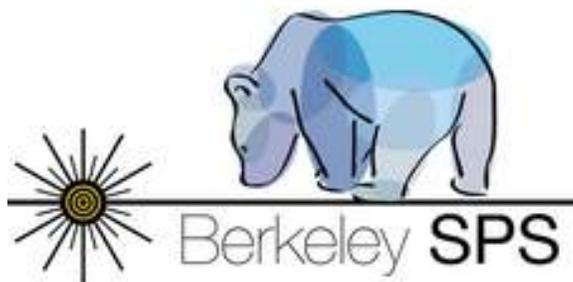




## SPS Chapter Report 2018



# SPS Chapter Report 2018

*University of California, Berkeley*

*Zone 18*

*Chapter Advisor: James Analytis*

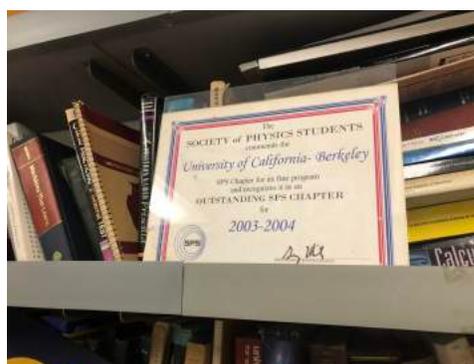
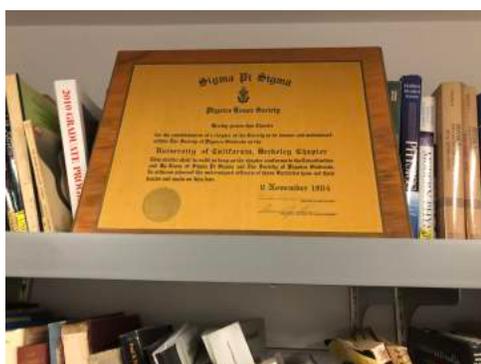
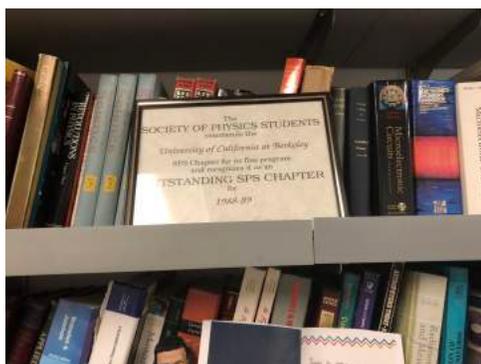
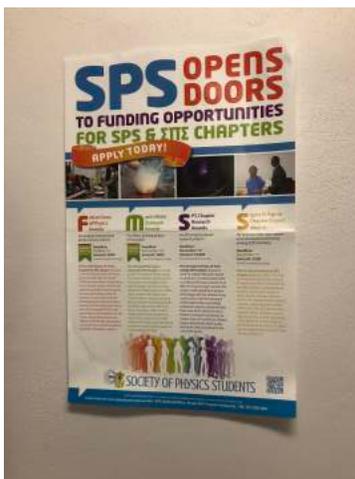
Written by Mayia Vranas, Emily Glazer, Katherine Latimer, Sabrina Berger, Nicholas Rui, Sam Weismann, Jonathan Jackson, Riya Shah, Yasmeen Musthafa, Andrew Hsu, and Frank Wang



## SPS Chapter Report 2018

# Part 1: Chapter interactions and participation in SPS national and Regional Programs

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*Our SPS chapter here at UC Berkeley takes pride in being a long-standing chapter of SPS National. We do everything in our power to abide by the SPS mission statement, giving our physics undergraduates here at Berkeley a home in the department. Though we have faded in and out of existence over the years, we always find a way back through strong and dedicated leadership and the ever-present need for community.*



## SPS Chapter Report 2018

### **1.1 Membership Promotion**

This year, UC Berkeley SPS has retained over 10 registered national SPS members. We have made mention of national SPS in emails, and have given out national SPS paraphernalia kept from our zone meeting in Spring 2015. UC Berkeley SPS members are well aware of national SPS and many enjoy the resources and APS membership that come with it.

### **1.2 Contact with Zone**

In addition to participation in the Zone 18 Facebook group, this year UC Berkeley SPS has come into contact with the UCLA and Diablo Valley College chapters of SPS. We have maintained communication with their officers via email, and hope to coordinate events and outreach together in the future.



## SPS Chapter Report 2018

### Part 2: Chapter interactions in the campus community

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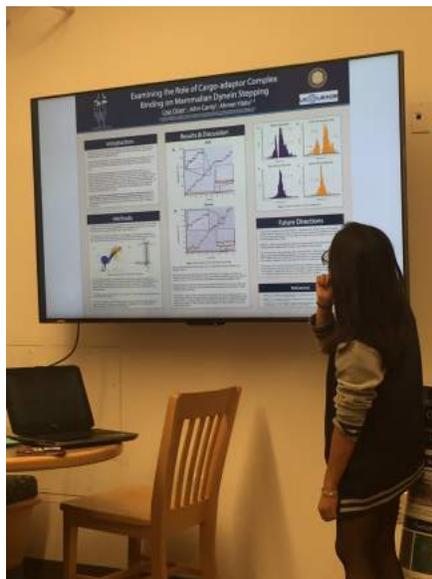
#### 2.1 General Meetings

At Berkeley SPS, we interact with the physics undergraduate community through a wide variety of events, the core of which are our general meetings. General meetings have had wide attendance this past year, and are separated into professional and social meetings. Professional meetings are held with the intention to give information and resources to the undergraduate community, while social meetings are held to help foster the community itself, bringing together undergraduates across all years. Listed below are examples of some of the general meeting activities Berkeley SPS facilitated this year.

##### 2.1.1 Professional Meetings

**Course advice:** We hold one to two meetings per semester where students who've taken upper division courses consult students on what to take next semester. This includes discussion on which professor and sequence of courses is best to take.

**Grad school application tips/timeline:** We also held a meeting to summarize the grad school application process with tips from students who had applied to graduate school in the fall. We also created a collaborative document for tips on all aspects of the graduate school admission process and shared it with the undergraduate physics community.



*Yasmeeen talks about the right parameters for a poster in “How to make posters and present research”*

**How to make posters and present research:** We held a meeting on how to present research whether orally or through a poster presentation. We made another collaborative document to



## SPS Chapter Report 2018

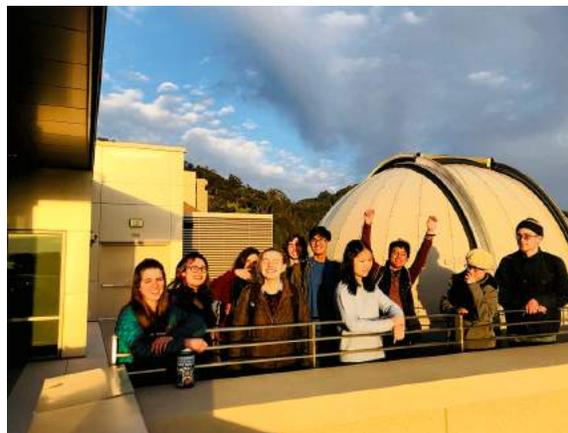
share with physics undergraduates on advice for this and will continue to add to it in the coming years.



*Panelists Imad, Josh, Amanda, and Caolan give their advice on how to get and do research in the physics and astrophysics departments.*

**How to get/do research:** Many students involved with Society of Physics students have been deeply involved in research projects at UC Berkeley and at other institutions around the world. We had a professional meeting where we discussed tactics for getting research at UC Berkeley, summer programs and research in industry (government or private companies). We also had students present their research from various disciplines in physics for a few minutes each.

### 2.1.2 Social Meetings



*SPS members at each of our semesterly hikes.*



## SPS Chapter Report 2018

**Semesterly hike:** At the start of the year, our chapter hosted a hike to the “Big C”, a well-known spot near Lawrence Berkeley Lab that is, quite literally, a Big C. Over 20 students participated in the hike, including many new freshmen and transfer students, who enjoyed the opportunity to socialize and share the view. With a desire to replicate this widely-enjoyed event, we hosted a second hike in the spring semester; however, already tired from the year, we decided to shorten the hike by “hiking” up the stairs in the nearby astronomy building. When we made it to the top, we enjoyed the sunset together, and were glad to be part of such a beautiful campus.



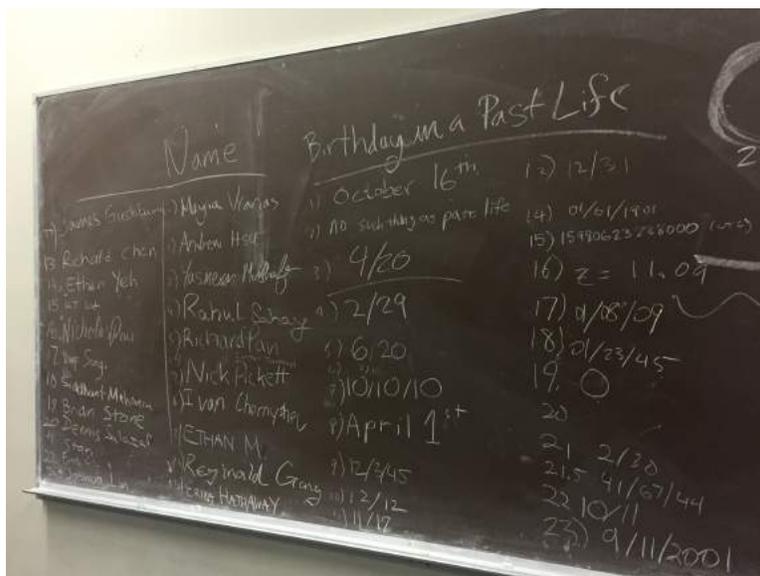
*Frank, Katie, Sam, and Youqi participate in a riveting game of Scrabble.*

**Board games:** A favorite event of SPS members is the board game social. Members brought game like Coup, Catch Phrase, Scrabble, and Cards Against Humanity, bonding over competitive spirit and misspelled words.

**“Paint a Professor”:** Another favorite event is our “Paint a Professor”, inspired by the extremely detailed portraits of favorite professors in the SPS room. Students drew and painted their favorite professors in pastel, colored pencil, and watercolor, while arguing over preferred teaching styles and respective workloads.



## SPS Chapter Report 2018



*A fun sign-in prompt at one of our first meetings of the Spring semester.*

**Valentine's Day Thank You's:** This Valentine's day, we gave students the opportunity to paint Valentines over pink and white cupcakes. However, we also took the opportunity to thank our department's staff (via valentines), including faculty advisors and the custodial team, for making our experiences as physics students possible. Collectively, we wrote heart-felt messages and designed our best cards to give to the staff.



*Members of SPS enjoy our Halloween social in front of Campbell Hall.*

**Halloween Social:** This Halloween, we hosted an outdoor social, with pizza, candy, and music. The event was attended by over 25 students, where we socialized, played cards, and blew off



## SPS Chapter Report 2018

steam before midterms began. Winners of the SPS Assassin Game (described in “Special Events”) were awarded.

**Ping Pong Tournament with UAS:** This year, SPS reached out to our neighboring society, the Undergraduate Astronomical Society (UAS) for a bit of friendly competition. Members on each side formed teams of two and competed for the title of Ping Pong Champions in the name of their respective societies. \*\*\*\* students participated in the event, and SPS was victorious!

**Destress with Spongebob:** In an attempt to encourage students to take a break during midterm season, our chapter hosted a Spongebob screening in one of the largest lecture halls. Students appreciated the chance to unwind through nostalgia with the iconic sponge.

### 2.2 Student-Faculty Lunches



*Student-Faculty Lunches with Roger Falcone (president of APS, left) and Bob Jacobson (right).*

The SPS Student-Faculty lunches are a series of lunch colloquia sponsored by the Physics Department here at Berkeley, wherein physics and astrophysics professors are invited to give informal talks to groups of students over lunch. The student-faculty lunches are an opportunity for the undergraduate community to socialize with physics professionals outside of the formal classroom and office settings. This program aims to help reduce student anxiety in approaching professors and attending office hours, as well as to allow undergraduates to learn more about professors, research opportunities, and various aspects of careers in physics. Students and professionals have the opportunity to meet and chat in an informal environment about whatever topics interest them. The program originally started as a monthly gathering for undergraduates and physics professionals in LeConte. Many undergraduates have attended the lunches and have since been inspired to get involved with research and industry.

This year, 10 lunches were sponsored, with cumulative attendance of almost 200 over the academic year. Below are the dates and professors who attended each lunch.

09/13/17: Eliot Quataert



## SPS Chapter Report 2018

09/28/17: Jonathan Wurtele

10/05/17: Uros Seljak

10/12/17: Dan Stamper-Kern

11/06/17: Bob Jacobsen, Undergraduate Dean of Letters and Sciences at UC-Berkeley

02/13/18: Austin Hedeman

02/27/18: Roger Falcone, President of the American Physical Society

03/23/18: Daniel Kasen

04/03/18: Eugene Chiang, Chair of Astronomy Department at UC-Berkeley

04/23/18: Bob Jacobsen, Undergraduate Dean of Letters and Sciences at UC-Berkeley

### 2.3 Special events

This year, Berkeley SPS held a variety of special events. Some were intended to help foster a better community in the department and increase membership and participation, while others were meant to provide resources and advice, as well as establish connections with UC Berkeley physics alumni. Below are the main events that our chapter hosted this year.





## SPS Chapter Report 2018



*Our panelists at the SPS Industry Panel came from a wide variety of paths post-graduation in physics, and students were eager to hear their advice and wisdom.*

**Industry Panel:** (March 5, 2018) This spring, we organized an industry panel for students interested in careers outside of academia. We had a variety of professionals at different stages in their career who had completed degrees in physics. The aim was for students to learn about alternatives to going straight to grad school after finishing their undergraduate degree in physics. More than 30 students attended this highly successful event to hear firsthand about what it's like to work in industry. Provided below is a full list of the panelists:

*Held industry jobs between undergraduate and graduate degrees:*

**Jessica Lu** (Professor in the UC Berkeley Astronomy Department)

**Michael Girard** (Graduate Student in the UC Berkeley Physics Department)

*Physics bachelor degree holders from UC Berkeley:*

**Kathryn Chu** (Data Analyst at Healthline)

**William Tokumar** (Software Architect at Symbio Robotics)

**Harry Bachrach** (Software Engineer at DocSend)



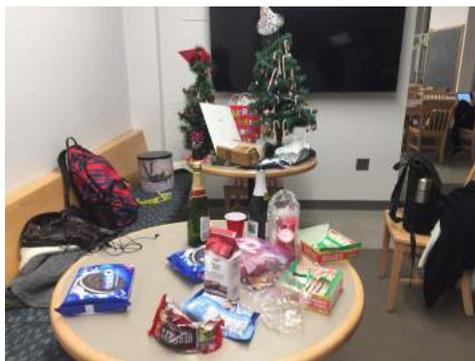
*SPS members enjoy games like Spikeball and Mafia at our day at the park.*

**Day at the Park:** (September 16, 2017) At the start of the year, we hosted an SPS Day at the Park social at Codornices Park in North Berkeley. We held this event early in the semester for new and old members to get to know one another and have fun in a relaxing off-campus setting.



## SPS Chapter Report 2018

Approximately 12 members came to the park to enjoy snacks, Spikeball, card games, and sunshine.



*SPS members excitedly open their Secret Schrödinger gifts at SPS's annual holiday celebration and gift exchange. Even our last year's president, Joe, decided to Skype in!*

**Secret Schrödinger:** This holiday season, we hosted our annual Secret Schrödinger gift exchange. Secret Schrödinger follows the same principles as Secret Santa and was held during December. This was a fun way to gather our club members together for some apple cider, holiday themed snacks, and gift-giving. Secret Schrödinger also gave a good break to those physics students who were struggling through exam preparations.



## SPS Chapter Report 2018



*Emily, post-assassination.*

**SPS Assassin:** (*Fall 2017*) This year, SPS rebooted our annual game of assassin to help new members and old members get to know each other at the start of the year. Each participant is assigned a “target”, and must catch and “kill” them by surprise (by poking them in the back with a blunt object). After a successful assassination, the participant is assigned a new “victim”. Assassins often gave detailed stories of their assassinations to be posted on the club Facebook group. This game encouraged members to step out of their comfort zone and meet someone new. The game ran from September to November, and had 25 participants.

**Office Hours:** (*Spring 2018*) Many SPS officers are upperclassmen who are familiar with the inner workings of the department and the physics curricula. Wanting to share this knowledge with other, newer students, we set up an “office hours” system in the SPS room for students to come in and talk to officers about courses and career advice while building community. We propped the door open and put a sign on the door so that physics students would be able to pop by to chat, ask for homework help, or just come in to study.



## SPS Chapter Report 2018



*Nicholas prepares to shock and surprise potential SPS members at Calapalooza.*

**Calapalooza:** (August 31, 2017) Calapalooza is UC Berkeley's student activities fair, which occurs at the start of each semester to show new and continuing students all the clubs and groups available on campus. We set up and ran an SPS table at both the Fall 2017 and Spring 2018 Calapalooza fairs, at which we recruited several new club members. We engaged potential new members with physics demos such as the Van der Graaf generator, passed out flyers with information about our first general meeting, and told them what SPS is all about. Calapalooza is one of our most effective recruiting events, at which we get to know new members and answer any questions they have about our club or about the Physics Department as a whole.



*We thank our SPS presidents, Katie and Sabrina, for an amazing year of SPS.*



## SPS Chapter Report 2018



*As the old officer cohort says goodbye at prom, the new cohort prepares for the coming year.*



*SPS members enjoy dancing and Chipotle at our annual “prom”.*

**SPS Prom:** (May 3, 2018) To end the year, our chapter of SPS hosted our annual “prom”. This widely-enjoyed event included Chipotle catering, music, and prom-style decorations. We also took time to honor the graduating seniors on the officer board and officially welcome the new officers. Approximately 30 club members attended and reminisced on a good year for SPS.

### **2.4. Involvement with the UC Berkeley Professional Physics community**

Since the revival of our chapter of SPS, we have maintained a close relationship with the physics department as a whole. Below are examples of our ties with the larger physics community at our university.



## SPS Chapter Report 2018



*Our Berkeley chapter's base of operations, the SPS room.*



*Officers and members care for the SPS room with our semesterly cleanings.*

**SPS Room and Snack Shack:** In 2016, the physics department, sponsored by various alumni, gifted our chapter of SPS an office to run our club out of. On top of hosting meetings and providing a space for members of the community to interact, SPS has sanctioned part of the office as a designated snack shack for students to come in to grab a snack for their 7 pm midterm, for their last push to finish a problem set due that day, or for lunch because they have an awkward 30-minute break. Many students, as well as faculty, staff, graduate students and post docs come in and out of the SPS room for these snacks. One side effect is that a lot of them are able to talk to SPS officers about choosing classes, their current problem sets, or just extracurricular activities. Many officers are able to meet new students within the department this way which allows SPS to grow as the main physics club for the department. We aim to create more exposure for some of the other students who feel lonely, or stressed by the environment. The snack shack's intention branched out to form strong bonds within the community.

**Barbecues:** One of the long-standing SPS traditions is to throw department barbecues for faculty, staff, students, and graduate students. As a large public university, Berkeley can feel overbearing for many students that fail to handle the sheer size of the institution. At SPS we host



## SPS Chapter Report 2018

barbecues on Fridays to allow our physicists create a smaller community within the university. One of our main points about the barbecue is inclusion. We offer vegetarian and vegan options to cater to many of our students who are unable to eat meat which helps to bring them into the community and fit in with the rest of the department. Our barbecues also allow for students and professors to talk outside of the stressful and strict environment of the classroom. A lot of students are able to have free flowing conversations about topics unrelated to the material that they would not have had in the lecture halls. The SPS barbecue facilitates a friendly tight-knit environment that creates a stronger bond within the department. A stronger bond that creates transparency between administration and students while fostering better communication between all levels of the department.



*Erica and Richard work hard at the Prospective Grad Student Barbecue to feed a long line of hungry customers.*

**Prospective Graduate Student Barbecue:** One of the biggest events for SPS is the graduate student barbecue in which we host prospective graduate students for a lunch barbecue. This opportunity is aimed to give admitted graduate students a slice of Berkeley life. Just like normal barbecues allow for students to converse with professors in a stress-free environment, the grad student barbecue allows for prospective students to talk with current students about the Berkeley environment. Whether it is the weather, the academics, the research, or just the daily life at Cal, many prospective grad students are able to learn more about the Berkeley life and all that comes with it.

**Holiday Skit:** Every December, the Physics Department hosts a holiday party for students, faculty, professors, and other community members to come together for a classy evening of dinner and open-mic style entertainment. As a club, SPS writes, rehearses, and performs a skit



## SPS Chapter Report 2018

each year at the holiday party which puts a humorous spin on the undergraduate experience. This year, we created a skit entitled “What Students *Really* Think About During Lecture”, which was performed by approximately 20 club at the party. Our participation in this department-wide event helps undergraduates feel comfortable attending, and makes our presence known in the department.

**Equity and Inclusion Meetings:** Several of the SPS officers participated in the Physics Department Equity and Inclusion Committee’s panels this spring. Topics discussed included office hours culture, gender-neutral bathrooms in the building, harassment issues facing undergraduates, particularly in the research environment, and ensuring research mentors understand how to respectfully interact with their undergraduate researchers. The ultimate goal is to make the department and the field of physics more accessible to women and minorities in particular, and to make the department more respectful and welcoming in general.

### 2.5. Involvement with Related Clubs and Organizations on Campus

This year, SPS has reached out to and established connections with several other physics-focused organization in the department, which are described below.

**ULAB:** Undergraduate Laboratory at Berkeley (ULAB) is an organization dedicated to helping freshman break into STEM research by helping them design and execute their own independent research projects. One of our officers currently heads the physics and astronomy division, and we collaborated with ULAB to publicize this opportunity to our members. Several members participated, and presented a talk (“Designing an Electromagnetic Shield to Block Secondary Cosmic Rays”) at a local research symposium.

**IGenSpectrum:** Identity and Gender Spectrum (IGenSpectrum) is the LGBTQ+ in physics group in the department, open to graduate students, undergraduates, post docs, and professors alike. In the past, IGenSpectrum has had a reputation for being targeted towards graduate students; in an effort to widen their reach, the group reached out to SPS to spread awareness of the club to the undergraduate community. Together, we hosted a board game mixer event, and have strengthened our ties so that we can host more joint events in the future.

**UAS:** Undergraduate Astronomical Society (UAS) is the astrophysics society housed in our neighboring building, Campbell Hall. Many SPS members are part of both societies, allowing the two clubs to come together in our first annual ping pong tournament. This allowed members of both groups to bond and communicate through friendly competition. Of course, SPS was victorious.



## SPS Chapter Report 2018

### 2.6. Website and Social Media

In order to keep members up-to-date on club events, in addition to an email list, UC Berkeley SPS maintains an extensive social media presence. This year, we updated our website, increasing utility and providing up-to-date information for prospective and current members.

**Website:** With the institution of our new webmaster, several changes have been made to the website. Cover pictures, the officer list, and constitution were updated. Course advice was made up-to-date, and upcoming events were posted regularly. We created a new course flow chart to help students planning their schedules visualize potential paths, and gave descriptions of required courses in physics and astrophysics. The officer list was made interactive, and new bios were put in place with contact information. We have tracked traffic to the website using Google Analytics; on average this year, we received four visits per day, with a record high of 40 during the prospective graduate student visits.

**Facebook:** Our chapter also maintains a Facebook group to keep members up-to-date on upcoming meetings and events. The Facebook group is also open for members to post on, and gives a platform for outside event advertisement and questions on course advice and more.

### 2.7. Funding



*Adrien, this year's treasurer, enjoys some of our Snack Shack's fruit snacks while tallying our funds.*

Many of the events and programs serve a dual purpose: while they often help bring our community together, they also fund the club. Our main sources of income include our frequent barbecues and snack shack sales. UC Berkeley SPS also receives some funding from the



## SPS Chapter Report 2018

department allotted from the campus-wide Big Give fundraiser, intended to allow us to maintain our Faculty-Student Lunches.

### 2.8. Strategies for Promoting Membership



*New and old SPS members enjoy pizza and snacks at the first meeting of the year.*

As exhibited by our wide variety of events and resources, our chapter does our best to promote member retention and participation via structuring activities and opportunities around regular student commitments. While older members of the physics department are well-aware of SPS and excited to participate, we acknowledge the importance of reaching out to new students who are often intimidated by the department. By posting fliers, making announcements in lower division and transfer-oriented classes, and tabling at events like Calapalooza, as well as keeping our office door open whenever possible, we are able to increase awareness of SPS and its resources at all levels of the physics undergraduate community.



## SPS Chapter Report 2018

### Part 3: Chapter's interaction with the professional physics community outside of the college/university

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#### 3.1 Graduate Schools



UC Berkeley SPS would like to congratulate our recent graduates in the class of 2018! Of the seniors in our officer board, three have made the decision to attend graduate school, and next year will be attending Harvard, UC Berkeley, and Princeton. In addition, we would like to congratulate our president, Katie Latimer, for receiving Department Citation award, and Jonathan Jackson, our secretary, who was the student speaker at the physics commencement ceremony.

#### 3.2 Publications

We would like to congratulate several of our UC Berkeley SPS members for their publications or pending publications this year. Publications are listed below, with a short description of their topics.

**Andrew Hsu:** Michael H. Wong, Joshua Tollefson, Andrew I. Hsu, et al A New Dark Vortex On Neptune, submitted to the American Astronomical Journal. Published online on February 15, 2018.

*Topic: New Hubble Telescope image of Neptune shows previously unknown dark spot; investigation of its morphology and behavior.*

**Andrew Hsu:** Amy Simon, Richard Hueso, 13 more authors including Andrew I. Hsu et al Jupiter's Mesoscale Waves Observed at Visible Wavelength. Submitted to Astrophysical Journal: April 30 2018. Currently waiting for news of review.

*Topic: Investigating Jupiter's small scale waves.*



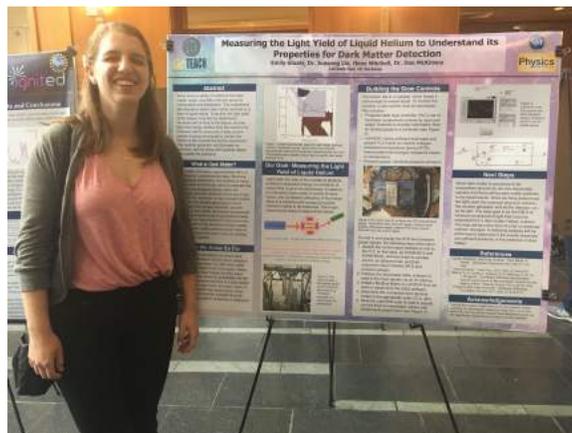
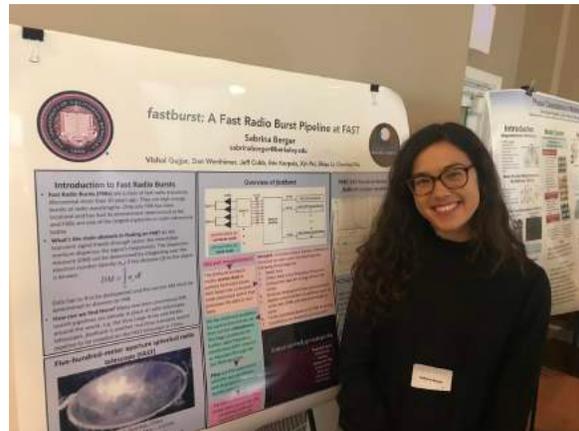
## SPS Chapter Report 2018

**Jonathan Jackson:** Marco La Manna, Fiona Kine, Eric Breitbach, Jonathan Jackson, Talha Sultan, Andreas Velten. *Error Backprojection Algorithms for Non-Line-of-Sight-Imaging*. IEEE Topic: *Transactions on Pattern Analysis and Machine Intelligence* (currently in review).

**Katie Latimer:** Latimer, K. J., Dwaraknath, S., Persson, K. A. "Evaluation of Thermodynamic Equations of State across Chemistry and Structure in the Materials Project." *NPJ Computational Materials*.

### 3.3 Conference Participation

The following conferences were attended by at least one member of the Berkeley SPS community. These conferences allowed our members to communicate their research, usually via posters, to the greater physics community.



*Katie, Sabrina, and Emily (respectively) give talks and present posters at their conferences this year.*

**Mathematical Association of America Mathfest Conference**, July 2017: Talk by Katie Latimer



## SPS Chapter Report 2018

Materials Research Society Fall Meeting, November 2017, Boston, Massachusetts: Katie Latimer

*European Space Agency's Extreme Habitable Worlds Conference*, December 2017, Noordwijk, Netherlands: Talk by Sabrina Berger

*University of California Leadership Excellence through Advance Degrees (UC LEADs) Symposium*, March 2018, Santa Barbara: Talk by Yasmeen Musthafa

*Confrence for Undergraduate Women in Physics (CuWIP)*, January 2018, Eugene, Oregon: 10+ UC Berkeley SPS members

### 3.4 Lab Tour

This year, UC Berkeley SPS hosted our annual lab tour to the Advanced Light Source at Lawrence Berkeley Lab. Our annual tour to the National Ignition Facility at Lawrence Livermore National Lab was cancelled due to citizenship-related restrictions, though our contact with the organization has been maintained and will be used to plan a tour further in advance this coming year.



*SPS members prepare to tour the Advanced Laser Source.*

**Advanced Light Source Lab Tour:** (15 March 2018) In the 2018 ALS tour, participating SPS students were greeted and guided by ALS interim director Steve Kevan, as well as the head of Accelerator & Floor Ops Group, Tom Scarvie. At the beginning of the tour, we walked through the research posters and individual offices situated along the beam lines. Then, during the tour, students were able to ask about all aspects of this facility, from its electron bending mechanisms, to its current use in chemistry and biology research. Dr. Kevan also guided the students to the center of the building, where we could get a panoramic view of the whole lab, and closely watch



## SPS Chapter Report 2018

the center magnet in action. In the end, we were shown the planned ALS upgrades that will keep this facility at the frontiers of science.



## SPS Chapter Report 2018

# Part 4: Chapter's Interactions with the off-campus public community

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## 4. Outreach

UC Berkeley SPS prides ourselves in extensive and recurring outreach with various schools and student groups throughout the bay. Listed below are our most successful outreach events from the last year.



*SPS members explain various physics concepts to inquisitive children via demonstrations at the Bay Area Science Fest.*

**Bay Area Science Fest:** (11 November, 2017) Our crew of ~15 volunteers traveled to AT&T Park in San Francisco to spread their enthusiasm for physics to children and adults alike. Along with other organizations brought together by Science@Cal, they captivated festival-goers with various physics demonstrations such as a set of polarizers, a superhydrophobic glass plate, an



## SPS Chapter Report 2018

erie set of mirrors that created the illusion of a flying pig, a curious atmospheric mat, and the crown jewel, the van de Graaff generator.



*Katie, Nicholas, and Rahul wait for a new student to explain circuitry to at the Thousand Oaks Elementary School Science Fair.*

**Thousand Oaks Elementary School Science Fair:** (3 February, 2018) We bounced over to Thousand Oaks Elementary School to show students the magic of circuitry. Using the humble breadboard, we guided each young student through a hands-on exploration of conducting and insulating materials. We especially enjoyed when students' eyes lit up when discovering that Gatorade™ conducts electricity, and their excitement as they dragged their parents over to reveal their discoveries.



*Nicholas, Andrew, Rahul, and Ivan at Engineering 4 Kids Day.*

**Engineering 4 Kids Day:** (17 March, 2018) In a new event this year, our organization teamed up with various engineering clubs on campus and local elementary and middle schools to create



## SPS Chapter Report 2018

an enthralling educational experience for the future generation of scientists. Berkeley's Society of Physics Students took over one of many rooms toured by students in a delectable "cheese-plate" of STEM fields. We charmed audiences of young students as well as their parents with nothing more than the van de Graaff generator. After our spiel, groups of twenty to forty students at a time would line up to get a turn shocking their parents. Many groups also held hands in a long chain and got to experience the "chain-of-pain," a suspiciously named exercise in which every person in the chain would feel a community-fostering shock. We're pretty sure this is legal.

**Cal Day:** *(21 April, 2018)* Working alongside a campus-wide effort to invite prospective students and other members of the general public, our chapter volunteered in a plethora of inviting displays. Students in SPS displayed demonstrations to the public, showed off posters of their original research, shared their experiences on a student panel, facilitated lab tours of James Analytis's group's lab, discussed life at Berkeley with future students waiting for time with our fabulous physics advisors, and manned the undergraduate physics reading room to show off SPS itself. We're pretty sure we convinced some people on the edge of coming to Berkeley to endure the same gauntlet we have, and we're positive we've shown the general public our Cal Physics spirit.

**A Day in the Life of a STEM Undergard:** (DATE) For more details, see our Blake and Lilly Prize application.



## SPS Chapter Report 2018

### Part 5: How chapter strives to further the SPS purpose and mission

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#### The SPS Mission:

*“The SPS exists to help students transform themselves into contributing members of the professional community. Course work develops only one range of skills. Other skills needed to flourish professionally include effective communication and personal interactions, leadership experience, establishing a personal network of contacts, presenting scholarly work in professional meetings and journals, and outreach services to the campus and local communities.”*



University of California, Berkeley is a campus that holds over 30,000 undergraduate students. Of these, over 400 are involved in the physics major. With a campus so large, our chapter of SPS emerged to fulfill a desperate need for community among the undergraduate population. This year, our chapter has focused on expanding our reach and resources, providing more



## SPS Chapter Report 2018

opportunities for building of leadership skills, professional development, and comradery. However, what makes our chapter strong is more than our events: it is the eccentric and active participants so dedicated to making sure that everyone has a home in their department. This year, our officer board alone had 15 members, and while each was given a specific role, from Treasurer to Grillmaster, each was eager to step outside of their role and fulfill needs in other areas. In addition to the officer board, a group of outreach-enthusiastic members stepped up, excited to reach out to the community beyond UC Berkeley, developing their leadership skills in the process.

***Our chapter's social events served to foster a sense of community and comradery in the physics department.*** Events like our beginning-of-the-year hike, board games, "Paint a Professor", Valentine's day Thank You Notes, Halloween Social, and the widely popular Secret Schrödinger exchange brought our members together on a weekly basis, allowing them to establish friendships with students of different years that might not have developed otherwise. After these meetings, students would stay around to socialize, and often we would go for dinner as a group. During the most difficult points of the semester, particularly during midterm season, these meetings became a break and refuge for tired and overworked students. Social meetings were generally housed in the Undergraduate Reading Room, allowing ease of access to students already in the room completing their problem sets.

***Our chapter's outreach and professional events allowed students to develop a wide range of leadership and professional skills, as well as begin to establish a network of contacts.*** Our outreach events were wide and varied this year, especially targeting elementary, middle, and high school students. After participating in their first outreach events, many of our newer members could not get enough, and were recurring participants in later events. Through demonstration training, students were taught effective ways of communicating science to those without the same experience, and these skills were honed in the events themselves. Meanwhile, students who sometimes were not present in our more socially-based meetings initially were drawn to the club through our professional meetings. Events like "How to Make Posters and Present Research" and "Graduate School Application Tips and Timeline" gave personalized information and advice that often is not made widely known in our department. These resources were posted on our website and Facebook group as well, so that members who could not attend would have access to this much-needed information. Many students looked to these resources when posed with the opportunities to present their research, and were more effective in communicating their work as a result. In addition, Faculty Student Lunches and our Industry Panel allowed students to establish connections within and outside of academia. Faculty Student Lunches were widely attended, and gave students the opportunity to speak to professors on a personal level and learn about their walks in life. These lunches often led to the acquisition of research opportunities for many of our members. The Industry Panel was also widely attended; panelists were enthusiastic and excited to share their experiences in industry, from the job search process to their reasons for leaving the academic path. Students learned about what opportunities there are beyond academia, information not widely known in such an academic-heavy university, and were inspired to keep their options open and attend career fairs. Our chapter is now in touch with various alumni and faculty, which will allow us to host similar events in the future.



## SPS Chapter Report 2018

This year in our chapter was dedicated to expanding our reach, sharing resources, and retaining membership. We are proud to uphold the SPS mission at our university, and look forward to our continuing participation in the coming years.



## SPS Chapter Report 2018

### Blake Lilly Prize Application

|   |   |
|---|---|
| Name of activity  | “A Day in the Life of a STEM Undergrad”   |
| Description of activity   | Day-long interactive workshop on campus for local high school students  |
| Targeted areas of impact  | Most of the students were juniors from high schools in Richmond, El Cerrito, Pinole, and Oakland. We were partnering with Berkeley’s Upward Bound program to reach students from underrepresented demographics who are interested in pursuing advanced studies in a STEM-related field. |
| Number of Attendees   | Roughly 25 students, 5 adult chaperones (not from SPS)  |
| SPS Provided volunteers   | 20  |
| Student   | 16  |
| Non-Student   | 4   |
| Estimate of hours to implement activity                           | Planning/coordination: 30<br>Day-of execution: 4 (x20 volunteers = 80 person hours)   |
| Individual Name<br>(leave blank if this is a chapter application) | N/A   |

#### How is this activity different than what you have done before?

Our chapter has been actively involved in outreach programming for the past several years. However, this event constituted two “firsts” for us, in that we were the principal organizers, and also in that it was specifically targeted towards high school students.

The program was held on a Saturday in October; however, planning began during the summer, when we reached out to several contacts on campus in order to figure out how best to recruit high school students to participate. Our network led us to the Berkeley chapter of Upward Bound (a federally-sponsored program aimed at decreasing barriers to access to higher education for students in low-income, first-generation-college, and/or underrepresented communities), whose staff agreed to schedule our event for one of their “Saturday Academy” days.

The day was structured around a rotation of mini-workshops for small groups of students (four groups of 6-7 students each). Activities included lab tours in astronomy and biology, an informal undergraduate student panel on life as a STEM major, “office hours” with professors from our physics department, and an interactive, STEM-themed obstacle course.



## SPS Chapter Report 2018

### How did you assess the impact your activity had on the community?

Since this event was the first of its kind for our chapter, we conducted a comprehensive follow-up with both student volunteers and our collaborators in the Upward Bound program. Some feedback from the students included:

- “Do more volunteer training/prep on our end, especially for the student panelists”
- “Try to get more bio/premed undergrad students involved (we did try to reach out beyond the physics department, but I think this would have been more effective if we had started earlier and targeted other student orgs rather than just our individual networks)”
- “On the logistical side, have one or two people available to direct latecomers and stragglers to the correct location”

Our collaborators had additional suggestions:

- “Keynote Speaker to frame the day”
- “Tell our students to be there 30 mins earlier”
- “Not sure if all the groups were following the agenda rotation times”
- “Maybe have a small gathering-reflection activity after the second rotation”

We were also very happy to hear the following anecdote from one of the adult chaperones:

*“Overall, the event was awesome and a great learning experience for our students. When I was talking to one of our students yesterday, as we were discussing grades, she said she never thought of the Physics field but that the event on Saturday helped her see that as an option for her. It came out of left field and I was really excited about her comment.”*

We are currently in contact with this group about setting up a similar event for the coming Fall semester, keeping the above suggestions in mind. Overall it was an exciting opportunity to share our experiences with prospective scientists, engineers, and mathematicians!



## SPS Chapter Report 2018

| Time  | Group 1 (Leader: Storm Lin)  | Group 2 (Leader: Agustin Pacheco)                             | Group 3 (Leader: Stanley Liu)                            | Group 4 (Leader: Mayia Vranas)                           | Key  |
|-------|--|---|--|--|--|
| 9:30  | 375 LeConte: Introduction, Overview of activities, "KWL" chart, Group assignments, General logistics |   |  |  | Whole-group  |
| 9:40  |  |   |  |  | Transition   |
| 9:50  |  |   |  |  | Lab Tour   |
| 10:00 | Transition to Activity 1   |   |  |  | Prof Session   |
| 10:10 | Life Sciences Addition, Tour: Josh Tworig  | 251 LeConte Moderator: Amanda Lee                             | 270 LeConte, Tour: Leo Steinmetz                         | 429 Birge, Professor Fajans (Moderator: Storm Lin)       | Student Session  |
| 10:20 |  |   |  |  | **Fun Activity**   |
| 10:30 | Transition to Activity 2   |   |  |  |  |
| 10:40 | 429 Birge, Professor Fajans (Moderator: Storm Lin)   | Life Sciences Addition, Tour: Josh Tworig                     | 251 LeConte Moderator: Amanda Lee                        | 270 LeConte, Tour: Leo Steinmetz                         |  |
| 10:50 |  |   |  |  | **Also see volunteer role descriptions in other sheet (bottom tab)** |
| 11:00 | Longer transition to Activity 3 for bathroom break, etc.   |   |  |  |  |
| 11:10 | between LC and Campbell (Leaders: Isaac Zheng, Preston Dicks)  | 443 Birge, Professor Hedeman (Moderator: Ian Galbraith)       | Driveway between LC and Campanile (Leader: Sam Weismann) | 251 LeConte Moderator: Amanda Lee                        |  |
| 11:20 |  |   |  |  |  |
| 11:30 | Transition to Activity 4   |   |  |  |  |
| 11:40 | 251 LeConte Moderator: Amanda Lee  | between LC and Campbell (Leaders: Isaac Zheng, Preston Dicks) | 443 Birge, Professor Hedeman (Moderator: Ian Galbraith)  | Driveway between LC and Campanile (Leader: Sam Weismann) |  |
| 11:50 |  |   |  |  |  |
| 12:00 | Back to LeConte for wrap-up  |   |  |  |  |
| 12:10 |  |   |  |  |  |
| 12:20 | 375 LeConte: Reflections, Complete KWL chart. Additional questions/feedback, Group photo?            |   |  |  |  |
| 12:30 |  |   |  |  |  |

*Workshop rotation agenda.*



## SPS Chapter Report 2018



*Group photo following our “Day in the Life” event with local high school students. [Cal SPS resident photographer/tech enthusiast Frank in left frame]*



## SPS Chapter Report 2018

Society Physics Students Presents:

# A DAY IN THE LIFE OF A STEM UNDERGRAD

Join the UC Berkeley Society of Physics Students in exploring what day-to-day life is like as an undergraduate in science, technology, engineering, and math fields

Neurobiology    Biology    Astrophysics

Astronomy    Computer Science

Lab Tours    **And More**    Science in Action

Q &A with Undergrad Students and Professors  
LeConte Building at UC Berkeley  
Oct. 7th  
9:00am-12:30pm

*Poster promoting our event.*



## SPS Chapter Report 2018



*Students participate in a relay race led by Sam.*



*Leo gives a tour of his experimental cosmology lab to a group of students.*



## SPS Chapter Report 2018



*Katie welcomes the group and explains the “KWL” chart.*