STUDENT CHAPTER ANNUAL REPORT 2010

Officers:

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>President</td>
<td>Anton N. Tsypkin</td>
<td><a href="mailto:football-zenit2005@yandex.ru">football-zenit2005@yandex.ru</a></td>
</tr>
<tr>
<td>Vice president</td>
<td>Andrey G. Anisimov</td>
<td><a href="mailto:andrey.g.anisimov@gmail.com">andrey.g.anisimov@gmail.com</a></td>
</tr>
<tr>
<td>Secretary</td>
<td>Maxim A. Volynsky</td>
<td><a href="mailto:maxim.volynsky@gmail.com">maxim.volynsky@gmail.com</a></td>
</tr>
<tr>
<td>Treasurer</td>
<td>Elizaveta M. Buyanovskaya</td>
<td><a href="mailto:lee.buyanovskaya@gmail.com">lee.buyanovskaya@gmail.com</a></td>
</tr>
</tbody>
</table>

Scientific Adviser: Prof. Sergey A. Kozlov
kozlov@mail.ifmo.ru

List of current Student Chapter members:

1. Andrey Anisimov
2. Oleg Antonov
3. Konstantin Arakantsev
4. Anton Averkin
5. Anvar Baimuratov
6. Zoya Bekyasheva
7. Elizaveta Buyanovskaya
8. Alexandr Chebykin
9. Arkadiy Drozdov
10. Vladislav Gendin
11. Andrei Gorodetsky
12. Yaroslav Grachev
13. Dmitry Ivanov
14. Sergey Ivanov
15. Konstantin Koreshkov
16. Ekaterina Kuleshova
17. Oleg Lashmanov
18. Vasilyi Lesnichiy
19. Olga Mokhnatova
20. Oleg Nenarokomov
21. Evgeny Novoselov
22. Alexey Orlov
23. Yaroslav Pants
24. Anton Pantyushin
25. Maxim Peterson
26. Nickolai Petrov
27. Maxim Prikazov
28. Leonid Samoilov
29. Mariya Serikova
30. Olga Smolyanskaya
31. Maria Tsurkan
32. Anton Tsyplin
33. Vadim Turkov
34. Maxim Volynsky
35. Dmitry Zhukov
36. Andrei Zlatov

St. Petersburg State Univ. of Information Technologies, Mechanics and Optics
SPIE Student Chapter
49 Kronverksky ave., Saint Petersburg, Russia, 197101
Phone: +7 (812) 232 1467
Chapter activities since last report

*Used benefits:*

- Activity Grant
- Officer Travel Grant (Maxim Volynsky, O&Ph 2010)
- Free Books
- Visiting Lecturer (Vijaya Ramarao)

*This year our members worked for extending their study to the following directions:*

- Holography
  - Volume holography
  - Digital holography
  - Holographic polymeric recording media analysis
- Optical object sensing
  - Optical coherence tomography (OCT)
  - Terahertz optics and spectroscopy in medical and biological applications
- Nonlinear optics
  - Optics of femtosecond pulses
  - Spectral analogues of Maxwell equations for dielectric media with non-resonance dispersion and instantaneous electronic nonlinearity
  - Theoretical research of THz pulses near-field diffraction by circular aperture
  - Nonlinear interaction of extremely-short light pulses
  - Experimental studies of electromagnetic radiation scattering amplification effect in 'probenanoobject' system; development of tungsten probe etching technique
  - Experimental studies in laser and nonlinear optics: eye-safe laser project, stimulated Raman scattering, solid-state lasers
  - Nonlinear interaction of pulses of a small number of oscillations
- Interferometry
  - Dynamic stochastic filtering in interferometry
  - Speckles-field analysis
- Optical materials
- Optical-electronic systems
  - Stereoscopic optical-electronic systems for the control of linear displacements
  - High precision shift and angular control optical-electronic measurement methods and systems
  - Influence analysis of initial errors on accuracy of optical-electronic systems
  - Development of measured system based on CCD and CMOS sensors
- Computer vision and image processing
- Metamaterials
Sins last report our chapter organized 3 meetings (2 internals and 1 with other chapters).

1. First internal meeting (20/11/2009)

Program includes:
- Opening (Anton Tsypkin & Andrey Anisimov);
- About Optics&Photonics '09 (Andrey Anisimov);
- Totals '09 & Plans '10 (Elizaveta Buyanoskaya);
- SPIE Scholarship Award (Maxim Volynsky);
- Grants: Student Travel Grant, Officer Travel Grant, Education Outreach Grants Program (Chapter Officers);
- Library: books finding (Andrey Anisimov);
- Any other business (Chapter Members).

Total information:
http://spie.ifmo.ru/?a=new_stream/meeting_1
http://ysa.ifmo.ru/spie/new_stream/meeting1/index.php

2. Second internal meeting (11/12/2009)

Program includes:
- Information about member activity (Members);
- Education outreach Grant Program: ideas, "lectures", "flash labs", "web portal" (Andrey Anisimov, Vasily Lesnichy, Olga Mokhnatova, Evgeny Novosyolov, Members);
- Site discussion and ideas (Members);
- Officer Travel Grant '10 (Officers);
- Web site profiles (Members);
- Library (Officers, Members).

Total information:
http://spie.ifmo.ru/?a=new_stream/meeting_2

3. XI SPIE Chapters Meeting @ International Conference "Basic Problems of Optics 2010" (21/10/2010)

Program includes:
- About Optics&Photonics '10 (Maxim Volynsky);
- Education Outreach Grants in 2011 (Andrey Anisimov);
- About SPIE Student Chapter of St. Petersburg State Univ. of Aerospace Technologies (Vasily Kazakov, Univ. of Aerospace Tech.);
- SPIE Visitor Lecture Program: 2010 (Elizaveta Buyanovskaya);
- SPIE Visitor Lecture Program: plans to 2011 (Maxim Volynsky, Andrey Anisimov);
- Ideas about next meeting (Officers, Members).
Grants and awards of chapter members:

2. Maxim Volynsky – SPIE Officer Travel Grant
3. Ekaterina Kuleshova – Grant for students, postgraduate students, young scientists and specialists of St. Petersburg, 2010.
4. Konstantin Arakantsev – Grant for students, postgraduate students, young scientists and specialists of St. Petersburg, 2010
5. Matia Serikova, Dmitry Zhukov, Anton Pantushin, Maxim Volynsky – The award for the best MS thesis of Univ. of ITMO
6. Maria Serikova – The award for the best student of Univ. ITMO, 2009
7. Anton Tsypkin – Grant "U.M.N.I.K." for the project "Data transmission device at speeds of over 10 Tb/s over optical fiber"
8. Andrey Zlatov – Grant "U.M.N.I.K." for the project "Development of high-precision setup for testing of volume holographic elements"

Other activity

- Education Outreach Grant Application – organization of workshops for students “Optics: ways and means of scientific research” – not obtained
- Development of new our chapter's web page (http://spie.ifmo.ru)
Planned activities for the future

1. **IRB Program:**
   - Increasing the Chapter staff by involving “young” students from different departments and faculties
   - Reinforcing the interconnection inside the Chapter among young and “senior” members
   - Bringing active members into the Chapter management and sharing officers functions

2. Holding of bimonthly Chapter meetings to:
   - a. discuss everything and anything about the chapter
   - b. give the possibility to talk to any member (everybody has a voice and everybody is heard)
   - c. solve all problems

3. To discuss, analyze and plan student conference on “Student life” topics including science (optics & photonics), education and common topics (leadership, teambuilding, problem solving, etc.) in cooperation with SPIE Chapters of St. Petersburg State Univ. of Aerospace Instrumentation

4. Preparation of new Education Outreach Grant Application (the main goal is to “reanimate” the chapter, to unite students in a strong team)

5. Development of relations with neighbor SPIE Chapters (St. Petersburg State Univ. of Aerospace Instrumentation Chapter, Bauman Moscow State Technical Univ. Chapter, Lomonosov Moscow State Univ. Chapter, Nizhny Novgorod Student Chapter, Yerevan State Univ. Chapter and others).
## Financial information

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Begin</strong> (2009 Chapter budget):</td>
<td><strong>255</strong></td>
</tr>
<tr>
<td>SPIE Funding 2010</td>
<td>+1100</td>
</tr>
<tr>
<td>Membership renewal</td>
<td>−50</td>
</tr>
<tr>
<td>Attending and participation in the &quot;Photonics West 2010&quot;</td>
<td>−200</td>
</tr>
<tr>
<td>Attending and participation in the IV International Conference «Speckle-2010», Florianopolis, Brazil</td>
<td>−550</td>
</tr>
<tr>
<td>Accommodation for visiting lecturer Vijaya Ramarao</td>
<td>−459</td>
</tr>
<tr>
<td>Conference fee for Vijaya Ramarao</td>
<td>−296</td>
</tr>
<tr>
<td>Attending and participation in the &quot;Optics &amp; Photonics 2010&quot;</td>
<td>−250</td>
</tr>
<tr>
<td>SPIE Funding for Vijaya Ramarao (Visiting Lecturer Program)</td>
<td>+450</td>
</tr>
<tr>
<td><strong>Total</strong>:</td>
<td><strong>0</strong></td>
</tr>
</tbody>
</table>
Publications


37. **M. Peterson** Clustering a set of correspondent points on images of dynamic scenes based on the MDL principle // Optical Journal, Saint Petersburg, 2010. V. 77. №10. PP. 56-62
Patents


Conferences

1. **A. Anisimov**, E. Gorbunova, V. Korotaev, A. Krasnyashchikh, A. Chertov The design principles of optical-electronic information-measuring and videoinformation distributed systems for aggregation image analysis // The XXXIX scientific and educational conference of SPbSU ITMO, 2–5 February, 2010, Saint-Petersburg, Russia.

2. **A. Anisimov**, Korotaev V.V., Krasnyashchikh A.V. Development of optical-electronic measuring transducer of linear spatial values // The XXXIX scientific and educational conference of SPbSU ITMO, 2–5 February, 2010, Saint-Petersburg, Russia.

3. **A. Anisimov**. Study of the influence of the mirror-prism reflectors properties on accuracy of measuring optical-electronic systems // The XXXIX scientific and educational conference of SPbSU ITMO, 2–5 February, 2010, Saint-Petersburg, Russia.


7. **V. Gendin** "Formation of images with built-in watermarks by digital holography method" // XXXVIII Scientific and Educational Conference of Teaching Staff and Scientists, Saint Petersburg State University ITMO, 3 - 4 February, 2009. Saint Petersburg, Russia.


13. **K. Koreshkov**. Interaction of counter propagating paraxial few cycle light pulses in nonlinear dielectric media. LOYS-2010, 28-30 June, 2010, SPb, RF


24. A. Zlatov Properties of volume phase holograms based on photo-thermo-refractive glasses doped with rare earth ions, 14th International Conference "Laser Optics 2010", 28 June – 2 July 2010, St.Petersburg, Russia

25. M. Volynsky Computer processing and data visualization in optical coherence tomography // XXXIX Scientific and Educational Conference of Teaching Staff and Scientists, St Petersburg State University ITMO, 2-5 February, 2010. Saint Petersburg, Russia.


33. M. Peterson Mapping from monocular camera motion // XXXVIII Scientific and Educational Conference of Teaching Staff and Scientists, Saint Petersburg State University ITMO, 03-06 February, 2009. Saint Petersburg, Russia

34. I. Gurov, M. Peterson Defining characteristics of digital cameras in computer vision systems from image of calibration object // XXXIX Scientific and Educational Conference of Teaching Staff and Scientists, Saint Petersburg State University ITMO, 02-05 February, 2010. Saint Petersburg, Russia

35. I. Gurov, M. Peterson, A. Potapov 3D object model reconstruction from dynamic scene images // XXXIX Scientific and Educational Conference of Teaching Staff and Scientists, Saint Petersburg State University ITMO, 02-05 February, 2010. Saint Petersburg, Russia

36. M. Peterson The selection of independent motion models in the images of dynamic scenes based on the MDL principle // XXXIX Scientific and Educational Conference of Teaching Staff and Scientists, Saint Petersburg State University ITMO, 02-05 February, 2010. Saint Petersburg, Russia

Pictures

XI SPIE Chapters Meeting @ International Conference
"Basic Problems of Optics 2010"

Vladislav Gendin
International Conference "Basic Problems of Optics 2010"

First internal meeting (20/11/2009)

St. Petersburg State Univ. of Information Technologies, Mechanics and Optics
SPIE Student Chapter
49 Kronverksky ave., Saint Petersburg, Russia, 197101
Phone: +7 (812) 232 1467
Andrey Anisimov and Maxim Volynsky
SPIE Optics + Photonics, San Diego 2010

Maxim Volynsky
International Conference on Coherent and Nonlinear Optics (ICONO/LAT 2010). Kazan, Russia

St. Petersburg State Univ. of Information Technologies, Mechanics and Optics
SPIE Student Chapter
49 Kronverksky ave., Saint Petersburg, Russia, 197101
Phone: +7 (812) 232 1467