



# SOCIETY OF PHYSICS STUDENTS

An organization of the American Institute of Physics

## Marsh White Award Report Template

Project Proposal Title	Phun with Physics
Name of School	Ithaca College
SPS Chapter Number	3183
Project Lead (name then email address)	Adam Rabayda arabayda@ithaca.edu
Total Amount Received from SPS	\$497.50
Total Amount Expended from SPS	\$389.00

## Summary of Award Activities

The Ithaca College chapter of the Society of Physics Students successfully held the event “Phun with Physics” on April 17, 2018. This event consisted of a variety of physics experiments and demonstrations run by SPS members for the campus community and their families. Experiments included a cymatic frequency generator, Van de Graph generator, homopolar motors, a plasma cutter, the slinky drop, and more! Our club also provided snacks to the event attendees. Most experiments were interactive which made it a fun and lively environment in which all attendees were able to learn something new by participating in the experiments.

## Statement of Activity

### **Overview of Award Activity**

Through the funding of the Marsh White Award, our SPS chapter was able to hold an outreach event called Phun with Physics. This event consisted of thirteen different physics experiments and demonstrations that covered topics such as circuits, electricity, magnetism, waves, superconductors, space-time, and 3D printing. SPS members volunteered their time to learn the physics behind their experiment, set them up, and explain the physical concepts and run the demonstration for event attendees. The event was held in one of the main buildings on Ithaca College campus, so it was very accessible to students, faculty, and members of the community. Students were the main target audience of the event, and the experiments were at a level where it was helpful to have some basic science knowledge to find them the most interesting. Typically college students will have this level of knowledge from high school science courses, so students of any college major could attend. The

vast majority of students who attended the event were in one of the introductory physics classes, so they had some background knowledge specifically in physics already. Most of the community members who attended were family members of the SPS members running the event. Roughly 200 people in total attended this event. This event allowed students and community members to have hands on interactions with physics demonstrations and experiments that they would not get in a classroom or even a science museum. Attendees got to try their hand at cutting aluminum foil with the plasma cutter, see if their hair would stand up while touching a Van De Graph generator, and launch marbles through the fabric of space-time to see how large masses effect the paths of planets. These hands on experiments inspire people to be more curious about and more involved with science, instead of just learning about it in the classroom. Our SPS chapter has never done a project like this before. Our chapter normally focuses all of its funds on sending students to conferences, and having the occasional meeting to bond and take a break from homework over pizza. A few of our members have done their own science related outreach projects, including helping repair experiments on our local Physics Bus, but we have never done outreach on such a large scale. The goal is to continue doing outreach events like this one every year, adding new experiments each time to keep the event updated and interesting. Seeing all the amazed faces of both event attendees and SPS members who were running the experiments after watching the cymatic frequency generator make interesting patterns, or when we finally got a homopolar motor to work after trying for hours, made all the planning that went into this event worth it. We believe this event was a success based on how much everyone enjoyed it.

### **Impact Assesment: How the Project/Activity/Event Promoted Interest in Physics**

The goal of the Phun with Physics event was to promote an interest in physics among students and the general public. Our more specific goals were to have more than 100 people attend the event, to have approximately 15 experiments that would interest college students, and for people to walk away with an increased knowledge of physics. All of these goals were met. Approximately 200 people attended the event, we had 13 physics demonstrations and experiments on a variety of topics run by plenty of SPS member volunteers, and event attendees seemed interested in and excited about the experiments that we had, and learned a lot. Our original evaluation plan was to track attendance at the event, the level of participation in each of the experiments, as well as handing out surveys asking if attendees enjoyed the event and which experiment was their favorite. While we did not end up handing out surveys, we did track attendance at the event, and the level of interest in each experiment was monitored. The most popular experiments were the plasma cutter, the superconductors, and the 3D printers. These experiments are all very interesting, and not something a student would have typically seen before in a high school or even college science class. The SPS members running these experiments were also some of the best at explaining physics concepts, which aided attendees understanding of the demonstrations. Some of the less popular experiments were the slinky drop and the Jacob's ladder, which were less complex than most of our other experiments, and did not hold the attention of attendees for very long. Using this knowledge of what attendees enjoyed and didn't enjoy, we can find more complex and interesting experiments like the superconductors and plasma cutter, to add for next year. The overarching physics topic for the experiments did not seem to matter as much, attendees enjoyed experiments in a variety of topics. Based on the attendance of this event, and the expressions of awe on attendee's faces when the unexpected happens in an experiment, we would consider this event a success. Attendees left with more physics knowledge, and a greater interest in physics overall.

## Key Metrics and Reflection

Who was the target audience of your project?	<b>The Ithaca College community and their family members</b>
How many attendees/participants were directly impacted by your project? Please describe them (for example “50 third grade students” or “25 families”).	<b>~150 Students ~20 family members ~ 30 faculty members</b>
How many students from your SPS chapter were involved in the activity, and in what capacity?	<b>The 4 SPS officers were heavily involved in planning and running the event. There were about 20 other SPS members who helped to run the experiments.</b>
Was the amount of money you received from SPS sufficient to carry out the activities outlined in your proposal? Could you have used additional funding? If yes, how much would you have liked and how would the additional funding have augmented your activity?	<b>Yes, the amount of money we received was sufficient. We were able to purchase all of the materials and food we needed.</b>
Do you anticipate repeating this project/activity/event in the future, or having a follow-up project/activity/event? If yes, please describe.	<b>We anticipate holding this event once a year from now on, and eventually once per semester. This will require us to keep adding new experiments in order to keep the event interesting and new.</b>
What new relationships did you build through this project?	<b>This event allowed for our members to spend quality time together enjoying fun physics experiments. We also were able to interact and build relationships with other students and faculty from different departments across campus.</b>
If you were to do your project again, what would you do differently?	<b>We would add new experiments and advertise more. We would like to include more experiments that allow the participants to take things that they make home with them.</b>

## Expenditures

The majority of our expenses went towards purchasing supplies for different demonstrations and experiments. We needed supplies for seven out of the thirteen experiments that we ran at this event, the rest of the supplies we already had at Ithaca College. The specific supplies are listed in the table below. The cookies were purchased to help draw more people to the event, and to provide some sort of food item since the event was held in the evening. All of the funding for supplies and cookies came from the Marsh White Award, other funding was not used.

### **Expenditure Table**

<b>Item</b>	<b>Please explain how this expense relates to your project as outlined in your proposal.</b>	<b>Cost</b>
Cymantic Frequency Supplies	Frequency generator and metal plate for demonstration	186.00
Batteries	Used for plasma cutter and homopolar motor demonstrations	46.00
Plasma Cutter Supplies	Pencil lead and aluminum foil for demonstration	9.00
Homopolar Motor Supplies	Wires, wire cutters for this experiment	8.00
Ferrofluid	For magnetic field lines demonstration	19.00
Pancake Printer Supplies	Syrup, pancake mix for the pancake printer	9.00
Miscellaneous Supplies	Other supplies for demonstrations on electricity and space-time	12.00
Cookies	Food for SPS members and attendees to enjoy, helps to bring people in	100.00
<b>Total of Expenses</b>		<b>389.00</b>

## Activity Photos

All photos were taken by our chapter's secretary, Liana Rodelli.



SPS member Thy, far right, explains how superconductors and the Hall Effect works to student attendees.



SPS member, Wyatt, middle ground on the right, makes homopolar motors with community members.



SPS member, Alex, sets up the pancake printer. In the background are some of Ithaca College's 3D printers, and a 3D printed wave model.



Associate Zone Councilor, Salvatore, far right, shows students magnetic field lines using ferrofluid.



SPS member, Robert, far right, helps students cut aluminum foil with a plasma cutter.



SPS member, Kemi, right, runs a standing wave demonstration for a student.



If you have any questions, please contact the SPS National Office Staff  
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