SPIE/OSA of Charles University

http://www.spie.cz

Annual report 2017-2018

Officers

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Introduction

SPIE Charles University in Prague Chapter (the Chapter) was founded in 2011 publicize optics among many students of Faculty of Mathematics and Physics of Charles University in Prague (FoMP CUiP) as well as among high school students. Most of the members are master and PhD. students of Quantum Optics and Optoelectronics at FoMP CUiP; in recent years we have also members from the Department of Condensed Matter Physics (the same institute) and from Academy of Science (PhD. students of the FoMP CUiP who work there). In total, the Chapter has twenty-two members.

Recently, new websites which represents our chapter were created and are available also in English version at http://spie.cz/en/. To spread inkling of our chapter and its activities we set up a facebook page which is available at http://facebook.com/SpieOsaCharlesUniversity.

Many activities are organized by the members of the Chapter for different focus groups.
Demonstration of Physics experiments on schools, our largest project, impact more than thousand elementary and high school students every year. For the second time, our chapter announced competition called ”Best Paper Award” which motivates master students of optics-related fields to publish scientific papers and posters. Several times per year we take part in events focused on public audience or university students, some of them are organized by our members. Usually five to ten social activities for members of the Chapter take place every year, e.g., trips to interesting places, barbecue or cultural programs.

Chapter activities

Demonstrations of Physics experiments on schools

The largest project of the Chapter is called *Demonstrations of Physics experiments on schools*. The members of the Chapter visit at least ten elementary or high schools every academic year and they present popular experiments to five or six classes every time, each of them having usually twenty five to thirty students. Therefore, we address from 1000 to 1500 students every year! Teachers on the schools also get to know that many physical topics may be taught in an enjoyable way. We offer several kinds of programs depending on the age of audience. We are able to present experiments and topics interesting for wide range of students, e.g., for the third grade not having physics as a subject yet, as well as specialized scientific program for classes at the end of the high school studies. Discussion about university studies is also offered to the schools.

With financial support of SPIE, we can afford to buy tools for demonstrations and experimental materials and we visit the schools for free. (Professional commercial groups offer similar program for several thousand Czech Crowns – hundreds of US Dollars). We also appreciate the possibility to apply for ”Optics outreach kits” provided by SPIE. The diffraction glasses from the last one are great tool for easy explanation of the light composition. Kids at elementary schools as well as university professors really enjoy it! We have about ten schools on a waiting list all the time and we give priority to poorer regions of the Czech Republics where the schools do not have so many opportunities for excursions or similar extension of teaching.
May 15th — 19th 2017: Outdoor seminar of Institute of Physics

Members of the Chapter participated on the annual five-day outdoor seminar in The Bohemian-Moravian Highlands. Several lectures about current research and hot optical topic were given by the members there. We also organized a social evening there in order to introduce activities of the Chapter to younger optical students and the membership was offered to them.

June 22rd 2017: Barbecue

When the summer started we arranged a traditional BBQ. Except of the small refreshment we made a competition on a slack-line and experiments with liquid nitrogen. New members were successfully integrated to our social group and from this event they do participate on our activities.

September 6th 2017: Festival of science

Our chapter was asked to join the festival of science in Prague. Three members of our chapter presented exciting experiments using liquid nitrogen. Our experimental show was extremely successful, you can read about the performance on one of the largest Czech news site (https://zpravy.idnes.cz/festival-vedy-dejvicka-07d-/domaci.aspx?c=A170906_165350_domaci_fer Czech only). The Charles University magazine FORUM published an article about Festival of Science including a photo of SPIE/OSA demonstration of physics (https://iforum.cuni.cz/IFORUM-13962-version1-forum_39_2017_sazba_150dpi_str.pdf page 62-63, Czech only).

August 2017: San Diego

The SPIE Officer Travel Grant in 2017 was used by David Wagenknecht, treasurer of the Charles University Chapter, to visit Optics and Photonics conference 2017 in San Diego (California, USA).

During the Leadership workshop, the first part of the Conference, he establish contacts with students from other Chapters, e.g., with the chapter in Bratislava (Slovakia), Kharkov (Ukraine), and Pretoria (South Africa). Moreover, he discussed outreach activities organized by SPIE chapters all around the world.
In the scientific part of the conference, DW presented invited talk Spin-dependent electronic transport with thermal disorder from the first principles and broadened his knowledge of optics. Experience from visiting California and neighbouring National parks was incredible! Stories about hiking in Yosemite national park or about driving though the Death Valley stimulated many students from our Chapter. Their activities has increased, having intentions to go to San Diego as well.

**October 10th 2017: Theatre**

As a culture event of this year we have chosen a theatre play which was held in the Prague National Theatre and called ”The Mouse Paradise Experiment”. The play was an allegorical performance with biological-humanistic topic.

**October 19th 2017: Chapter Officers election**

Annual election of the Chapter Officers was held at the beginning of the academic year. The members got together in order not only to elect a new board, but also to summarize the last year and discuss activities for the next one. New members were welcomed to the Chapter and informed them about the events and SPIE chapter.

**October 20th 2017: Session for bachelor students**

As every year, we have organized an informal meeting which consisted of several short talks and small refreshment. About 30 students the second year of bachelor’s study program General Physics attended. We have offered them participation in student projects and we have informed them also about our SPIE student chapter and its activities. The impact was successful - several of them signed for the projects.

**October 2017: Gaudeamus Brno**

Members of the SPIE/OSA of Charles University had a small demonstration of interesting experiments on Gaudeamus fair in Brno for two days. However, a primary reason for our presence was not to explain a physical phenomena but to informally talk to high school students, describe them study programmes and answer related questions. We hope that some of them will study on Faculty of Mathematics and Physics in the future - and maybe even become members of our Chapter!

**November 10th 2017: Karts in Radotín**

Perfect teambulding activity of our Chapter - Karts in Radotín! We spent wonderful moments on racetrack or in a restaurant. We learned one rule of karting: It is not important to finish the race but the be the fastest one.
November 23th 2017: Faculty Open Day

This event is being organized by the whole Faculty of Mathematics and Physics and about 800 high school students came to find out important informations about their possible future study on our faculty. Members of the Chapter took part and they were presenting interesting physical experiments and introducing optical topic that are currently in the focus of scientific community to show, that our research groups have state-of-art devices and that they do publish in highly-impacted journals.

December 18th 2017: Chapter Christmas party

Christmas party of the Chapter was held again in December. Prior to discussion about physics and activities of the Chapter. We spent hours interestingly in good food and drink and in playing with our new optics outreach kits.

April 6th 2018: Lecture Physics in Experiments II

We were asked to make a lecture in Charles University in Prague. Audience numbered about 50 bachelor students could see very impressive experiments such as color mixing (using Optics Outreach Kit), light polarization or changes of colour of LED by cooling them in liquid nitrogen and working principles of LCD.
Future plans

- Continuing in *Demonstration of Physics experiments on schools*
- May 2018: Outdoor seminar of Institute of Physics
- June 2018: Announcement the results of the third year of the "Best Master Student Paper/Poster Award"
- June 2018: Barbecue
- August: An Officer of the Chapter will take part in SPIE conference in San Diego
- Autumn: Regular events like election of a new board, Christmas party or activities for younger university students
Financial report for period 05/2017 – 04/2018

Incomes:

- Funds from previous period: 13 562 CZK
- SPIE Activity Grant – 900 USD (01/2018): 18 583 CZK

**SUM:** 32 145 CZK

Expenses:

- BBQ Summer Party (06/2017): 3 416 CZK
- Social Event – Theatre (10/2017): 2 650 CZK
- Session for bachelor students (10/2017): 3 498 CZK
- Domain spie.cz (11/2017): 151 CZK
- Chapter Officers Election meeting (11/2017): 2 750 CZK
- Social Event – Karts (11/2017): 2 400 CZK
- Chapter Christmas Party (12/2017): 2 800 CZK
- Web domain hosting (04/2018): 581 CZK
- Experimental equipment for Demonstration of Physics experiments on schools: 2 690 CZK

**SUM:** 20 936 CZK

Total balance by end of April 2018: -11 209 CZK

Further expected expense by 12/2018:

- Social Event – Paintball (05/2018): 2 000 CZK
- BBQ summer party (06/2017): 2 500 CZK
- Election Meeting (10/2018): 2 000 CZK
- Student’s projects meeting (10/2018): 2 000 CZK
- Christmas Party (12/2018): 2 500 CZK

On Chapter members’ behalf: 05/21/2018

Zdeněk Kašpar