G. Abramochkin** **Integral transformations and rotations of Hermite-Laguerre-Gaussian beams.** *P N Lebedev Physical Institute (Samara branch), Samara, Russia*

CB

- 11:20 – 12:10 ***M. R. Dennis** **Topological twisting of light: how to knot and plait phase**

singularities. *H H Wills Physics Laboratory, Bristol University, Bristol, UK*

12:10 – 12:30 **S. Orlov Propagation of singular Bessel beams.** *Vilnius University, Vilnius, Lithuania*

12:30 – 12:50 **O. V. Tikhomirova Inhomogeneous media peculiarities reconstruction from the measurements of phase singularities parameters.** *Institute of Atmospheric Optics, Siberian Branch of The Russian Academy of Sciences, Tomsk, Russia*

Lunch

14:00 – 14:50 ***J. F. Nye The evolution of diffraction catastrophes from simple Fraunhofer patterns.** *H H Wills Physics Laboratory, Bristol University, Bristol, UK*

14:50 – 15:10 **A. P. Sukhorukov Parametric interactions in singular optics.** *Moscow State University, Moscow, Russia*

15:20 – 15:30 **W. Zakowicz Wave pulses video gallery.** *Institute of Physics, Polish Academy of Sciences, Warsaw, Poland*

15:30 – 15:50 **S. P. Anokhov On optical beam knife-edge diffraction.** *International Center "Institute of Applied Optics" NAS of Ukraine, Kiev, Ukraine*

CB

16:20 – 17:10 ***V. P. Aksenov Singular optical fields in inhomogeneous atmosphere: theory and applications.** *Institute of Atmospheric Optics, Siberian branch of Russian Acad Sciences, Tomsk, Russia*

17:10 – 18:00 ***G. Gbur Singular optics in fields of different states of coherence.** *Vrije Universiteit, Amsterdam, The Netherlands*

19:30 Banquet

27 June (Fri)

9:00 – 9:50 ***R. Dändliker Measuring optical phase singularities at subwavelength resolution.** *Institute of Microtechnology, University of Neuchâtel, Neuchâtel, Switzerland*

9:50 – 10:10 **O. V. Angelsky On applicability of the singular optics concept for diagnostics of random and fractal rough surfaces.** *Chernovtsy National University, Chernovtsy, Ukraine*

10:10 – 10:30 **T. D. Visser Light transmission through sub-wavelength slits: phase singularities, plasmons and enhanced transmission.** *Vrije Universiteit, Amsterdam, The Netherlands*

10:30 – 10:50 **C. Rockstuhl Investigation of phase singularities generated by optical micro- and nano-structures.** *Institute of Microtechnology, University of Neuchâtel, Neuchâtel, Switzerland*

CB

- 11:20 – 12:10 ***Y. S. Kivshar** **Optical vortices and vortex solitons.** *Nonlinear Physics Group, Research School of Physical Sciences and Engineering, The Australian National University, Canberra, Australia*
- 12:10 – 12:30 **R. K. Drampyan** **Break-up of spatially modulated laser beam in a Kerr medium and formation of stimulated Raman scattering.** *Institute for Physical Research, Armenian National Academy of Sciences, Ashtarak, Republic of Armenia*
- 12:30 – 12:50 **P. L. Ramazza** **Dissipative solitons: multistability and instabilities.** *Istituto Nazionale di Ottica Applicata, Firenze, Italy*
- Lunch
- 14:00 – 14:50 ***M. J. Padgett** **Spinning light.** *University of Glasgow, Glasgow, UK*
- 14:50 – 15:10 **A. Ya. Bekshaev** **Complex structure of the orbital angular momentum of asymmetric light beams with optical vortices.** *I.I. Mechnikov University, Odessa, Ukraine*
- 15:20 – 15:30 **J. Leach** **Measuring the orbital angular momentum of a single photon.** *University of Glasgow, Glasgow, UK*
- 15:30 – 15:50 **E. R. Eliel** **Mesoscopic spiral phase plates for multi-dimensional photon entanglement.** *Leiden University, Leiden, the Netherlands*
- CB
- 16:20 – 17:10 ***M. V. Vasnetsov** **Effects associated with orbital angular momentum in optical vortex beams.** *Institute of Physics, National Academy of Sciences of Ukraine, Kyiv, Ukraine*
- 17:10 – 17:30 **U. Leonhardt** **Quantum Catastrophes.** *University of St Andrews, North Haugh, St Andrews, UK*
- 17:30 – 17:50 **G. Nienhuis**
- Dinner
- 19:00 – 21:00 Posters II

28 June (Sat)

- 9:00 – 9:50 ***J. P. Woerdman** **Classical and quantum fields in open resonators.** *Leiden University, Leiden, the Netherlands*
- 9:50 – 10:10 **G. Kaiser** **The secret lives of complex-source pulsed beams: their source distributions in the space-time and Fourier domains.** *The Virginia Center for Signals and Waves, Glen Allen, USA*
- 10:10 – 10:30 **A. V. Volyar** **Fiber excitation and vortex preserving fibers.** *Tavrida National University, Simferopol, Crimea, Ukraine*

10:30 – 10:50 **C. N. Alexeyev** **Optical vortices and gap structure in vortex preserving twisted fibers.** *Tavrida National University, Simferopol, Crimea, Ukraine*

CB

11:20 – 12:00 Closing remarks and discussion

Lunch

15:00 – 18:00 Excursion

Dinner; free evening events for contacts and discussions

29 June (Sun)

Departure

SUMMARY

15 Key speakers (8 NATO + 5 from Eligible partner countries/Mediterranean dialogue countries + 2 others)

40 min presentation + 10 min discussion

30 other participants (13 NATO + 16 EPC + 1 other)

26 oral presentations, 15 min presentation + 5 min discussion

5 posters (Z. Bouchal, J. Wagner, V. V. Kotlyar, T A Fadeeva, A. A. Ryzhevich)

Posters (**bold** name for representing co-author)

1. **Z. Bouchal** **Nondiffracting vortex beams.** *Dept. of Optics, Olomouc, Czech Republic*
2. **J. Wagner** **Experiments on pseudo-nondiffracting vortex beams.** *Dept. of Optics, Olomouc, Czech Republic*
3. N.S.Kazak, V.N.Belyi, N.A.Khilo, E.G.Katranji, **A.A.Ryzhevich** **Formation of optical vortices using the polarization singularities in crystals.** *Institute of Physics, NAS of Belarus, Minsk, Belarus*
4. **V.V. Kotlyar**, S.N. Khonina, V.A. Soifer **Generating laser mode beams with desired orbital angular momentum.** *Laser Measurements Laboratory, Image Processing Systems Institute, Russian Academy of Sciences, Samara, Russia*
5. **T.A. Fadeeva** **Vortex separation and analysis of its structure in a fiber directional coupler.** *Tavrida National University, Simferopol, Crimea, Ukraine*
6. O.P. Budnyk, **R.A. Lymarenko** **Linear singularities in optical beam diffracted on a half-plane.** *International Center "Institute of Applied Optics" NAS Ukraine, Kiev, Ukraine*

7. **A.Yu. Popov, V.Ya. Gotsulskiy, V. I. Sidorov Registration of the orbital speed component of microparticles motion induced by optical vortex beams with help of LDA and correlation spectroscopy methods.** *I.I. Mechnikov University, Odessa, Ukraine*
8. **M. Gitterman, I. Shapiro, B.Ya. Shapiro Vortex explosions in superconductors and in optical beams.** *Department of Physics, Bar-Ilan University, Ramat Gan, Israel*
9. **Yu.A. Egorov, A.V.Volyar “White vortices” and their control in a beam near a focus** *Tavrida National University, Simferopol, Crimea, Ukraine*
10. **V.G. Shvedov, Ya.V. Izdebskaya, A.V.Volyar vortical trapping of large microparticles by profiled singular beams in IR spectral range.** *Tavrida National University, Simferopol, Crimea, Ukraine*
11. **A.N. Alexeyev, A.V. Volyar Vortex conversion in twisted optical fibers.** *Tavrida National University, Simferopol, Crimea, Ukraine*
12. **M.A. Yavorsky, C.N. Alexeyev, Yu.A. Fridman. Nonlinear conversion of optical vortices in ideal fibers.** *Tavrida National University, Simferopol, Crimea, Ukraine*
13. **V.P.Aksenov, A.V. Ustinov Vortex backwash on the wave front surface of Gauss-Laguerre light beam.** *Institute of Atmospheric Optics, Siberian branch of Russian Academy of Science, Tomsk, Russia*
14. **M.S. Soskin, G.V. Bogatyreva Detection and Metrology of Optical Vortices Helical Wave Fronts** *Institute of Physics, National Academy of Sciences of Ukraine, Kyiv, Ukraine*
15. **I.V. Basistiy, V.A.Pas’ko, V.V. Slyusar, M.S. Soskin, M.V. Vasnetsov Synthesis and analysis of optical vortices with fractional topological charges.** *Institute of Physics, National Academy of Sciences of Ukraine, Kyiv, Ukraine*
16. **V. Denisenko, R. Egorov, G. Galich, and M. Soskin Experimental investigations of polarization singularities in elliptic speckle-fields: topological characteristics, sign rule, loop rules, network of singularities.** *Institute of Physics, National Academy of Sciences of Ukraine, Kyiv, Ukraine*
17. **G. Bogatyreva¹, A. Ivanovskyy², P. Polyanskii³, M. Soskin¹ Elliptic combined beams carrying polarization singularities.** ¹*Institute of Physics, National Academy of Sciences of Ukraine, Kyiv, Ukraine,* ²*Holographia, LLC, Bortnichi, Kiev, Ukraine,* ³*Chernivtsy National University, Chernivtsy, Ukraine*
18. **A.Babenko, A.Mokhun, M.Soskin Combined elliptic Gaussian beams with L-contour singularity.** *Institute of Physics, National Academy of Sciences of Ukraine, Kyiv, Ukraine*
19. **T.A. Davydova and A.I. Yakimenko Stable multiple-charged localized optical vortices in cubic-quintic nonlinear media.** *Institute for Nuclear Research, Kyiv, Ukraine*
20. **A.P Kiselev Explicit solutions of the wave equation describing vorticity.** *Steklov Math Institute, St.Petersburg Department, St.Petersburg, Russia*