INTRODUCTION

I’d like to give a big thank you to all chapter members for making 2017 yet another successful year for the St Andrews chapter! This year has presented some new challenges, especially through our successful change of focus on our outreach events and through trying new events combined with many of the committee members approaching the end of their PhDs still committing valuable time to the chapter. I’d also like to thank SPIE for continuing to support the work of the chapter.

Let’s make 2018 an even better year for the chapter!

James.

2017 CHAPTER OVERVIEW

Officers:

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>President</td>
<td>James Glackin</td>
</tr>
<tr>
<td>Treasurer</td>
<td>Markus Karl</td>
</tr>
<tr>
<td>Secretary</td>
<td>Graeme Docherty-Walthew</td>
</tr>
<tr>
<td>IT Officer</td>
<td>Francisco Tenopala Carmona</td>
</tr>
<tr>
<td>Outreach Officer</td>
<td>Natalie Mica</td>
</tr>
<tr>
<td>Officer</td>
<td>Laura Tropf</td>
</tr>
</tbody>
</table>

Chapter Members:

- Oskar Blaszczyk
- Catherine Campbell
- Alasdair Fikouras
- Blair Kirkpatrick
- Naomi McReynolds
- Andrew Meek
- Claire Motion
- Maya Petkova
- Vyome Singh
- Yuk Shan Cheng
- Roopam Gupta
- Maxime Jacquet
- Iain Shand

Chapter benefits:

During 2017 we used the following chapter benefits:

<table>
<thead>
<tr>
<th>Chapter Benefit</th>
<th>Notes</th>
</tr>
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<tbody>
<tr>
<td>Officer travel grant</td>
<td>Markus Karl, Photonics West 2017</td>
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<tr>
<td>Activity grant</td>
<td>£678.84</td>
</tr>
</tbody>
</table>
CHAPTER ACTIVITIES

OUTREACH:

In 2017 the chapter decided to try changing the focus of the type of outreach from mainly science fair demonstrations to events which would generate interest in optics and science in general for under-privileged and under-represented groups. We collaborated with teachers from local high schools to tailor optics based sessions to particular needs, e.g. building practical skills and career focussed sessions.

Cellblock Science 09/02/2017

This session was taken to HMP Low Moss as part of the University of St Andrews Cellblock Science programme by Francisco Tenopala Carmona, Laura Tropf and Oskar Blaszczyk. The aim of Cellblock Science is to improve the quality of Science education provided to inmates in Scottish prisons through interaction with academics. A total of 30 inmates attended this event.

After assisting with sessions run in 2016, the chapter developed a session exploring the nature and properties of light. Diffraction of waves was demonstrated using a ripple tank and the participants measured and identified the spectra of hydrogen, helium and mercury lamps using diffraction gratings. Applications of these techniques in science and industry along with Optics related careers were discussed.

University of St Andrews Science Day 04/03/2017

The Science Day is the annual open day in the School of Physics & Astronomy where scientists from across the university gather and demonstrate their work through outreach activities. It is an all-day drop in event, with outreach displays and special lectures. The chapter demonstrated the “Seeing Life through a New Light” kit, the laser obstacle course and our “Discovering Optics” kit. The event was attended by around 600 people.

Fife Science Festival 26/05/2017

The Fife Science Festival is an annual event within the county of Fife where researchers from across Scotland contribute to events to raise awareness and interest in science for the general public. The chapter attended an event held in Cowdenbeath leisure centre where Schools visited and participated in science based activities.

The Chapter has put together an outreach session showing how fibre optics work and their applications, along with a hands on session for participants. Participants are introduced to total internal reflection using a special light tank to demonstrate TIR and are then given lengths of fibre optic and mini LED finger lights to send Morse code messages down the fibre. This was inspired by the SPIE workshop “Dumpster Optics”.

Around 80 schoolchildren aged 11-13 attended this session.
Explorathon 29/09/2017

Explorathon is an annual event held across Scotland as part of European Researcher’s Night. Events include special outreach sessions, such as the one the chapter contributed to and public events.

The chapter took the fibre optics demonstration developed for the fife science festival and held a careers orientated session at Woodmill High School in Dunfermline. Around 80 Schoolchildren aged 13-14 attended this session.

Top left: Francisco and James sending light through an optical fibre. Top right: Natalie explaining the use of partially-scattering optical fibres for deep-sea illumination. Bottom: Francisco and James using a light tank and glass rod to show the concept of total internal reflection in the fibres during the activity delivered to high school pupils as part of Explorathon 2017.
Schools outreach session 24/11/2017

As a part of our schools-directed outreach activities of this year, three members of our Chapter visited Beath High School in Cowdenbeath. There, James, Oskar and Francisco delivered a workshop to secondary school pupils to explore the principles and applications of magnification. Our activity consisted in going through the concepts of real and virtual images, object, image, and focal planes, and the combinations of lenses to achieve higher magnifications. This visit has opened the door to delivering similar outreach activities with this high school and other schools in the area.

We delivered the workshop to around 60 pupils aged 13-14.

Girls in Physics Day 29/11/2017

The East Lothian Girls in Physics Day is an annual event run at Preston Lodge High School. This event aims to demonstrate to girls from the ages of 13-16 the wide variety of what we, as a society, can do with physics and allow them to see other women currently working in the field.

At this event the Chapter held a 20 minute session where groups of girls could learn about fibre-optic technology using the lesson plan discussed under the Fife Science Festival event.

At the end of the day, we participated in a panel questions and answer session regarding our careers as physicists.

Approximately 70 girls from five different schools aged 13-16 attended this event.

Students sending messages down optical fibres
ACADEMIC

PandA Undergraduate + Postgraduate Event 03/10/2017

The chapter organised a poster session to encourage interaction between the postgraduate and undergraduate communities in the School. Postgraduate students presented posters of their work and got the chance to talk to undergraduates about their research and also life as a PhD student, as well as about what it is like working in the various research groups of the school. The timing of the event was chosen to coincide with the selection of final year projects to allow final year undergraduates to talk to postgraduate students about potential final year projects.
Monthly Student Seminars

We hosted a series of 5 seminars. In each of them a PhD Student or Postdoc of the School of Physics and Astronomy gave a 20 min talk to peers from the School, followed by around 10 min of discussion. During the seminars drinks and snacks were provided by the Chapter.

This year we had contributions from:

Jonathon Harwell (PhD student): Lasers from Solar Cells?
Lewis Bawden (PhD student): Spin-valley locking in the normal state of NbSe₂
Ross N. Gillanders (postdoc): Field Trials with, and Talking to Industry about, a Polymer-based Explosive Vapour Sensor System
Oskar Blaszczyk (PhD student): Controlling and enhancing exciton diffusion in organic semiconductors
Graham Bruce (postdoc): Making the most of interference: new applications of laser speckle
Rhea Stewart (PhD student): Anomalous Meissner screening probed using low energy muon spin spectroscopy
James Glackin (PhD student): Organic semiconductors, landmines, bombs & bees
Andrew Meek (PhD student): Biophotonic Tools to Study Cellular Forces and Stiffness
Lethy K. Jagadamma (postdoc): Ternary Blend Polymer Solar Cells

Visiting Lecturer – postponed until 2018

We had begun organising a visit from Prof. Pierscionek to present her talk “The Paradox of the eye lens”. Unfortunately this has had to be postponed due to the speaker not being able to come due personal reasons.
SOCIAL

PandA BBQ 20/06/2017

2017 was yet another successful year for the annual PandA SPIE Student Chapter barbeque with over 80 people from the department coming to the courtyard to enjoy some burgers in the sun.

PandA Bonfire 13/11/2017

Another SPIE organised highlight for PandA social calendar is the annual bonfire. Around 20 people braved the Scottish winter to enjoy marshmallows toasted on the bonfire on Castle sands.
Chapter Dinner 11/12/2017

Following the AGM the chapter enjoyed a meal with the chapter to celebrate the end of a successful year of events and to begin planning next year’s chapter activities.
### 2017 FINANCE REPORT

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Credit/Debit (£)</th>
<th>Total ()</th>
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<tbody>
<tr>
<td>3-Mar-17</td>
<td>SPIE student seminar expenses (February)</td>
<td>-16.38</td>
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<td>17-May-17</td>
<td>SPIE student seminar (March) and Science Day</td>
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<td>22-Jun-17</td>
<td>BBQ Money Earnings</td>
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<td>22-Jun-17</td>
<td>SPIE student seminar expenses (April + May)</td>
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<td>BBQ Rent I</td>
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<td>22-Jun-17</td>
<td>Outreach Optical Fibres</td>
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<td>22-Jun-17</td>
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<td>22-Jun-17</td>
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<td>19-Jul-17</td>
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<td>1-Sep-17</td>
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<td>16-Nov-17</td>
<td>Bonfire Night Expenses</td>
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<td>Bonfire E-Car</td>
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<td>11-Dec-17</td>
<td>Chapter dinner</td>
<td>-150</td>
<td>703.25</td>
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**End Balance**: 703.25

**Activity Grant:**

We also received a £ 678.84 Activity Grant to add to our existing funds which has so far subsidised some of the social / team building events. As outlined in the Activity Grant application the remaining funds will be used to pay for various outreach activities, student seminars as well as social and networking activities in 2018.
2018 Activities

- **Outreach**
  - Continue Schools outreach activities, build on what we have so far.
  - University of St Andrews Science Day.
  - Fife Science Festival.
  - Schools outreach opportunities with Dundee Science Festival.

- **Academic**
  - Re-schedule visiting lecturer
  - UG+PG event.
  - Seminars

- **Social**
  - Summer outdoors event
  - BBQ
  - Bonfire
  - Cheese & Wine
  - Recruitment of new members.

2018 CHAPTER OFFICERS

<table>
<thead>
<tr>
<th>Position</th>
<th>Name</th>
<th>SPIE Member No.</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>President</td>
<td>Natalie Mica</td>
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<td>Outreach Officer</td>
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<tr>
<td>Officer</td>
<td>Laura Tropf</td>
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</tr>
<tr>
<td>Officer</td>
<td>Francisco Tenopala</td>
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<td><a href="mailto:ftc2@st-andrews.ac.uk">ftc2@st-andrews.ac.uk</a></td>
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