

## **Student Chapter Bi-Annual Report**

**(May 2005)**

### **Saint-Petersburg State University of Informational Technologies, Mechanics and Optics**

#### **Names and e-mail addresses of chapter officers:**

President: Paul Petrosenko, [chloory@mail.ru](mailto:chloory@mail.ru)

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#### **List of current Student Chapter members (21):**

1. Alexeev Alexander
2. Buyanovskaya Elizaveta
3. Chernov Ilya
4. Dmitry Belov
5. Fyodorov Fyodor
6. Kiselev Alexey
7. Kiselev Andrey
8. Kushnarenko Alexander
9. Lobanov Sergey
10. Makarov Evgeniy
11. Mohnatova Olga
12. Petrosenko Pavel
13. Shpolyansky Yuri
14. Stadnichenko Denis
15. Travin Denis
16. Tsigankova Ekaterina
17. Volkov Mikhail
18. Yankovskaya Elizaveta
19. Yastrebova Natalya
20. Zaharov Alexey
21. Zakirov Ravil

## **Chapter activities since last report:**

In first half of 2005 our members worked for extending their study to the following directions:

- ✓ analytical study and numerical modeling of the femtosecond supercontinuum generation;
- ✓ analytical study and numerical modeling of a few-cycle pulses propagation and reflection;
- ✓ investigation of few-cycle pulses collision in waveguides and possibilities of received effects' use in ultrafast optoinformatics;
- ✓ propagation of light along rows of nanospheres and nanocylinders;
- ✓ investigation of structures of permitted and forbidden zones in periodical system of intensifying an isotropic layers;
- ✓ modeling of nanotubes growth;
- ✓ holographic technologies for artificial intelligence creation.

Most part of members of the Chapter took part in organization of the ICONO/LAT 2005 Conference (<http://congress.phys.msu.ru/icono-lat-2005/>) on 10-15 May 2005, Saint-Petersburg, Russia. (ICONO 2005 - International Conference on Coherent and Nonlinear Optics collocated with LAT 2005 - International Conference on Lasers, Applications, and Technologies, ICONO/LAT-SYS 2005 - International School for Young Scientists). See annex 1 for photos.

## **Publications:**

- ✓ Bespalov V.G., Lobanov S.A. Unsteady forced combinatorial dispersion in bicomponent mixture of gases // Optics and spectroscopy, V. 99, N 1, 2005, pp. 116 – 120.
- ✓ Gurov I., Zakharov A., Voronina E. Dynamic phase shifting interferometry technique for wavefront analysis. //PALS 2005. 2nd Photonics and Laser Symposium. Proceedings. - Kajaani, Finland, 23-25 February 2005. - pp.14-15.
- ✓ Gurov I., Zakharov A., Bilyk V., Larionov A. Low coherence fringe evaluation by synchronous demodulation and Kalman filtering method: a comparison // Proceedings of OSAV 2004, 2005, pp. 218-224.
- ✓ Alarousu E., Bilyk V., Gurov I, Hast J., Krehut L., Mullula R., Zakharov A. Nonlinear dynamic filtering of logarithmically amplified fringe signals in optical coherence tomography // Proceedings of OSAV 2004, 2005, pp. 331-336.
- ✓ Gurov I., Zakharov A., Kouznetsov A. // Dynamic nonlinear filtering of fringe signals distorted by quantization noise // Proceedings of OSAV 2004, 2005, pp. 343-348.
- ✓ Belov D., Kozlov S., Shpolyanskiy Yu. About self-compression of spectral supercontinuum // News of Russian Academy of Sciences, to be published.

### **Conferences:**

- ✓ Gurov I., Zakharov A., Voronina E. Dynamic phase shifting interferometry technique for wavefront analysis. // PALS 2005. 2nd Photonics and Laser Symposium. Kajaani, Finland, 23-25 February 2005.
- ✓ Belov D., Kozlov S., Shpolyanskiy Yu., Dynamics of root-mean-square duration and spectral width of few-cycle laser pulses in nonlinear media. - XXXIV scientific and educational conference of SPbSU ITMO, St. Petersburg, Russia, 4 February 2005.
- ✓ Belov D., Kozlov S., Shpolyanskiy Yu., Dynamics scenarios of spectral supercontinuum in waveguides. - Int. Conference ICONO/LAT 2005, St. Petersburg, Russia, 10-15 May 2005.
- ✓ Makarov N. Optimization of femtosecond two-photon storage by spectral pulse shaping (5934-22) // SPIE International Symposium on Optics & Photonics, San Diego, California, 31 July - 4 August 2005.

### **Our grants and awards:**

#### **SPIE grants:**

- ✓ Yastrebova N. SPIE Educational Scholarship in Optical Science and Engineering 2005;
- ✓ Yankovskaya E. SPIE Travel Grant 2005.

#### **Others:**

- ✓ Petroshenko P.: Soros student – 2005.
- ✓ Shpolyansky Yu.: Grant of fund for noncommercial researches “Dynasty” 2005.

### **Planned activities:**

- Attendance of SPIE International Symposium on Optics & Photonics, San Diego, California, 31 July - 4 August 2005.
- Participation in organization of IV International conference for young scientists and specialists “Optics 2005”, October 17-21, 2005, Saint-Petersburg, Russia.
- Participation in organization of IV SPIE Student Chapters Meeting for neighboring SPIE Chapters from Russia and nearest Europe, October-2005, Saint-Petersburg, Russia. Previous meetings were very successful (<http://ysa.ifmo.ru/spie/MEETINGS>). Program is in annex 2.
- Attendance of Meetings of other SPIE Student Chapters.
- Attendance of the Topical Meeting on Optoinformatics, October 17-21, 2005, Saint-Petersburg, Russia.
- Developing and maintaining of chapter web page.