



SOCIETY OF PHYSICS STUDENTS

An organization of the American Institute of Physics

Marsh W. White Award Proposal

Project Proposal Title	Physics on the Move
Name of School	Saint Joseph's University
SPS Chapter Number	5619
Total Amount Requested	\$500

Abstract

Physics On the Move presents introductory level physics in a way that is fun and engaging. This exhibition will cover Newton's Laws in a way that is accessible to a large audience in hopes to inspire passion and interest in physics.

Proposal Statement

Overview of Proposed Project/Activity/Event

This project will entail two events set up in an exhibition format themed around the physics of motion. One event will be held on each of St. Joseph's University's campuses. The aim of this project is to present introductory-level physics material in a way that is fun and comprehensible to a large range of audiences. Students from the university, the surrounding community, and local high school students will be invited. It is very common to hear from people that physics is "too hard" for them to pursue. By presenting the information that they would see in a basic introductory physics course such that it is more easily understood, this project will promote further interest in pursuing physics.

We will focus on Newton's laws, friction, and gravity. These experiments will be arranged in such a way that the following builds upon the previous. Posters and decorations will be arranged throughout the exhibit with basic information surrounding math, vectors, and the history of Newtonian mechanics.

The following experiments will be included:

- Penny in a Cup: This experiment will serve to examine inertia with the audience.
- Ball Drop: The stacked balls drop experiment will give an example of conservation of energy and momentum.
- Friction Ramp: The audience will explore the effects of the force of friction
- Weight/Ramp: This experiment will help convey Newton's second law and show the affects that mass has on force.
- Newton's Cradle: This is a classic example of Newton's Third Law.
- Marble Collision: This experiment will further explore conservation of energy, momentum, and collisions.
- Tensegrity Structure: This demonstration will engage the audience in a conversation about forces.
- Rocket Pinwheels: This will further explore Newton's Third Law and allow the attendees to get hands on with the material.

In the past, our chapter has successfully hosted outreach events in this exhibition format. Attendance was high from both the local community and the student population.

How Proposed Activity Promotes Interest in Physics

This project was created with the general public in mind. The experiments and demonstrations will be geared to those with little to no prior physics knowledge. The way the information is presented will be engaging and fun. Prizes will be given out to those who pass knowledge checks after the demonstrations.

This will serve to create positive feelings surrounding the material and encourage further exploration. The high attendance at our previous Marsh White event is a good indicator of the participation we will see for this event.

Plan for Carrying Out Proposed Project/Activity/Event

- Personnel: The current SPS President will work in conjunction with their successor, who will be elected this December, to oversee the planning and execution of this event. The SPS advisor will aid in ensuring that deadlines are met.
- Marketing: Poster will be hung around campus and the surrounding neighborhoods to advertise the event. An online poster will also be posted on our SPS Instagram to be shared by SPS members. Additionally, we plan to reach out to a local high school via an alumna that is on staff to invite their physics students to attend.
- SPS member participation: At least 5 SPS members are confirmed volunteers to run the different demonstrations. An email will be sent out to our mailing list to recruit further volunteers for sign ins or extra support for the demonstrations.
- Expertise: Several of our SPS volunteers are teaching assistants for the introductory physics labs which cover very similar areas of physics. Additionally, these members have run and participated in previous SPS outreach events.

Project/Activity/Event Timeline

February 1, 2022: The orders for all materials/demos will be placed

February 15, 2022: Provided all orders have been received, all materials will be inspected and ready to be used for training by this date. An email will be sent out to all SPS members and students on the SPS email list to garner extra support.

March 1, 2022: Volunteers will be assigned to their position within the exhibit by this date. Training will begin for those who will be leading experiments and demonstrations.

March 1, 2022-March 27th, 2022: At least three training sessions will be held during this time.

March 27th, 2022: By this date, the event spaces will be booked, volunteers will be trained, and all materials will be ready for the exhibits.

April 10th, 2022-April 24th, 2022: Events will be executed within this date range

May 1st, 2022: Surveys collected during the event will be reviewed and discussed

May 31st, 2022: All final reports will have been submitted and duties fulfilled

Activity Evaluation Plan

The success of this event will be evaluated based upon attendance, attendee surveys, and volunteer feedback. Attendance will be taken via google form at the start of the exhibit. QR codes will be available for attendees to sign in by themselves. A student volunteer will be at the front signing in attendees as well. A survey will be sent out to those who signed in to receive feedback on the event. This survey will ask the attendees to provide feedback on the information provided, the corresponding demonstrations, and the overall experience of the exhibit. These surveys will be reviewed, and the success of the event's execution will be discussed amongst the SPS members who participated in its execution.

Budget Justification

The expenses outlined in the budget encompass the materials needed to provide an engaging and educational experience. Most of the funds will be allocated towards the demonstrations. These demonstrations are central to the function of the event. The space will be decorated with education posters along with décor to create an aesthetic environment. This serves to create a pleasant environment for the attendees. The funds would also help to provide prizes to give out during the event. Prizes will help promote attendance and engagement during the event. Other expenses that the funds would cover include refreshments and shipping costs. The demonstrations outlined will be supplemented with related demonstrations from previous outreach events that our chapter has saved.