

Activity: Demos in the Sun

SPS Chapter: College of William and Mary Society of Physics Students, Williamsburg, VA

Student Organizers:

William Bergan, Treasurer



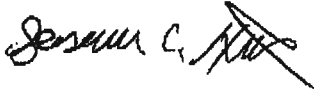
Reed Beverstock, Secretary/Webmaster



Jennifer Hackett, Vice President



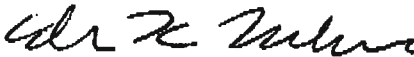
Joshua Hill



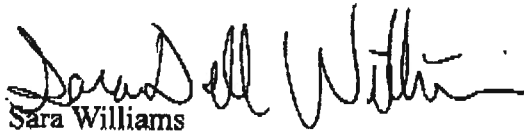
Tom Lever



Tim Milbourne



Elana Urbach, President



Sara Williams

Faculty Advisors:

Professor Irina Novikova

Amount Requested: \$300



Professor Seth Aubin



Date of Submission: November 30, 2012

College of William and Mary SPS

Demos in the Sun is the first in a yearly series of spring outreach events aimed at non-physics students at the college. It will consist of a series of outdoor physics demonstrations designed to inspire interest in the field. This year's theme, "To Infinity and Beyond," will feature demos highlighting kinematics, propulsion, rocketry, and other exciting areas of physics.

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Each year, the William and Mary Physics Department has hosted PhysicsFest, an outreach event aimed at local families and grade-school students. The event consists of a variety of stations showcasing various physical phenomena as well as a demo show held in one of the lecture halls. However, when selecting demos for PhysicsFest, we came up with a significant number of ideas which would be difficult to execute inside. We also recognized that PhysicsFest has been aimed primarily at the local community rather than our fellow students at the college. To address this, we created the idea of Demos in the Sun, an event that would give our chapter of the Society of Physics Students a way to invite our peers in the college community to experience physics in an interactive way more suited to their academic level.

Our campus features a large, central green where students gather for frisbee games, socializing, and various events. We intend to utilize this central area for this event, as it would be perfect for the large scale demos and activities we have in mind. By holding it on a Saturday in the spring semester it will be accessible to a large group of students.

Each year we plan to have a different theme. This year, our theme is "To Infinity and Beyond," which will explore topics of propulsion and kinematics. SPS has already made a potato cannon and a hovercraft that we plan to use as demos outside; true to the theme of "To Infinity and Beyond," we plan to augment these with a trebuchet, and to send a camera to the edge of space via a weather balloon. The launch will occur a week or two before the event (in order to meet FAA regulations against launching an unmanned free balloon from a populated area), and the video will be posted online after the camera is retrieved and will also be shown at the event. In addition to these larger scale demos, we will have some exciting activities that the students can participate in: students will have a "blast" experimenting with mentos and coke bottles. We will also be making an SPS classic: liquid nitrogen ice cream.

In addition to these demos and activities, we will hold a few contests throughout the day. One such competition will have students create paper airplanes to be judged on highest flight, farthest flight,

and style. Another competition will address propulsion in water rather than in air by asking them to design a submarine using Alka-Seltzer, with the goal of remaining underwater as long as possible. At the end of the day, the winners will be contacted to receive a prize, most likely a Wawa gift card.

In order to organize this, we will use a method similar to what we have used for the more complex demos at PhysicsFest. Individuals in SPS will research the method for each demo. The club will then spend several meetings practicing demos and working out any kinks. This way, everyone knows the basics of running each demo and work can be spread evenly the day of the event. In the case of the balloon launch, we will take special care to ensure that we conform to FAA regulations regarding unmanned free balloons, including the use of a radar reflector and communicating our intentions to the Newport News air-traffic control tower.

Our time table for the event begins with us making our planned demos over the course of the next semester, with some work beginning before the end of this semester. Within the first couple weeks of next semester, we will reserve space on the campus' central green for our event. We will advertise the event across campus, through fliers, Facebook groups, and information about the event sent in weekly emails to the student body. Our tentative day and time for the event is Saturday April 13th from 11:00am to 5:00pm. April 20th will be reserved as a rain day.

In order to successfully run this event, we estimate that we will need \$312. We currently do not have any additional sources of funding, but we do have about \$70 in savings. We are also considering running fundraisers, such as selling pizza, throughout the spring semester. The planned expenditures consist of:

Edge of Space Balloon	
Weather Balloon	\$120
Radar Reflector	\$30

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Parachute	\$70
Camera Housing	\$10
Cardboard Trebuchet	\$30
Liquid Nitrogen Ice Cream	\$30
Mentos and Coke	\$10
Alka Seltzer Submarines	\$10
Paper Airplane Competition	\$2
TOTAL	\$312

We plan on being able to obtain \$12 from current club funds, thus the Marsh W. White award of \$300 would provide the remainder of our needed budget while allowing us to use our current bank balance to cover unexpected expenses as well as other activities throughout the semester. Thank you.

