

Physics Extravaganza at Rhodes College Rites to Play



Submitting Students and Officers

Morgan Smathers  
smamr@rhodes.edu

Joseph McPherson  
mcpja@rhodes.edu

Alec Lindman  
linac1@rhodes.edu

Jake Magness  
maglj@rhodes.edu

Stefan McCarty  
mccsj@rhodes.edu

Mark Sellers  
selme-15@rhodes.edu

Faculty Advisor

Dr. Brent Hoffmeister  
hoffmeister@rhodes.edu

Rhodes College SPS Chapter  
Total Amount Requested: \$300  
Date of Submission: 13 November 2012

Rhodes, Physics Extravaganza at Rites to Play

Rhodes College Tax Id number: 100141795.

Abstract: Rhodes College SPS will coordinate and implement a Physics Extravaganza in conjunction with the established Rites to Play festival at Rhodes College in order to increase interest in science among young elementary and middle school students. We will have a variety of interactive demonstrations and games that will be available to engage the students. The goal of the Physics Extravaganza will be to encourage an interest in science and a positive attitude towards learning in young Memphis students.



Rhodes, Physics Extravaganza at Rites to Play

The Society of Physics Students at Rhodes College enjoys extensive outreach with the Memphis community. We have been an Outstanding Chapter for 12 consecutive years, and regularly visit local schools to do demo shows and engage young students in science and peak their interest in physics specifically. In 2012, the Rhodes College Chapter was honored to receive the national Blake Lilly Prize for our outreach efforts. The Rhodes College SPS chapter is guided by six highly dedicated officers, as well as 2011 SPS Outstanding Chapter Advisor Dr. Brent Hoffmeister.

Each spring Rhodes College hosts the “Rites to Play” children’s carnival to serve underprivileged children in the Memphis community. While SPS has participated in this event for several years, over the last two years, we have greatly expanded our presence at Rites to Play; this was largely facilitated by our receipt of the Marsh White Award in 2011 and 2012. Our presence this year will constitute a collaborative effort between SPS and other academic student organizations, and will target children in grades K-8. The Physics Extravaganza will encourage young Memphis students to develop their interest in science and a positive attitude towards learning. Memphis Public Schools face the challenge of providing adequate science education with limited resources and support. Therefore, the Rhodes SPS chapter is excited to give students and their families an opportunity to see and interact with demonstrations at the Physics Extravaganza which they may never have experienced before.

Rhodes College will host Rites to Play in April at the large field known as Buckman Lawn. In the event of rain, Rights to Play will take place in an indoor location in the Brian Campus Life Center multi-sports forum at Rhodes. Rhodes SPS will set up a number of different booths as well as designated areas for stand-alone demonstrations.

Rhodes, Physics Extravaganza at Rites to Play

Demonstrations will be organized by theme: electromagnetism, optics, pressure and fluid dynamics, kinetics, and thermal physics. Students will be able to wander between demonstrations according to their interests, giving them greater freedom and choice in their interaction with physics, although implosions and explosions will be scheduled events during the two hour carnival. In the electromagnetism section we will have an electric bike generator, a Van de Graaff generator (using bubbles and electroscopes to demonstrate repulsion), bouncing magnets, a superconducting levitation demo, and tabletop magnetic canon. We demonstrate the power of optics by burning paper, wood, and marshmallows on a giant parabolic mirror, along with “invisible” Pyrex in vegetable oil. Our pressure and fluid dynamics demonstrations will include the scheduled barrel implosions, water explosions with ping pong balls for greater effect, a ping pong ball canon, “Physics in vacuum” using a vacuum pump, and the exciting “Air-zookas.” The kinetics demonstrations will include our giant 10’x 3’ oobleck pool, a 15” diameter oobleck speaker, an angular momentum platform, chatter rings, a wave pendulum, and a Brachistochrone (explaining the curve of fastest descent). The thermal dynamics section of our Physics Extravaganza will include liquid-nitrogen ice cream and marshmallows, a self-contained fire tornado, both hydrogen and oxygen exploding balloons, and liquid oxygen demonstrations. We plan to organize these demos according to their topics and label each section in a fair-style setting so the students will clearly understand how each demo relates to different parts of physics. These demos will expose students to a large variety of concepts in physics.

In addition to the physics demonstrations provided by SPS, we will collaborate with other academic student organizations on campus. We hope to involve the chemistry department with liquid nitrogen demonstrations and elephant toothpaste, the biology department to teach about microscopes. SPS is the most active academic student organization on campus, with over thirty

Rhodes, Physics Extravaganza at Rites to Play

active participants brought together from a variety of academic departments. Rhodes SPS is perfect to lead an event like the Physics Extravaganza because we have extensive experience coordinating and implementing large events. Each fall, the SPS Pumpkin Drop attracts nearly 300 student spectators, other nearby SPS chapters, and Memphis community members.

In addition to the over one thousand students that traditionally attend the Rites to Play carnival each year, Rhodes SPS will take initiative to further raise the awareness of our partners in the Memphis School System. As we conduct outreach throughout the year, we will personally invite teachers and students from these schools to join us at the Rites to Play Physics Extravaganza.

Most of the physics demos to be on display are already owned by SPS. The Rhodes Student Allocations Board helps cover some of the minimum operating costs for many of our demos; however, the board has had to cut allocations to groups across the board this year. This grant is to cover the new materials and the perishable supplies to be used for demonstrations and bridge the funding gap.

**Total Budget for the Mini Science Carnival at Rites to Play:**

1. Two 55 gallon Barrels (\$140)
2. Liquid Nitrogen Ice Cream Supplies (\$40)
3. Marshmallows (\$10)
4. Ping pong balls (\$50)
5. Bubble gun and supplies for electrostatics demos (\$40)
6. Silk braid electroscopes (\$20)

Total amount: \$300.00