



# SOCIETY OF PHYSICS STUDENTS

An organization of the American Institute of Physics

## Marsh W. White Award Proposal

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Project Proposal Title	Launching Physics Outreach with a Trebuchet
Name of School	Missouri Southern State University
SPS Chapter Number	4398
Total Amount Requested	\$500.00

### Abstract

Missouri Southern State University's chapter of SPS would like to build a trebuchet in order to expand their outreach efforts. There is no better way to get people excited about science than a homemade catapult that can demonstrate projectile motion!

# Proposal Statement

## Overview of Proposed Project/Activity/Event

Our chapter of SPS has been actively involved in promoting science education and provoking interest in physics via outreach activities/demonstrations on campus and in the local community since its founding in 2015. We participate in several annual events on/off campus throughout the year which includes, but not limited to MSSU regional science fair, Joplin downtown Third Thursday, and Demos for all ages at local schools and in the local community. Interactive physics demonstrations are a lot of fun and the hands-on activities create greater interest and curiosity which makes learning science interesting.

Thanks to the Marsh White award 2019-20, we were able to update our demo list by building a 56-inch X 26-inch bed of nails and a wave pendulum with billiard balls. These demos were well received by the audience during our recent outreach events, helped increase participation and involvement, and upsurge passion and curiosity for physics. The bed of nails turned out to be a thrilling and exciting experience for people of all ages. With our wave pendulum demonstration, everyone was able to witness the mesmerizing oscillations of billiard balls and observe the beauty of physics in action.

MSSU SPS is excited to take science outreach to the next level by building more interactive demos which facilitates member involvement, increases participation in many aspects while focusing on the broader impact to the community. Our chapter will be working together in building a trebuchet during Spring 2022 semester. This project will help our SPS chapter get individuals riled up about science. The trebuchet is a visual experience that will entice people to ask questions about science, and hopefully about SPS as well.

Our SPS chapter has grown over the past few years after a standstill in membership. Projects like these help our members stay active and engaged, and encourage the growth of our chapter even further. We are well-positioned to carry out this project because our chapter has an annual pumpkin carving/painting party in October, so the trebuchet will allow us to launch the pumpkins after they have been decorated to add another aspect of physics to the event.

## How Proposed Activity Promotes Interest in Physics

Most students outside of physics disciplines only know physics as the class you take to talk about how fast a car moves. From past experiences, we have figured out that the best way to engage people to ask about physics are physical demonstrations. We have also noticed that physical demonstrations that are visually appealing or intriguing are the best way to draw people in, especially students and younger audiences.

Our chapter of SPS constantly strives to inspire students of all ages via science outreach, reinforce critical thinking and curiosity to gain a deep understanding of everything that happens around us.

Interactive demos are the best way to encourage interest in a fun-filled way which makes learning entertaining. We strongly believe that this award will help support our chapter's goals in making a bigger impact in the community.

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

Rebekah Sweyko (Vice President) and Madison Nagel (Outreach Coordinator) will lead the project by planning, purchasing, scheduling and ensuring successful completion of the project with support from other officers, members, our chapter advisor Dr. Jency Sundararajan and Chemistry club advisor Dr. Shayna Burchett. Our members gained experience constructing demonstration projects like the human bed of nails and wave pendulum during the last year which will be helpful in constructing the trebuchet and completing the project while working together as a team.

An average of 20 students would be participating in the actual construction of the trebuchet. We will be collaborating with other clubs on campus like the MSSU Chemistry club, MSSU Women in Science club and any other clubs interested in working on the project thereby promoting diversity and inclusion, making everyone feel welcomed in Physics.

We will discuss building the trebuchet during our welcome back meeting in Spring 2022 and make solid plans to execute the project. We will be promoting this project via emails and social media to encourage all members to help build the project. This project will be done as an organizational effort where officers and advisors work alongside the members of MSSU SPS and interested members from other clubs in the construction of the trebuchet.

## Project/Activity/Event Timeline

Since the trebuchet will be used mainly outside, we will allow ourselves the cold winter and spring to focus on building the trebuchet so it will be ready for demonstration by the end of the Spring 2022 semester. Building of the trebuchet will take place mainly during our chapter's monthly SPS meetings with supplementary building occurring throughout the weeks when members have time.

The trebuchet will then be used further in the future at events such as Third Thursday. In our University's hometown of Joplin, MO, there is a monthly event called "Third Thursday" where local businesses and organizations can get together to showcase their missions and products downtown. MSSU annually sponsors the September Third Thursday event, where we have demonstrated physics projects such as the wave pendulum and bed of nails, which were funded from previous Marsh White Award grants.

## Activity Evaluation Plan

Our chapter will evaluate the success of the trebuchet by keeping record of how many participants are interested in the demonstration of the project. After demonstrations, we may verbally ask participants what they thought of the trebuchet. Our main metric of success will be in numbers - specifically regarding attendance and how many people participate.

## Budget Justification

The requested amount of \$500.00 will be used to purchase supplies such as wood, wheels, screws, and bolts, as well power tools needed to complete the project. (Detailed Budget Proposal included). Any additional expenses for the project will be requested from the department budget.