



SOCIETY OF PHYSICS STUDENTS

An organization of the American Institute of Physics

Marsh W. White Award Proposal

Project Proposal Title	Summer Squash: Watermelon Smashing at Rhodes Rites to Play
Name of School	Rhodes College
SPS Chapter Number	5940
Total Amount Requested	\$293.83

Abstract

The Rhodes College SPS chapter will build a new physics demonstration for the college's annual Rites to Play, a free spring carnival held for the children of Memphis. Rhodes SPS will contribute a number of physics demos, but we plan to try a new activity, namely, smashing frozen watermelons.

Proposal Statement

Overview of Proposed Project/Activity/Event

Rites to Play is an annual campus-wide carnival event that features dozens of student organizations. It is aimed at children and their families from around Memphis, and typically attracts 800-1000 people. Rhodes SPS has historically been highly involved in Rites, thanks in part to funding from previous Marsh W. White awards, and we would like to continue and expand upon this tradition. This year, we would like to add a watermelon drop to our canon of demonstrations.

We plan to have several tables for a superconductor that levitates above a magnetic track, a Van de Graaff generator, and our vacuum chamber. In addition to these tabletop demos, we will have space for a fire tornado, which reaches almost five feet, our Fresnel lens, a 15" Oobleck speaker, an Oobleck pool, and a potato cannon. Participants will be able to enjoy some liquid nitrogen ice cream as they interact with demos and SPS members. All of the demos will be running continuously throughout the day.

Since Pumpkin Drop was a big success this year, drawing families from around Memphis as well as college students, we would like to introduce a Watermelon Drop at Rites to Play this year as a fun summer twist on a much-beloved tradition. This will make the event more memorable, and it will draw people to Rites and to our demos. Additionally, we will be able to use this event to develop better freezing techniques for with new freezers (an issue we ran into at Pumpkin Drop this year).

Rites to Play is specifically targeted at elementary and middle school students and their parents, so we will be sure to include demos that especially target that age range, such as the Oobleck pool. However, we feel that a watermelon drop is an activity people of all ages will enjoy and remember.

How Proposed Activity Promotes Interest in Physics

The setup of the event is such that children and their parents can wander freely through our part of the carnival and spend as much time at any demo as they would like. Since the setting is informal and fun, historically we have found that people are much more likely to ask questions and to be interested in learning about the demos than at more formal outreach events. Each of our members will be trained on running the demos and how they work, so that they will be able to give appropriate answers.

Many of the schools in Memphis struggle to provide hands-on science activities for their students. Rhodes SPS has been firmly committed to providing materials and demonstrations to these schools, as we are heavily involved in outreach. This event is similarly structured around the principle that science should be fun and engaging. To that end, we have tried to arrange the event so that these students will not feel pressured to "be smart" but will be excited by the demos and want to learn more.

The watermelon drop in particular will be a new format for us. Pumpkin Drop, being at night on Halloween, tends to have less time for scientific explanation and relies heavily on the “wow” factor of frozen pumpkins shattering. Rites, however, is a daytime event, and we plan to brief our smash-ers on why freezing materials makes them easier to shatter, shy sugars in particular are good for freezing, and why we could (theoretically) see triboluminescence if we were in the dark.

Plan for Carrying Out Proposed Project/Activity/Event

- Personnel – Phoebe Sharp, our On-Campus Programming Officer, will be responsible for overseeing our chapter’s participation in Rites to Play, while Edo Draetta, our Demo Officer, will be in charge of checking demos for functionality and training members on using them if necessary. Phoebe will be primarily responsible for the purchase of the watermelons and liquid nitrogen, as well as testing freezing techniques.
- Marketing – Rites to Play is one of the largest events held on campus, and it is very well publicized in the Memphis area by the college and the Kinney Community Service Program, the primary organizer. Once families arrive at the college, we will have signs for the watermelon drop. Since we are known for Pumpkin Drop, the watermelon drop in and of itself will help provide publicity for the rest of our demos.
- SPS member participation – We typically have about 20 SPS members help with setup and running demos throughout the day.
- Expertise – Phoebe was the primary organizer of our Pumpkin Drop this year, so she has experience planning this sort of event. She has extensive knowledge about coordinating with Physical Plant and using liquid nitrogen to freeze pumpkins. Edo served as our Outreach Officer last year, so he is very familiar not only with how the demos work but also with communicating the physics to the public. Finally, since the entire chapter was recently involved in Pumpkin Drop, which was similarly demo-based, most of our members have had experience with an event of this type.

Project/Activity/Event Timeline

February 30	First meeting, planning, specific due dates
March 10	Finalize budget and buy what is needed
March 15	Have demos finalized
April 16	Rites to Play

Activity Evaluation Plan

We plan on using both immediate feedback from participants and a qualitative analysis of engagement levels to gauge our success at this event. To that end, we will ask kids and parents what they think of the demos, whether they think science is cool, etc. We will also ask each of our SPS participants to pay close attention to people's reactions to the demos; are they just staring blankly at what we're doing or are they participating with us? Additionally, we will use this feedback to reevaluate the demos we've chosen based on how interactive they really are.

Budget Justification

We already own all of the demos we will be using at Rites to Play, and the Allocations Board and internal funding will cover the costs to run them. We would like to use the money from this award to purchase liquid nitrogen and watermelons, which we believe will increase how memorable the event is and increase attendance. If we can craft an impressive enough sub-section of Rites to Play, we have found that Allocations and the College will be more likely to fund us after proven success, which would mean that the watermelon smash could become a regular part of our setup at Rites.