



# SOCIETY OF PHYSICS STUDENTS

An organization of the American Institute of Physics

## Marsh W. White Award Proposal

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Project Proposal Title	Physics Demonstrations for Educational Outreach
Name of School	University of Minnesota Twin Cities
SPS Chapter Number	4339
Total Amount Requested	\$291.64

### Abstract

The purpose of this proposal to create a well balanced and thorough physics educational program for elementary to high school aged students. We are missing key demonstrations to make our program the best it can be, and we are asking SPS national to help by providing funding for additional demonstrations.

# Proposal Statement

## Overview of Proposed Project/Activity/Event

The University of Minnesota SPS chapter has made great strides in the last few years in creating and improving our educational outreach program. We have been featured on FOX news, presented at an AAPT meeting, and have also been honored by the CSE Alumni board for our endeavors. The aim of our program is to educate elementary to high school aged students about all the physics phenomena that they occur on a daily basis. In doing so, we hope to spark interest in our young viewers to continue on in either a physics program, a STEM field, or to be general science advocates.

The purpose of this proposal is to expand our outreach program by adding new and exciting demonstrations to our list of demos. The universe is vast in all of its wonders, and there is only so many topics we can present on with our limited resources. So we are asking SPS national to help us share our knowledge and passion of physics to all people that wish to hear.

Some topics that we will be able to discuss in greater depth if we are funded include: fluids and pressure, thermodynamics, optics, sound propagation, and bioelectricity. As mentioned above, this is a continuing program and we are well prepared to receive this award. These demonstrations will not go to waste with our chapter because we are constantly asked to do physics demonstrations by Boy Scouts of America, 3M, local schools and museums, and of course the U of M. By funding us you are helping not only educate youth, but also cementing a program that we hope to make a well established tradition in our department.

## How Proposed Activity Promotes Interest in Physics

The reason why this project should be funded is because we are actively promoting physics. We seek our audience, and because of our enthusiasm they are often excited to listen. The main purpose of our educational outreach program is to explain both basic and applied physics concepts to students in a understandable manner. This is the most direct way to promote physics interest. On top of presenting to elementary to high school students we also peak the interests of parents and teachers.

Our proposal is very well aligned with the core fundamentals behind the Marsh W. White Award. We are a SPS chapter in good standing, we have a strong team of cabinet members who love their work, and we promote physics in exciting ways that is sure to get the interest of anyone within a solar radius. So please consider us for this grant, this program will promote further physics interests to the general public.

## Plan for Carrying Out Proposed Project/Activity/Event

Rebecca McLaughlin will be in charge of planning our event and monitoring the progress. This is Rebecca's second year as acting outreach coordinator, and she has done a phenomenal job at planning our past events. Our program has had a lot of expansion and improvements since she was elected to her position. She has doubled the number of outreach events that we do in a year, encouraged more member participation, and marketed our chapter via Twitter.

The event that we plan to use these demos at is the called the CSE EXPO. It is a science fair style exposition put on by the U of M's College of Science and Engineering, and this year it will be held on March 3<sup>rd</sup> of 2015. This is a well-established event, and the leaders of the CSE EXPO will be our main source of marketing. Last year they were able to get over a thousand elementary to middle school age students to attend this event, and we are hoping for a large turnout again this year.

The CSE Expo is one of three of our largest events for the year, and our members are highly involved in the event. With the large number of active members we have this year we are projected to have at least twenty members either organize, build, or present at the EXPO. This is a very important event for our group, and we hope to be able to present some new demos this year.

As for expertise, project director Luke DeMars has been involved with CSE EXPO for about a year, and he is very familiar of how to present at the EXPO. Luke is in charge of managing this one event for the year along with our outreach coordinator Rebecca. On top of SPS officer participation, we also have two full time staff in the physics department who dedicate their time educating our officers and members on effective methods of presenting physics. As can be seen by the number of people involved our group is well prepared.

### **Project/Activity/Event Timeline**

- March 3<sup>rd</sup>, present demonstrations at CSE EXPO.
- February 28<sup>th</sup>, hold physics presentation workshop for participating members.
- February 14<sup>th</sup>, decide on best methods to present new demos.
- February 1<sup>st</sup>, order new demos from arbor scientific.

### **Activity Evaluation Plan**

Starting this year our chapter has created a event evaluation form. As a group, our officers sit down with this evaluation form and we record: how many members participated, how well the event went to plan, what could be improved, new ideas, compliments/complaints from audience, and we also recognize standout participation from our members. With this form we not only hope to improve our members experience with our outreach program, but also to improve the experience for our audience.

### **Budget Justification**

Everything that is on the budget sheet is that we need to present at the EXPO. None of the funds are going towards T-shirts, food, event staffing, or anything else that will be needed to host the event. The setup and the marketing is done for free by the College of Science of Engineering. Since our demos come pre-made they do not need any additional funds to operate them. The only thing that does not directly apply to the demos is the costs for shipping and handling of our demos to Minneapolis.

The demos that we have put on the budget sheet were chosen because these were assessed to be the areas in our presentations that we were lacking either good examples or flare. We hope to expand upon our optics, sound, and thermodynamics portion of our presentation with the proposed demos. We also hope to promote interest in basic concept and applied physics with the gravity ball and energy stick. By strengthening these weak sections of our presentation with these new demos we hope to be overall more entertaining, well rounded, and informative physics and STEM advocates.