



2022 Chapter Report

Chapter Name:

Society of Physics Students - Embry-Riddle Aeronautical University (Prescott)

Save your Chapter Report file using the naming format: [University Name] 2022 Chapter Report

(Ex. UNC Asheville 2022 Chapter Report.docx)

1: What did this academic year look like for your department?

Please help us understand what the academic year looked like at your department. Please include things like (but not limited to)...

- Which groups of students (if any) were present on campus?
- Were in-person classes or events allowed?
- Were there any notable changes in your department's organization (e.g., merging with other departments)?
- How did your chapter meet and communicate?
- How did you fund your activities?

ERAU-Prescott was fully open to students and faculty throughout the school year. Despite the few number of COVID cases that lurked at the beginning of the Fall semester, we were able to maintain the safety of the Eagles and staff to reduce any concerns. In-person events were allowed and our SPS chapter took full advantage of that, beginning with our annual SPS BBQ. To the right, three of the 2021-2022 officers are pictured while Caitlyn Ooms (Vice-President) stands on a table and sings along to a Katy Perry song. We were also allowed to be in-person for classes, and this proved to be beneficial especially for the sophomores. Before this year, they had not really had an interaction with their class like the upperclassmen did. They finally got to know each other and became close friends and it was awesome to see that growth.



There were no noticeable changes to our department. We still have a small yet strong Physics and Astronomy Department.

This year, we met every week on a day that worked for the majority of the club. Usually at 6pm, we all huddled into one of the Physics Lab rooms and awaited the meeting to start. All officers would meet a few days prior to the meeting to plan any events or talk about any noteworthy topics in order for the meeting to run smoothly. Our meetings had a variety of events, as our President, Janessa Slone, wanted meetings to be a place where members can relax and have fun. We had our BBQ, played Physics Jeopardy, had a successful Centennial Party, participated in a Mario Kart Tournament, hosted Resume/CV workshops, and so much more. We realize that not all chapters were able to experience the SPS year that we did, and we are very grateful to have been with each other in one of the hardest times of our lives.



We mainly communicated over email. Our school's Department of Student Engagement makes it easy to contact all members or even a select few with just one or two clicks. If any members had an emergency and needed to

contact an officer, all of our numbers and Snapchats were given out. We also had an SPS Calendar that was updated by the officers to relay any events or important dates.



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Our chapter had a variety of new fundraisers this year. Thanks to our amazing treasurer, Teagan Laws, and the rest of our officer team, we were able to raise over \$2500. Our first fundraiser happened at MOD Pizza, a popular pizza parlor in Prescott Valley, AZ. The majority of our club attended and even some faculty! Our secretary, Megan Peatt, created some awesome flyers and our members helped put them around campus. Next is our infamous ‘Spooky Grams’ which is always popular around Halloween. These grams are filled with candy, toys, stickers, and handwritten notes from the sender. The price of the gram depends on what size you would like to send. Our members help the officer team fill the bags, write notes, and organize them so

they are ready to be picked up. This year went very smoothly and we sold over 300 grams! At the beginning of the spring semester, we had a bucket hat fundraiser. Janessa Slone designed the bucket hats and the rest of the officer team chose the color and style. They became very popular quickly once the order was shipped in (we heard Brad Conrad even wants one). Our final fundraiser was a week-long praise of the infamous ‘Pi-Day’. For a whole week, our chapter baked and sold baked goods in front of our Student Union while we led up to the festivities we had for Friday. On Friday, we continued our bake sale but also sold Pi-themed stickers, had a Digits of Pi Contest, and had a Pi-ing event! People that volunteered to be Pi-ed included all of the officers and 4 of our Physics Professors! This was very popular and was a great way to end the semester. We even got in our school’s newspaper because of it.

The officers mainly spent any money raised on new demos or items for our Physics work space “The Cave”. We are so glad to have been able to purchase a brand new Keurig and K-cups for our members.



2: How has your Chapter maintained a sense of community amongst SPS members this year?

Please share new things you tried and any insights you gained about effectively maintaining your SPS community this year. These might include...

- What kinds of events were popular?
- Did you start a Discord or Slack group?
- Did you create a mentoring program amongst students? Were alumni involved?



As mentioned before, we had a variety of new things happening at our meetings. What we found most popular was the Mario Kart tournament. Members were able to sign up and the officers generated a random bracket. One of our Seniors, Jeramy Gordan, is the first ever SPS Mario Kart Champion. When we played Physics Jeopardy, our members had no idea. All of the officers dressed like Game Show hosts and didn’t mention the game until the very end of the meeting when the Jeopardy theme song “randomly” turned on. Teams were made, and the battle began. THANKFULLY—our seniors were able to snag the win, but the freshmen were close behind them. Our members often went together to campus activities. This year, we were able to have our ‘Octoberwest’ homecoming where a lot of members enjoyed tacos and bouncy houses. Some members even went on trips out of state

together. Our main source of community was The Cave. This is where 95% of our members would come during their passing periods, in between classes, and even late at night to study for a Quantum Mechanics exam. The Cave carries some of the best memories from the 2021-2022 SPS year.



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3: Describe your Chapter's/Club's activity with SPS.

Tell us about efforts related to topics including (but not limited to)...

- Did you apply for any SPS awards, scholarships, internships, chapter awards, adviser awards, etc.?
- Did you nominate anyone for SPS Associate Zone Councilor or Zone Councilor?
- Did you vote in the SPS National Council election?
- Did you collaborate with other SPS chapters?
- Did you attend SPS Zone meetings, National meetings, or Sigma Pi Sigma inductions?

Our President, Janessa Slone, applied for an internship and is the current SPS SOCK Intern! Though we did not apply for any awards through SPS, we plan to do so next year with all of our accomplishments. Janessa was also the Associate Zone Councilor for Zone 16 for 2021-2022 and just got reelected for the next year. Our chapter did vote in the National Council election. Our zone does not have a ton of activity, but we did try to plan a zone meeting either in Mexico or Arizona. Janessa attended the National Council meeting in September 2021 in Washington, D.C. The Sigma Pi Sigma chapter at ERAU did hold inductions where many of our SPS members were officially inducted.

4: How has your Chapter has engaged with your community?

Tell us about how your chapter was active on campus – within the department or university. Your discussion might include...

- Guest speakers, movie screenings, business meetings, virtual tours, student presentation rehearsals
- Social events (e.g., zoom parties, movies, picnics, banquets, and outings)
- Science events (e.g., outreach, colloquia, workshops, poster sessions, invited speakers)
- Initiatives to improve inclusivity and diversity in your chapter or department
- Help with student recruitment and retention efforts for your department or university
- Interaction with alumni (e.g., newsletters, invitations to speak, arranging internships, or visits)
- Interactions with other student organizations or campus groups (e.g., blood drives, campus fundraisers)
- Service and outreach beyond the campus community (e.g., classroom demos, tutoring, help with science fairs, open houses)
- Other chapter-organized community service, fundraising, etc.
- Participation in off-campus social events or interactions with other civic groups

Because our chapter was able to have events that included the public, we took full advantage of it. Our outreach coordinator, Clarissa Winks, planned numerous events with the public. This includes a Halloween day of Physics with the Highland Center in Prescott, AZ. We took multiple demos, including a mini Tesla Coil, for families to walk around with their kids and interact with them. Some of our volunteers dressed up and the attendees really enjoyed it!



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We also had our very own Michele Zanolin speak at one of our meetings to encourage reaching out to companies and making connections to earn an internship/REU.

As mentioned before we also had our annual SPS BBQ. Some professors came out and enjoyed some food with us as a kickoff for the year.



As part of outreach, we worked with Granite Mountain Middle School to talk about Black Holes and Rockets to 5th and 6th graders. This was a very popular event to volunteer for amongst our members to get experience in presenting. The students always enjoyed the presentations and had many questions. Building Rockets and launching them was their favorite part, one of them launched over 30 feet!

To prepare for any Outreach Events that required demos, we held a Demo workshop on the weekend and had one of our previous officers host this. We have a variety of demos at ERAU and this workshop was intended for our new members to learn how to present them. This workshop was a success! In the picture to the right, one of our newest members, Abigail Parks, was trying our race track demo that demonstrates Inertia.



We had multiple Professional Development workshops thanks to our Vice President, Caitlyn Ooms. Caitlyn organized multiple alumni talks (over zoom) where alumni had the chance to return to an SPS meeting to talk about what their experiences are like in industry and in graduate school.

We had most of the class of 2020 attend these meetings and it was very fun and informative. We also had a CV/Resume workshop with free pizza where our own professors walked around and looked at our portfolios. This was a great addition to the year especially when our Seniors were applying to graduate schools. We also had an end of the year internship/REU/graduate school panel so our members can be celebrated for their accomplishments this year.

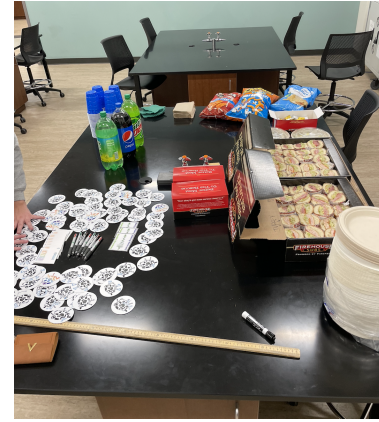


For some fun, we also had a social with our chapter at 'In the Game'. In the Game is an arcade with games, laser tag, and mini bowling. It was tons of fun especially for our new members to get to know the upperclassmen. Most of our members won science themed shot glasses (don't worry, they're all 21+)!

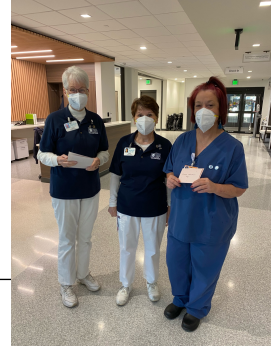
We also celebrated Sigma Pi Sigma's 100th birthday as a combined chapter! We worked with the Sigma Pi Sigma Officer Team to host a party with catered sandwiches, cake, music, and gifts from our awesome centennial party box. It was lots of fun and a great way to introduce a change of pace.



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One of the newest additions to our outreach was holiday cards for the nurses at the Yavapai Medical Center. The officers wanted to give back to the nurses and staff who have been through trying times during COVID, so our chapter showed our appreciation through Valentine's Day and Nurses' Week cards.



5: How has your Chapter interacted with the professional physics community outside of your college/university?

In this section, tell us about...

- Participation in professional physics meetings (e.g.: AAPM, AAPT, AAS, ACA, AMS, APS, ASA, AVS, NSBP, OSA, SOR) — Include titles and authors of papers presented by your chapter members, attendance by your members, distances traveled, tours
- Any publications or presentations by chapter members (authored or co-authored) — please list titles, and full references.
- Any submissions to the *Journal of Undergraduate Reports in Physics (JURP)*

This year, we had many of our members publish papers and present at various conferences.

Publications:

Dorfling, J., Siewert, S. B., Bruder, S., Aranzazu-Suescun, C., Rocha, K., Landon, P. D., Bondar, G., Pederson, T., Le, C., Mangar, R., Rawther, C., & Trahms, B. (2021, December 29). *Satellite, aerial, and ground sensor fusion experiment for management of elephants and rhinos and poaching prevention*. AIAA SciTech Forum. Retrieved June 13, 2022, from <https://arc.aiaa.org/doi/abs/10.2514/6.2022-1270>

Martin, K. M., Minkoff, T., Landon, P., Gray, B., Landau, D., & Laboratory, J. P. (2020, January 5). *Julia language 1.1 Ephemeris reader and gravitational modeling program for solar system bodies*. AIAA SciTech Forum. Retrieved June 13, 2022, from <https://arc.aiaa.org/doi/abs/10.2514/6.2020-1468>

Peatt, M. J., & Richardson, N. D. (2022, January 12). *Optical photometry of WR140 as the dust formed during the 2016 Periastron Passage*. arXiv.org. Retrieved June 13, 2022, from <https://arxiv.org/abs/2201.04670>

Presentations:

Parker Landon, AZ NASA Space Grant - Tucson, AZ

Jennifer James, AZ NASA Space Grant - Tucson, AZ



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Janessa Slone, AZ NASA Space Grant - Tucson, AZ

Becca Spejcher, AZ NASA Space Grant - Tucson, AZ

Mari Beltran, AZ NASA Space Grant - Tucson, AZ

Janessa Slone, ERAU Discovery Day - Prescott, AZ

Parker Landon, ERAU Discovery Day - Prescott, AZ

Megan Peatt, ERAU Discovery Day - Prescott, AZ

6: How does your chapter connect alumni and the department?

Sigma Pi Sigma exists to honor outstanding scholarship in physics; encourage interest in physics among students at all levels; promote an attitude of service of its members towards their fellow students, colleagues, and the public; and provide a fellowship of persons who have excelled in physics.

In this section, tell us about your Sigma Pi Sigma Chapter (as unique from your SPS chapter):

- *What are your upcoming plans for inducting students and alumni into Sigma Pi Sigma?*
- *How does your chapter engage with alumni (e.g., invitations to inductions, department events with alumni, invited talks)?*
- *Did you give any Sigma Pi Sigma or SPS service awards?*

Our Sigma Pi Sigma chapter is completely separate from our SPS Chapter, with a separate officer team. The team has let our team know that they are transitioning to new officers and are going to do more fundraising and outreach toward the physics community.

Our chapter continuously invites alumni to our meetings to give industry and alumni talks. These have proved to be beneficial in the past, as some of our alumni have helped our members receive a summer internship.

We did not give any SPS Service awards this year.



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Highlight an activity or initiative your chapter is proud of this academic year. This may be published in an issue of *The SPS Observer*. (OPTIONAL)

In this section, describe an activity, event, or initiative your chapter is proud of, in an article format. Suggested length: 750-1500 words.

Please include the following information:

Title:

Authors:

Point of contact for further questions:

List of image names and captions and photo credit to include if published. Ex. UMD_October_Outreach.jpg, SPS students build a spaceship with local children. Photo courtesy of Brad Conrad.

For examples of published articles, check out the Features in the Winter 2021 issue of The SPS Observer: spsnational.org/the-sps-observer/issues/winter-2021

Title: SPS at ERAU Celebrates Pi(e) Day!

Authors: Janessa Slone

Point of Contact for Further Questions: Janessa Slone (slonej1@my.erau.edu)

Beginning the 2020-2021 school year, the Society of Physics Students at Embry-Riddle Aeronautical University (Prescott, AZ) started celebrating the infamous Pi-Day. The officer team this year decided this tradition is worth continuing, but there was only one condition. They wanted to make it a much bigger event. They took ideas from their well-known ‘Spooky Grams’ and transformed Pi day entirely. Previously, SPS had done a Digits of Pi Contest that resulted in the first 10 people receiving a free full-sized pie. Mini pies were also sold and given away as ‘grams’ to students and faculty as a token of appreciation. To make this event bigger and better, the officer team



Dr. Brennan Hughey (left), Janessa Slone (middle), and Dr. Michele Zanolin (right) after being pied by students on campus. Photo taken by Megan Peatt.

planned a week-long fundraiser with concluding events at the end of the week. Members of their chapter baked and sold baked goods everyday to contribute to the festivities. The chapter support and enthusiasm was amazing to witness. Examples of baked goods included cookies, brownies, chocolate covered strawberries, and of course—a variety of vegan/gluten free options. To decorate the fundraising table, members used SPS balloons and stickers that they had from their Centennial Party Box. Many sold goods were accompanied by spherical cows bought by students on campus. After four days of planning volunteer schedules and selling goods, the Friday fun had begun. Early in the morning on Friday morning, 4 SPS members and 2 Officers joined together in the Quad area on campus. It was a very cold March morning, but that wasn’t stopping SPS from celebrating Pi. As one last ‘hoorah’ before Spring Break, the officers and a few faculty signed up to be Pied by students on campus. “Pie your Professors” quickly became a huge hit and is secured on the event list for next year. To



Dr. Darrel Smith being pied during SPS Pi(e) Day. Photo taken by Megan Peatt

participate in this event, there was a small fee of \$2 to throw a pie from about 7 feet away, but there was also an option to get a guaranteed hit for only \$5. Dr. Michele Zanolin (Associate Professor of Physics) and Dr. Brennan Hughey (Department Chair of Physics and Astronomy) were incredibly excited to help the Society of Physics Student raise money that is intended to send members to Physcon 2022. Dr. Zanolin paid for numerous students to participate in throwing pies at the officers, and even paid for students to throw pies at him! Dr. Quentin Bailey and Dr. Darrell Smith also participated in being pied which helped our chapter raise even more money. While Pie your Professor was happening in the background, baked



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goods were still being sold at the front table. Volunteers came every hour according to the shift schedule made by Teagan Laws. Volunteers even had the opportunity to throw some pies at the officers and faculty. We also had another digits of Pi contest where the person who can recite the most digits of pi would win a free pie! The winner was a freshman, Hailey Beier, with 156 numbers recited! She is one of the newest SPS members and really showed her dedication to the STEM field. A volunteer outside of SPS also designed Pi(e) themed stickers for them to sell at the baked goods table. The SPS Chapter at ERAU - Prescott was able to raise about \$600 in funds to help support sending some of their active members to Physcon! This chapter is known to have great fundraisers and lots of fun all throughout doing so. Next year, they plan to continue the tradition and possibly expand further!



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Blake Lilly Prize Application (OPTIONAL)

The Blake Lilly Prize, given in honor of the late Blake Lilly, recognizes SPS chapters and individuals who make a genuine effort to positively influence the attitudes of school children and the general public about physics. The Blake Lilly Prize is an opportunity to be publicly recognized for these types of physics outreach efforts. Examples of eligible efforts include a "Physics Circus," classroom demonstrations, tutoring services for grades K-12, or assisting with school science fairs. For more details, visit: www.spsnational.org/awards/blake-lilly

If you wish to nominate an event your chapter or an individual from your chapter coordinated during the 2021-22 academic year for the Blake Lilly Prize, please detail the activity below.

| | |
|---|--|
| Activity Name | Granite Mountain Middle School Outreach |
| Activity Description | Teaching 5th and 6th graders about various physics topics including effects of space, black holes, rockets, etc. |
| Targeted Impact Areas | Elementary, K-6. Special Education and Disability Services. |
| Number of Attendees | Various classes, about 30 students in each class. 4 classes each session with 3 sessions. ~360 students. |
| SPS Volunteers | Janessa Slone, Jennifer James, Madx Cole, Hailey Beier, Maelynne Schneider, Justin Carpenter, Caleb Colucci |
| Student | |
| Non-Student | |
| Estimate of Hours to Implement Activity | ~28 hours over numerous sessions. Each session took 1 hour. |
| Individual Name (leave blank if applying as a chapter) | |

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

Please detail how this activity relates to outreach you have done previously.

Before this past school year, our SPS chapter would rarely go off campus to do outreach. Most of the off-campus outreach consisted of working with nearby businesses or parks and never had one target audience. Janessa was in contact with a previous ERAU STEM Outreach coordinator that had been teaching a STEAM class at the local middle school. This STEAM class was designed for students with learning disabilities and Mrs. Elise had requested that our chapter attend and teach one of these classes. Janessa worked closely with Elise to design the best powerpoint possible and we were able to present and work with all of the students. Each student even wrote some questions on sticky notes about what it's like being a physics major, what college is like, etc. The students were very excited to talk to our volunteers personally, and gave compliments out very generously to each of them. At the end of the presentation, many questions were answered and no question was looked over. Then Bottle Rockets were built using baking soda and vinegar (the classic), and students were



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super excited to show them off. We continued doing this presentation and rocket building a couple more times before the school year ended and there was a lot of great feedback from the volunteers and Mrs. Elise.

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

Please discuss your evaluation methods, the results of the impact, and any improvements you are considering making in the future.

Due to the great amount of feedback, our chapter will surely be doing this event again. All of the students had fun and were amazed at the opportunities that we presented to them. Even though they might not have understood some things we are pursuing currently, they awed in excitement that one day that could be them. Next year, we would like to make this a more common event and expand to other classrooms as well. We began to do that toward the end of the semester and will continue to do so in the next year.