



SOCIETY OF PHYSICS STUDENTS

An organization of the American Institute of Physics

Marsh W. White Award Proposal

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| Project Proposal Title | Juniata's Physics Outreach: demo upgrades |
| Name of School | Juniata College |
| SPS Chapter Number | 3392 |
| Total Amount Requested | \$500 |

Abstract

Juniata College's SPS Chapter is dedicated towards spreading physics to all people. Through outreach programs such as Physics Phun Night, we hope to bring excitement to the youth, our future leaders in science.

Proposal Statement

The entire Proposal Statement should be no more than 2 pages, and organized as follows.

Overview of Proposed Project/Activity/Event

For twenty years the Juniata SPS club has put on one of the college's most well-known outreach programs: Physics Phun Night. Physics Phun Night is a free physics demonstration show open to the public, and geared towards a younger audience. SPS members perform and explain physics demonstrations and concepts in a way that excites the audience and hopes to motivate the younger generations in the fields of science.

This event is targeted towards elementary and middle-school aged children. Each year, approximately 300 people from the public attend our program. These are interactive demonstrations, where the children can see physics up-close and in action. We believe this is the best way to increase interest and enthusiasm in physics. Although we already are well established, the majority of our demos are outdated and have been used many times. With a combination of funds from this grant, and our department, we hope to expand our demonstrations, incorporate new ones, and fix/modify some of our "classics."

Our chapter is well-positioned towards achieving a successful event as we have approximately 20 SPS members willing and able to plan, design, and carry out this outreach event. Our most loved and well-known demo, the bed of nails, is in desperate need of repairs. The current bed is over 20 years old, and is becoming a tetanus and safety hazard with all of the rust and bent nails. We hope to rebuild this bed (approximately 6' x 3' in dimension) with new, galvanized nails that will last for another 20 years to come. In addition, we wish to include a demo that explains air pressure and illustrate what a vacuum is. A vacuum pump will be necessary for us to pursue this.

Our goal in Physics Phun Night is to promote physics to the wider community and get the youth excited for science. Physics can be seen as an intensive, almost impossible subject that is all theoretical. We hope to inspire the future generations towards the idea that physics is fun, rewarding, and cool! By showing this to the youth, we hope to increase diversity and excitement within the field.

Similar to Physics Phun Night, our SPS chapter also dedicates time towards "Mall Physics." Instead of the community coming to us, we go out to the local mall and perform demonstrations for the public. Similar demos are presented. This is also geared towards younger children, but oftentimes adults and older students start up a deeper conversation on concepts that we facilitate. With more demos, we hope to reach wider audiences and spread the joy physics to the communities around us.

How Proposed Activity Promotes Interest in Physics

The Juniata SPS chapter is dedicated towards spreading physics to the greater community in an accessible and engaging way. One of the main priorities in this chapter is to promote and send knowledge of physics to the public, and more importantly the younger children, on whom we feel we can make the biggest impact. Physics Phun Night is extremely important to us, as three of our current SPS members once were young students watching the demonstrations from the seats when they were kids! We want to show the public that physics is fun and that it has many applications to everything around us. A crazy old white man working in a lab is not how we want to portray physics to the youth. Everyone can study physics. Everyone can be a part of physics. This is our goal. Diversity is beautiful, especially in physics, where differing thought processes and ways at looking at life are crucial to new discoveries. A Marsh M. White award will help us to achieve our goal and spread physics to all people who want to listen.

Plan for Carrying Out Proposed Project/Activity/Event

We (SPS members) will work with Dr. Borgardt to organize and plan a successful outreach event. Evan Ulrich and Camden Kasik (along with a slew of other upperclassmen SPS members) will be in charge of planning the event. Camden, our SPS president, will be planning weekly meetings leading up to the event to monitor each demo and our progress. We will work closely with our marketing department at Juniata to promote the event. This will be distributed to the local newspaper, posters will be set on display for the public to see, and the event will be publicized on the internet. Also, over 1000 flyers will be created that we distribute to local schools and community bulletin board locations. Approximately 20 SPS members will be participating in this event, as it is entirely performed by students. The event itself is about 75 minutes long, and each participating member will put in about 10 hours in preparing their respective demos and supporting the overall program. The majority of the SPS members who will be performing demos have done it before and have experience. The upperclassmen help the beginners until they become comfortable with performing demos and speaking to an audience. Typically, one experienced student will be chosen as the emcee. Their job is to introduce each student and occasionally crack a horrible physics pun, to the many groans of the audience.

Project/Activity/Event Timeline

This event is already very well established and has been performed annually for many years. Most SPS members have been a part of Physics Phun Night in years past, so we have experience in creating and carrying out the event. This specific event has not been scheduled yet, as it occurs around early April. In the weeks prior to the big night, SPS club members choose demonstrations to do, build them if needed, and make sure they are in working order. We also practice short explanations at a layman's level, avoiding jargon. A program is distributed to attendees, with a powerpoint that notes the demos performed and the presenters. Each member is required to become a mini "expert" on the demo, and present a short physics related description on what the audience is seeing. We often have our Women in Physics group sponsor a specific demonstration to highlight this group, and to serve as role models for the young girls in the audience. This, along with printed programs and flyers, will be finalized about two weeks before the actual event. (Planning will begin just after the start of the semester). Multiple meetings will take place to organize and allocate specific jobs to each SPS member involved in this event. We hope to have our new and improved demos working and presentable two weeks before the scheduled event.

Activity Evaluation Plan

We will evaluate our success by the amount of people in attendance, a direct correlating to our ability to advertise our event to the public. By seeing the children's' faces light up as they see rockets launched, liquid nitrogen clouds, and vibrant explosions, we know we will have had a successful event. Getting just one student excited about science is seen as a success to us. We know that by demonstrating fascinating physics concepts, we will be able to ignite a spark in the minds of young thinkers. By performing this event annually, we are able to gauge whether or not the event was just as good as the year before. Hopefully with new demos we can make Physics Phun Night even more memorable.

Budget Justification

Because we are about to exceed our page limit, our budget justification will be brief. We are in desperate need of upgrades to our physics demos, such as our beloved bed of nails. We also need funds for the liquid

nitrogen that will be used, as well as a vacuum pump that will be used in new demos. We hope to gain \$500 from SPS national to make our necessary upgrades and buy supplies for new demos. The department has promised to match any funds we receive from SPS to apply to additional demonstration repair and development. Finally, the money would also go towards flyers and posters to promote the event.