



# SOCIETY OF PHYSICS STUDENTS

An organization of the American Institute of Physics

## Future Faces of Physics Award Proposal

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<b>Project Proposal Title</b>	Rhodes College Egg Drop
<b>Name of School</b>	Rhodes College
<b>SPS Chapter Number</b>	5940
<b>Total Amount Requested</b>	\$485.00

### Abstract

At Egg Drop, local children construct a contraption from basic supplies to protect an egg from a 40-foot drop. Rhodes College SPS hopes to show the excitement in physics. In doing so, the event educates and instills a desire for further physics knowledge within children from our diverse community.

# Proposal Statement

## Overview of Proposed Project/Activity/Event

Egg Drop is an annual event that Rhodes SPS hosts to engage children with the topics of physics and engineering.

Local kids from the Memphis community are invited to take part in this event by building their own contraption to hold an egg with the materials provided by SPS. After each child has created and decorated their holder, the contraptions are then dropped from the roof of Rhodes Tower to see which can keep the egg from breaking. We aim to encourage kids to think outside of the box when designing their egg holders to make it as light as possible and still survive the fall. To determine winners, Rhodes SPS members weigh each contraption and keep track of which eggs break. The lightest egg holder in each age group to survive the fall is given an award, in addition to an overall award for the best decorated egg holder. Each award winner is given a trophy that was 3D printed by Rhodes SPS.

Additionally, Rhodes SPS plans to add a popsicle stick bridge building contest as an extra challenge for middle school and high school kids. The popsicle sticks and other materials will be provided and the kids will be given time to design their contraptions. Popsicle bridge winners will be determined by testing the bridges with hanging weights. The bridges that hold the most weight before breaking will be proclaimed winners and receive a trophy.

The target audience for the event is kids in the local community, with an emphasis placed on kids that are members of traditionally underrepresented groups in physics. To accomplish this, Rhodes SPS will continue to partner with the Refugee Empowerment Program (REP) in Memphis. REP provides a place for refugee children to receive after-school care, tutoring, and opportunities to attend events. Rhodes SPS members currently provide tutoring for kids in REP, and they attended last year's Egg Drop. Rhodes SPS plans to place an emphasis on inviting members of REP to this year's Egg Drop, in addition to advertising to local schools and Girl Scout troops. The Rhodes SPS members have greatly enjoyed this event in the past and are looking forward to welcoming the larger Memphis community to our campus to enjoy physics!

## How Proposed Activity Promotes Physics Across Cultures

The proposed activity of the "Egg Drop" will inspire creative thinking and collaboration of ideas from the children participating, who will apply their knowledge of fundamental physics to design and engineer a safe egg holder. This will be a memorable experience in a physics setting for the children and will hopefully attach good memories to physics. By working in a hands-on setting, and not focusing on complex equations, we hope to make physics more fun and accessible. To compete in the activity, the children must possess a basic conceptual understanding of the physical forces at play and encourage them to think creatively to carry out the task. Additionally, this activity will serve to boost the confidence of kids in underrepresented groups and make physics more accessible. Overall, the children will leave Rhodes with a new understanding of physics as well as experience designing and engineering a device of their own, independently.

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

- Personnel:
  - Grace Nehring: SPS Outreach Chair and Sophomore Physics major, will be one of the primary people planning the event. She will be involved in the planning and in particular the marketing to the kids in Memphis. She was a contributor to this proposal.
  - Loyd Templeton: SPS On-Campus Programmer and Senior Physics major, will be the other primary person planning the event. He was a contributor to this proposal.

- Jess Hamer: SPS Demos Chair and Senior Physics major, will be involved in the planning and will be responsible for any physics demos we show.
- Shona Harbert: SPS Membership Chair and Senior Physics major will also be involved in the planning and marketing. She was a contributor to this proposal.
- Lily Whitesell: SPS Social Media Chair and Senior Physics major will be involved in spreading awareness about the event and covering the event on our Instagram. She was a contributor to this proposal.
- Keith Hoffmeister: Aerospace Engineering Club President, SPS member, and Sophomore Physics major. He was a contributor to this proposal.
- Other key personnel include: Olivia Kaufmann (SPS President, Physics '23), Gia Pirro (SPS Treasurer), Nolan Brown (SPS Vice-President, Physics '23), Sam Lippe (SPS Demos Apprentice)

- **Marketing :**

The project will be marketed to local schools and organizations the Rhodes SPS chapter works with. The Rhodes SPS chapter has historically worked with local girl scout troops for this event and the Refugee Empowerment Program. The event will also be marketed using Rhodes SPS social media accounts which are followed by some members of the Memphis community.

- **SPS member participation:**

Volunteers that get recruited will be primarily SPS members. It is expected that at least 25 students will be able to volunteer. If needed, recruiting for volunteers can be done with students enrolled in physics classes, who are not members of SPS. Volunteers will primarily be assisting the kids with assembling their contraptions (such as holding things or getting materials or helping with scissors or tying knots for them). Some volunteers will be needed for moving the contraptions to the roof and dropping them.

- **Expertise :**

Olivia Kaufmann (current SPS president), Nolan Brown (current SPS vice-president), Loyd Templeton (current SPS on-campus programmer), Jess Hamer (current SPS demo chair), Lily Whitesell (current SPS social media chair), and Gia Pirro (current SPS treasurer) were all a part of the officer board that put on this event last year. Faculty advisor Dr. Brent Hoffmeister was also involved in SPS the last time this event was held and will be able to provide further guidance in the planning and execution.

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

Over the academic year, the Rhodes College chapter of SPS conducts various outreach events with local middle and high schools. These institutions cover a diverse portion of the city, including students from many different areas. These connections will be notified in advance of the event and invited to participate. In January, ordering of the required materials will begin along with setting up a place to hold the event. We hope to receive the said ordered materials by the beginning of February. Also in February, the recruitment of volunteers from both inside and outside our chapter will begin. Additionally, these volunteers need not to be involved in SPS, but students with any interest whatsoever in science will be welcome to volunteer. Any event held on our campus requires official notification and budget justification at least four weeks prior to the proposed event. Within those four weeks, advertisements will be set up and volunteers will be trained. Historically, our chapter has used social media and fliers to promote events, including past Egg Drops. Finalizing participating schools will begin roughly a month prior. Social media advertisements will launch a week prior, along with set up for the event, which includes demo-setup and the collection of cleaning materials. The actual event will occur around Easter of the coming spring, which will consist of setting up tables, demos, and arranging volunteers accordingly. In May, the final report for the event will be constructed.

## Activity Evaluation Plan

To evaluate the effectiveness of this project, we will look at attendance, understanding, and feedback. We will take attendance with a short questionnaire that assesses the students' knowledge of basic physics principles and attitude towards physics. At the end of the event, students will be asked the same questions. This will help measure the improvement in understanding and attitude. The goal of our event is to encourage underprivileged students in physics; therefore, the questionnaire at the end of the event will include an additional question to evaluate how engaged and supported students felt during the event. The surveys will allow for an accurate record of the attendance and provide qualitative data about the impact of this event that will help us improve future events. We will also ask for feedback from teachers and parents after the event. In the officer meeting following the event, we will have an in-depth discussion about this evaluation. We will also consider how well we felt the event was implemented and what could be improved in future events.

## Budget Justification

The supplies that Rhodes SPS is asking for will be used by the participants of the Egg Drop competition. Supplies like cotton balls, straws, tape, balloons, twine, popsicle sticks, cardboard, craft kits, glitter, glue, and scissors will be required by participants to build their egg protector. We ask for tarps to protect the zone where eggs will hit from mess and damage due to the impact of the eggs and their protectors. We want to buy eggs for participants to drop. Lastly, we want drinking water to be available at the event for the attendees to stay hydrated.