SOCIETY OF PHYSICS STUDENTS
An organization of the American Institute of Physics

Marsh W. White Award Proposal

Project Proposal Title	Rhodes College Egg Drop
Name of School	Rhodes College
SPS Chapter Number	5940
Total Amount Requested	$500

Abstract

Egg Drop is an event where local children build structures from basic supplies to protect an egg from a 40-foot drop. Rhodes College SPS hopes to educate the community about the wonders of physics and instill them with the desire for further knowledge.

Proposal Statement

Overview of Proposed Project/Activity/Event

Egg Drop is an event that Rhodes SPS puts on every year to get kids engaged with engineering and physics. Egg Drop is a spin-off of the annual Halloween event, Pumpkin Drop, in which pumpkins frozen with liquid nitrogen are thrown off of the physics building (Rhodes Tower). Egg Drop builds off of the excitement of Pumpkin Drop but gets kids more actively involved. During this event, supplies such as paper, straws, cotton balls, and tape are gathered. Local kids come to design and build an egg holder. Then Rhodes SPS members put the holders to the test by dropping them off of Rhodes Tower. Rhodes SPS hopes to encourage the kids to think outside of the box and use the supplies in unconventional ways to design the lightest egg holder which can survive the drop. Whichever holder weighs the least, and survives the drop will be awarded with a prize.

The target audience will be kids in the local community. Rhodes SPS will advertise to scout groups as well as local elementary and middle schools. Rhodes SPS hopes to invite a few dozen children to compete for the Golden Egg. The team or individual with the lightest holder that keeps their egg intact will win the Golden Egg. A Golden Egg trophy will be manufactured using an on-campus resin or 3D printer.

The Rhodes SPS chapter has held this event before, but the pandemic has prevented the event from happening for the past few years. Only a few officers on the SPS board have had the chance to previously plan this event, so new officers are really excited to bring it back! The Rhodes SPS chapter also hopes that this will be a good way to welcome the greater Memphis community back to campus.

How Proposed Activity Promotes Interest in Physics

The proposed activity of the annual Rhodes SPS "Egg Drop" will inspire creative thinking and collaboration of ideas from the children participating to 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. This event will provide the children with the opportunity to build an egg holder of their own design and compete against the other children to see who can develop the most efficient egg holder. It must be both safe and light in order to win. Thus, in order 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. As well as the "Egg Drop" event, there will also be physics demonstrations happening at the same time. These will be carried out by some of the officers of the SPS society at Rhodes and will show the kids some physics principles that they may not be aware of. Therefore, through the event, all 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:
    - Olivia Kaufmann: SPS Vice President and Junior Physics major, will be one of the primary people planning the event
    - Loyd Templeton: SPS On-Campus Programmer and Junior Physics major, will be the other primary person planning the event. He was a contributor to this proposal
    - Jess Hamer: SPS Demos Chair and Junior Physics major, will be involved in the planning and will be responsible for any physics demos we show to the kids. She was also a contributor to this proposal

    - Ryan Simms: SPS Outreach Co-Chair and Junior Physics major will be involved in the planning and in particular the marketing to kids in Memphis. He was a contributor to this proposal.
    - Jordan Robinson: SPS Outreach Co-Chair and Senior Physics major will also be involved in the planning and marketing. He was a contributor to this proposal
    - Other key personnel include: Giuliana Hofheins (SPS President, Physics '22), Gia Pirro (SPS Treasurer), Nolan Brown (SPS Treasurer, Physics '23), Lily Whitesell (SPS Social Media Chair, Physics '24), Finn Giddings (SPS membership chair, Physics '22)
- Marketing -
    - The project will be marketed to local schools and organizations the Rhodes SPS chapter works with. By going through a variety of groups to advertise the event, the chance that more students show up will increase. The Rhodes SPS chapter has historically worked with local girl scout troops for this event, by encouraging this group of young women to get excited about physics and STEM.
    - The event will also be marketed through the use of Rhodes SPS social media accounts which are followed by some members of the Memphis community
    - Additionally, the Rhodes College Cubesat has been involved in outreach with Memphis public schools, that is another channel to market the event through
- SPS member participation - How many SPS members or volunteers are likely to participate and in what capacity? Will volunteers be recruited from other groups as well?
    - 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.
    - Volunteering will be open to anybody who has an interest in helping with the event. It is important that this event stays true to the SPS goal of increasing interest and accessibility to physics, so that anyone who is interested feels comfortable getting involved.
- Expertise - Are there SPS members or others with special expertise that will help to ensure success?
    - Current SPS president, Giuliana Hofheins was a part of the officer board that has previously put on this event, so she has an understanding of the mechanics of the event as well as the things that make it go well.
    - Other officers including Gia Pirro, Finn Giddings, and Jordan Robinson as well as faculty advisor Dr. Brent Hoffmeister were involved in SPS the last time this event was held and may be able to provide guidance in the planning and execution

Project/Activity/Event Timeline

Before the event date, SPS will be actively working to get the event off the ground. Throughout the year, the Rhodes Chapter of SPS does various outreach events with local schools. These previous connections will be notified in advance and invited to participate. In January, we will begin ordering the required materials and setting up a space for our event. We hope to receive these materials by February. In February, we will also start the recruitment of volunteers. These volunteers not only come from SPS members, but additionally from students with an interest in science. Any event on our campus requires official notification and budget justification at least four weeks prior to the proposed event. In these four weeks, we will be working to set up advertisements and training volunteers for the event. Historically, SPS has used social media and fliers to promote our events, including past Egg Drops. Finalizing the participating schools will begin roughly a month prior. Social media advertisement will begin roughly a week out of the event. The distribution of fliers will be a few days out. Set up for the event, cleaning materials, and demo-setup will

be held the week leading up. The actual Egg Drop event will take place around Easter of next spring. This day will consist of setting up tables, setting up demos, and getting participating students settled. In May, we will begin writing the final report.

Activity Evaluation Plan

The success of this activity will be measured using a few important metrics. The primary measure of Egg Drop's success will be attendance numbers. Having a high number of attendees will confirm not only the success of the event's marketing strategies but also the level of interest in having an event like this again in the future. Gathering feedback from the kids who participate will also be critical in measuring the success of Egg Drop. Children tend to be tough critics, particularly about the events that they participate in. Having their approval will mean that the Rhodes SPS officer board did a good job planning the event, and that nothing was too difficult or too easy. Additionally having positive feedback from participants will increase the likelihood that the event can be successfully put on again in the future. In order to obtain this feedback volunteers will be instructed to check in with participants and take a brief verbal survey asking if they are enjoying the event, if they are likely to come back next year, and what they think would make the event better.

It is important to this group of officers that the event goes well this year as a way to increase excitement in the community about physics and science. However, it is crucial that the event is able to be held again to build stronger relationships with the Memphis community as well as building a sustained interest in physics with the future scientists of Memphis. A longer-term metric of success will be whether or not kids return year after year to participate in future events being hosted by SPS. Having kids return will be an incredibly positive sign that the events hosted by Rhodes SPS are achieving their goal of increasing interest and accessibility in physics and science more broadly.

Budget Justification

Items listed in the budget are integral to the success of the event. Most of the supplies such as eggs, straws, cotton balls, carboard, and tape will be used by participants in the assembly of their egg dropping contraptions. It is important that we have enough supplies so that participants do not feel restricted by a lack of supplies. Despite having a goal of making the lightest working structure, it is important that the kids feel as though they can use as many supplies as they think they need. Creativity will be encouraged in the design and construction of the egg carriers, so many of the craft supplies (glitter, scissors, craft kits, etc.) will be used to encourage this. Other supplies such as the tarp will be necessary for the set up and clean up. Having participants drop their contraptions onto a tarp rather than straight onto the ground means that the tarp can be thrown away after the event and no egg residue will be left to be cleaned up from the sidewalk. Spray paint will be used to make the trophy. It can be printed on campus with either a resin or 3D printer, but in order to make it a Golden Egg, the trophy will need to be painted. In addition to a Golden Egg trophy, there will also be prizes awarded for 2nd and 3rd place, as well as for the most creative egg container and best decorated containers. Each of these prizes will also be awarded trophies which will be made on campus and painted in different colors to denote the place or award. Volunteer t-shirts are important because they will help participants identify people who they can ask questions or get help from. T-shirts also work really well as an incentive for volunteers and children for events, as well as providing a nice memento of the event after it happens.
Any costs associated with this event that are not covered by the Marsh White Award will be covered through the SPS operating budget withing the Rhodes Physics Department. The Marsh White Award will be used to cover the cost of all supplies and $232 of the cost of shirts. The remaining $308 of shirts will be covered by the Rhodes Physics Department.