



Bi-Annual Report (May, 2005) SPIE STUDENT CHAPTER of TAURIDA NATIONAL V. VERNANDSKY UNIVERSITY

SPIE Crimea Chapter is a society dedicated to advancing engineering and scientific applications of optical and optoelectronic applied science and engineering.



1. Membership

For this moment 12 students are listed in our SPIE Student Chapter.

List of all current student members of SPIE Student Chapter of Taurida

National V. Vernadsky University:

1. Yana V. Izdebskaya
2. Alexander F. Rubass
3. Yuriy A. Egorov
4. Sergey I. Lagunov
5. Dmitry V. Solodovnichenko
6. Yaroslav S. Kachin
7. Sergey V. Hablenko
8. Vsevolod S. Gatsenko
9. Dmitry V. Shmelev
10. Luiza Z. Mavlutalieva
11. Anna O. Romanova
12. Ivan A. Ostovski

All members undertake to pay member payments in time and to work on benefit of student chapter: to organize and participation in conferences and educational courses, to establish contacts to the colleagues of the world.

2. SPIE Student Chapter Officers

All opportunities on use of rights of members SPIE in educational and scientific fields were shown. Elections of the most active members are executed for the organization of work of our Chapter.

The list of SPIE Student Chapters officers on next academic years

Izdebskaya Yana - *the elected president* of SPIE STUDENT CHAPTERS of Taurida National V. Vernadsky University

Rubass Alexander - *the elected vice-president* of SPIE STUDENT CHAPTERS of Taurida National V. Vernadsky University

Egorov Yuriy- *the elected secretary* of SPIE STUDENT CHAPTERS of Taurida National V. Vernadsky University

Lagunov Sergey - *the elected treasurer* of SPIE STUDENT CHAPTERS of Taurida National V. Vernadsky University

3. Education

3.1 Students of our Student Chapter SPIE continue to attend research courses (since October 2004):

- Design of Optical Systems due informational method
- Diffraction Theory of Image
- Optics of Crystals
- Topology of optical vortices

We invite on lectures of all interested persons (the students from other departments of our University, Institutions, colleges and schools). Guest lectures are the professors and candidates sciences (Phys. and Math.) of our University and other Institutions.

3.2 Guest lectures (2004-2005)

1. Prof. Yuri Kivshar (The Australian National University) read lecture " "Exact" Solution of the Problem of Weakly Guiding Anisotropic Twisted Fibers" and conducted debate with members of our chapter (October, 2004);
2. Prof. Yuri Fridman read lecture "Spin continuity and birefringence in locally isotropic weakly inhomogeneous media" (Taurida National V. Vernadsky University, Department of Theoretical Physics) (March, 2005);
3. Prof. Igor Dzedolik read lecture «Envelope equations of guided vortex pulse in optical fibers» (Candidate of science (Phys. and Math.) Taurida National V. Vernadsky University, Department of General Physics) (April, 2005).
4. Prof. Sergey Roshupkin read lecture "Nonparaxial singular beams of higher orders" (Candidate of science (Phys. and Math.) Taurida National V. Vernadsky University, Department of Theoretical Physics) (April, 2005).
5. Konstantin Alekseev (Candidate of science (Phys. and Math.) read lecture "Generic singular beams in elliptic fibers", Taurida National V. Vernadsky University, Department of Theoretical Physics) (March, 2005).

3.3 The library

Prof. Alexander V. Volyar (Student's Chapter Faculty Advisor) has filled up library of Student Chapter with the editions new journals: "Proceedings of SPIE", "Journal of Optics A: Pure and Applied Optics", "Ukrainian journal of physical optics"; "OE Magazine"; "Quantum Electronics"; "Abstracts of 10th International Conference "Nonlinear Optics of Liquid and Photorefractive Crystals NOLPC'2004". These editions are used: for study of courses with the purpose of updating by their newest information, and for the best orientation of the students in high technologies published in these editions.

1. Scientific activity

4.1 Students of our Chapter participated at (2004-2005):

- International conference “**Education in Ukraine-2004**” on February 4-8, 2004, Kiev, Ukraine.
- Annual Student’s Conference “**Singular Optics**” on April 12-16, 2004, Simferopol, Ukraine.
- Olympiad “**Computer modeling-2004**” on May 12-16, 2004, Crimea, Ukraine.
- “**SPIE’s Annual Meeting-2004**” on 2-6 August, Denver, Colorado (Sergey Lagunov).
- **10th International Conference “Nonlinear Optics of Liquid and Photorefractive Crystals NOLPC’2004”** on October 3-8, 2004, Alushta, Ukraine.

Scientific works of our students in International Journals (2004-2005):

- 1) Izdebskaya Ya. V., Shvedov V. G., Volyar A. V. Singular Beam Diffraction by the Edge of a Dielectric Medium//Ukr. J. Phys. Opt. V. 5 (3)(2004)
- 2) Ya.V. Izdebskaya, V.G. Shvedov, A.V. Volyar Structure of an optical vortices at the boundary of dielectric medium //Proceedings of SPIE 2004, V. 5582. -P. 222-230
- 3) Volyar A.V., Egorov Yu.A., Rubass A.F., Fadeyeva T.A.//Techn. :Phys. J. Lett., 2004, V.30, № 16, P.82-89
- 4) Volyar A.V., Egorov Yu.A., Rubass A.F., Fadeyeva T.A.//Techn. :Phys. J. Lett., 2004, V.74, № 12, P.90-93.
- 5) Egorov Yu.A., Fadeyeva T.A., Volyar A.V. The fine structure of singular beams in crystals: colours and polarization// J. Opt. A: Pure Appl. Opt., 2004, V.6, P. 217-228.
- 6) Izdebskaya Ya.V., Shvedov V.G., Volyar A.V. Generation of high-order optical vortices by the optical wedge-system//Abstracts of NOLPC'2004, P. 92
- 7) Rubass A.F., Fadeyeva T.A., Egorov Yu.A., Volyar A.V. The orbital parameters of the perturbed singular beams// Abstracts of NOLPC'2004, P. 93
- 8) Egorov Yu.A., Fadeyeva T.A., Rubass A.F., Volyar A.V. Focusing of the coherent and incoherent Laguerre-Gaussian beams after uniaxial crystals// Abstracts of NOLPC'2004, P. 96
- 9) Egorov Yu.A., Fadeyeva T.A., Rubass A.F., Volyar A.V. White optical vortices in LiNbO₃ crystal//Proceedings of SPIE 2004, V. 5582. -P. 286-296
- 10) Volyar A.V., Kiselev A.P., Egorov Yu.A. Eigen-Polarization beams in uniaxial crystals //Proceedings of SPIE 2004, V. 5582 pp. 98 - 106

4.2 Our Student Chapter created the video-course: "Caustics, their applications". We presented this video-course on 10th International Conference “Nonlinear Optics of Liquid and Photorefractive Crystals NOLPC’2004” (October 3-8, 2004, Alushta) and the video-course "Optical vortices".

4.3 Scientific student seminars during academic year (2004-2005): “Generic singular beams in an optical fiber and free space, its applications” (Yaroslav S. Kachin.), “Spin continuity and birefringence in locally isotropic weakly inhomogeneous media” (Dmitry V. Shmelev), “Light Processing of Singular Beams by Optical Wedge: Natural Traps of Vortices” (Dmitry V. Solodovnichenko), “Fiber vortex interferometer: computer processing of experimental data” (Luiza Z. Mavlutaliev).

5. Grants, Awards

1. Sergey Lagunov (Treasurer of our Student Chapter) was awarded by travel grant on SPIE Annual Meeting – 2004 in Denver, Colorado for presentation of student Chapter of SPIE student chapters of Taurida National V. Vernadsky University.
2. Yana Izdebskaya (The President of our Student Chapter) has gotten travel grant on SPIE Annual Meeting – 2005 in San Diego, California for presentation of student Chapter of SPIE student chapters of Taurida National V. Vernadsky University.
3. Yana Izdebskaya (The President of our Student Chapter) has gotten SPIE Educational Scholarship 2005 on amount \$2,000.

6. Exhibition

2th Photo-Exhibition "Phase Singularities and Caustics" on September 6-10, 2004, Crimea, Ukraine.

7. Organizing Activity

- Organization of Young Scientist Conference "Singular and Nonlinear Optics 2005" on April 18-22, 2005, Simferopol, Ukraine. 35 reports are represented (18 Oral). The sections: Phase singularities and caustics, their applications, Laser physics/technology and applications, Nonlinear effects in active and passive optical devices and systems;
- Co-organization "10th International Conference "Nonlinear Optics of Liquid and Photorefractive Crystals NOLPC'2004" on October 3-8, 2004, Alushta, Ukraine;
- Organization of Olympiad "Computer modeling-2004" and 2th Photo-Exhibition "Phase Singularities and Caustics" on September 6-10, TNU, Crimea, Ukraine;
- Organization of the excursion for members of SPIE in r/d "Domain".

Expected Actions within the Next Year:

1. The Seventh International Conference "Correlation Optics" will be held in Chernivtsi, Ukraine on September 6-9, 2005.
2. Travel grant on SPIE's Annual Meeting- 2005 for presentation of report about activities of our chapter.
3. Organization of Young Scientist Conference "Singular and Nonlinear Optics-2006" at Taurida National V. Vernadsky University (April, 2006).
4. The presentation of the video-course "Optical vortices" on conferences "Singular and Nonlinear Optics" and the Seventh International Conference "Correlation Optics".
5. International Congress on Optics and Optoelectronics" which will take place on 28 August-2 September, 2005, Warsaw, Poland.
6. 3th Photo-Exhibition "Phase Singularities" on September, 2005, Crimea, Ukraine.

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10th International Conference “Nonlinear Optics of Liquid and Photorefractive Crystals NOLPC’2004”





