

International Conference of Physics Students 2014



August 10-17 Heidelberg, Germany

The following is a brief background about the International Conference of Physics Students as well as an account of my experiences in Heidelberg, Germany during the 2014 ICPS. ICPS this year was held August 10th to 17th. Sponsored by the Society of Physics Students (SPS) Undergraduate Research

Award, I was honored to present my research at this international conference. As will be evident in the text of this account, I greatly enjoyed my time at this conference and would really love to participate in the conference again. I encourage anyone interested to both try and apply to the SPS award if they are eligible or to attend the conference themselves. Whether presenting or not, it is a truly valuable experience. As I will detail later, ICPS 2015 will be held in Croatia and ICPS 2016 will be held in Malta. My account of the conference will be divided by type of activity to avoid a chronological description as well as provide a more interesting and detailed account. This account will hopefully elucidate the aims of the conference and structure of the week; however, for further information or inquiries about the conference, please don't hesitate to contact me at emeskhidze@elon.edu.

— Helen Meskhidze

Introduction

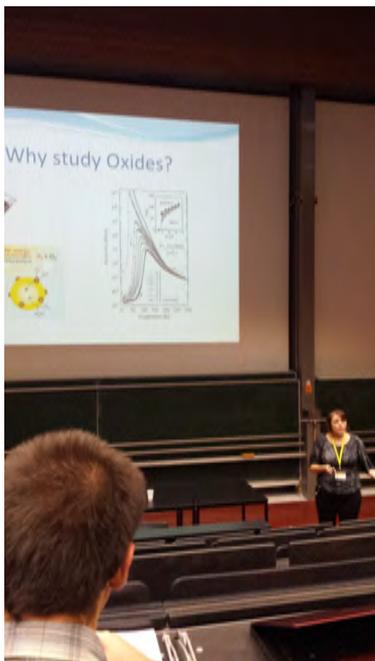
This year marked the 29th ICPS and was held at Germany's oldest university—Heidelberg. The International Association of Physics Students (IAPS) holds the ICPS annually in various international locations. IAPS members form a committee to help the host country make ICPS possible. As in the past, this year's ICPS was held for one week and was full of physics talks, opportunities to network internationally, and cultural experiences. The motto of the this year's conference was “Meet people, do physics, exchange knowledge.”



A photo of Heidelberg.

Student Contributions

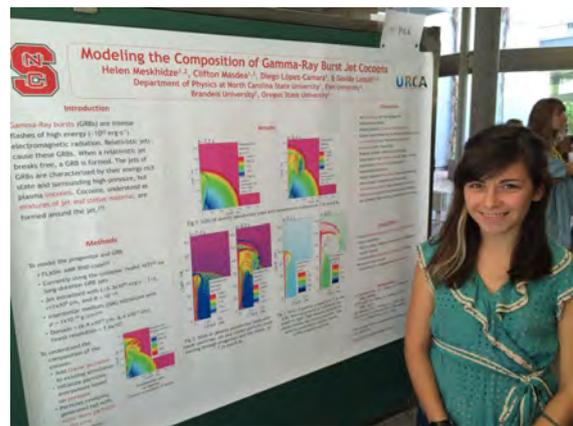
Student contributions to ICPS were made in two different ways: with a talk or poster. There are about 120 student lectures throughout the conference and about 80 posters displayed. Monday, August 11th, the student lectures began with two lecture blocks. Each block contained five sessions simultaneously and each session had three student lectures. Each student talk was about 12 minutes with about 2 minutes of questions. Various interesting fields of student were represented. I chose to first attend the nuclear and particle physics presentations. The topics of these talks ranged from the superconformal index to the advantages of string theory. I attended many other presentations throughout the week including ones about laboratory jet simulations with plasma, the philosophy of time and an argument for its non-reversibility, and quantum encryption. Our own Zoey Warecki gave a lecture as well! She presented her research about structural and molecular properties of thin films. Overall, the student lectures ranged greatly in topic and research level. Talks by post-doctoral students followed talks by second-year bachelors students. Each speaker presented their topic in a clear and interesting manner that I greatly enjoyed hearing.



A photo of Zoey's talk

The second type of student contributions were posters. There were many posters hung throughout the week that we were free to look at and read. There were also two poster sessions to give us all the opportunity to discuss each researcher's poster with them. These poster sessions were held Tuesday and Saturday for an hour and a half. During this time, students were free to go around

asking questions and discussing the subject of their research with others in similar fields or learn about an entirely interesting and new concept. I discussed computational astrophysics with a student from Finland doing galaxy merger research and learned about the construction of a Transmission Electron Microscope (a demo microscope made in their lab) from a fellow American student. During this time, I also had the opportunity to explain my own poster to various interested students, responding to their questions and reflecting on their suggestions. Overall, the poster session afforded students the opportunity for deeper conversation about their specialized research or an opportunity to learn something new in a more interactive manner than the lectures.



A photo of my poster and me

Guest Lectures and Workshops

There were various guest lecturers spread throughout the week that spoke about a variety of topics to suit the various interests represented at the conference. The first guest lecturer was Dr. Metin Tolan. Dr. Tolan discussed the physics behind the James Bond films. The various topics covered included the accuracy of Bond's free-falls, the possibility of Bond watches, and Bond's questionable use of women as mirrors. The lecture was a hit with us young, eager, and excited physics students. Other notable lecturers included Dr. Volker Springel, Dr. John Dudley, Dr. Margarete Muhlleitner, Dr. Karlheinz Meier, and Dr. Reinhold Ewald. I greatly enjoyed the lecture given by Dr. Volker Springel. He is part of the Illustris project and so he gave a talk about computational astrophysics, specifically forming the Milky Way on a supercomputer. The Illustris project received much media attention this past year when they evolved their post Big Bang simulations to form galaxies similar to those we have now. Dr. Muhlleitner gave a very interesting and informative talk about the Higgs boson. Lastly, I enjoyed Dr. Ewald's talk. Dr. Ewald was a radio astronomer but had the opportunity to be an astronaut for the European Space Agency. He spoke about his experiences and experiments in space.



Dr. Volker Springel's talk.

During the conference, two sets of workshops were also held. My personal favorite was “Approaching Physics from a Gender Studies Perspective.” This particular workshop moved past the frequently reported figure of women in physics but looked more philosophically at the problem of physics with women. Dr. Helene Gotschel, a Human Sciences professor at the Technische Universitat Darmstadt in Germany, hosted the workshop. It was truly a pleasure to participate in this workshop.

Annual General Meeting

The Annual General Meeting (AGM) is a meeting held at every ICPS (as the name indicates). At this year's meeting formal business was taken care of and the next host of ICPS and PLANCKS were decided. We voted on various actions, approved last year's minutes, and decided on an agenda for the coming year. At the end, the organizing committee of the next conference was also decided. Unfortunately, this meeting is known for lasting many hours; nonetheless, it was interesting to listen to the discussions and vote on behalf of our SPS.

We were reminded that next year (2015) is the International Year of Light. For more information about this, please visit http://www.eps.org/?page=event_yol. I also learned about PLANCKS. PLANCKS stands for the Physical League Across Numerous Countries for Kick-ass Students and is a physics contest to which each nation sends a few delegates to compete. This contest was started last year (2013) and lasts a few days. The contest lasts about a day usually and the rest is filled with activities and excursions.

Last year's group already decided that ICPS 2015 will be in Zagreb, Croatia and PLANCKS 2015 will be in Leiden, the Netherlands. We decided that ICPS 2016 will be in Malta and PLANCKS 2016 will be in Romania.

ICPS 2015 will be in Zagreb, Croatia

Cultural Experiences and Parties

A very important part of ICPS is the cultural experiences gained from the host country of the conference. To illustrate this, I'll provide a few examples of experiences that really stuck with me. Shortly after my arrival in the picturesque city of Heidelberg, the conference began. The opening ceremony of the ICPS 2014 was held in Heidelberg's grand castle. As we climbed up to the castle, various amazing views of the city became evident. The castle itself was quite the sight. Parts of the old castle had fallen, so the castle seemed to be fallen into itself but standing tall regardless, overlooking the city. The opening ceremony was held inside a hall of the castle.

Following the lecture, we were distributed various cards and assigned the task of finding our match from a small prize. The cards were all physics related, depicting anything and anyone from Newton to a spiral galaxy. Luckily, and quite by chance, I found my match mere minutes after receiving my card in a crowd of hundreds! We were required to go to the reception following the opening ceremony to claim our prize. Thus, we all made our way towards the bar where the opening reception was being held. Enjoying our prize of German gummy bears and the reception, my card partner and I began to mingle. After much socializing, the reception came to an end and we all headed back to the youth hostel.

As a way to familiarize us with the city, the organizers planned a city tour. The city tour gave us tasks to do

around the city that were sometimes physics related. As an example, we had to make a paper boat to measure the water flow down the Neckar River. An image of our boat is shown to the left. We also had to think of 3 sets of “false friends”-words that sounded similar in many languages but meant completely different things. This proved surprisingly difficult but really fun! Lastly, we visited the old student prison, a prison originally run by the university that housed many student delinquents. We were told that just before the prison was closed, it was actually trendy to be detained for a few days. Students just ended up just decorating the walls (as seen below)!



Another important aspect of the cultural experience is the parties; they are carefully planned and taken quite seriously. The costume party was held the first official night of the conference. Here many Schrödinger's cats made an appearance (quite alive!). On Wednesday night, the beloved Nations evening was held. During Nations evening, delegates from the various nations all prepare their various national foods and bring their national drinks. This was a great opportunity to familiarize ourselves with the customs and cuisine of the nations. This quickly became the favorite night of many of the attendees! We also had the privilege of seeing “Die Physikanten,” a German group known for presenting spectacular experiments in a very humorous and enjoyable manner. They were a delight to watch and the audience couldn't stop laughing! Lastly, another highlight of the week was the German evening and Einstein slam. During the German evening, we were fed a lot of typical German food that was great. The Einstein slam was held as a competition between participants to present their research (or some specific part of it) in ten minutes in a very funny manner. Everyone was given the opportunity to sign up shortly before the conference. The four participants did a hilariously good job presenting their research. The conference culminated in one final party, a barbecue followed by drinks at the Youth Hostel.



Excursions

One final interesting piece of the conference was all the excursions we went on. We went to Germany's Karlsruhe Institute of Technology (KIT) as a group. There we had a series of brief lectures and broke up into sections to do lab tours. I got to see the H2-Technikum project lab. This project focuses on the investigation of hydrogen distribution and different combustion processes in order to safely use hydrogen as a power source in the future. Our visit to KIT overall included tours of very interesting particle and nuclear physics facilities.

During the other day of excursions, we were given the option to choose which excursion to go on. I chose to go to the Max Planck Institute for Astronomy (MPIA). MPIA is part of a great network of Max Planck's institutes scattered across Germany. The institute and observatory is located on the Konigsstuhl mountain in Heidelberg and overlooks the city with some very awesome views. Their main building is actually in the form of a spiral galaxy! We had another series of lectures and lab tours here. The institute does both simulations and observations of vari-

ous galactic and extragalactic objects. Interestingly, they also do instrument development and testing. Their focus is on instruments looking in the infrared. It was a great opportunity to tour their labs and see their facilities. We actually walked back down to the city as part of a smaller walking tour of Heidelberg.

Final Thoughts

I cannot accurately summarize how much I enjoyed ICPS or how grateful I am to SPS for having awarded me the opportunity to attend. Further, I hope to retain the friends and connections I made during the conference. To put it simply, it's not an experience I will forget. The physics presented at the conference was interesting, the lecturers were great to listen to, and the cultural experiences were phenomenal.

— Helen Meskhidze

