

# Physics Carnival

Drexel University Chapter of the Society of Physics Students

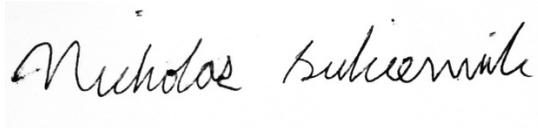
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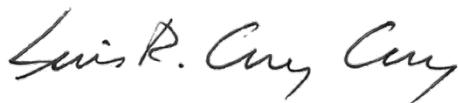


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**Total Amount Requested:** \$300

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Abstract:

The Drexel University Society of Physics Students intends to create a physics carnival outreach program to teach middle and high school students about the underlying physics behind a carnival. We will present this event at several schools, the Kaczmarczik Lecture Open House, and the Philadelphia Science Festival.

The Drexel University Chapter of the Society of Physics Students is a vibrant and active student organization that supports both social and academic events for our campus and community. In an effort to engage our local community, we have organized many different outreach programs to make physics more accessible to younger students and the general public alike. Last year, we helped run an after-school science program at Independence Charter School every other week, served as math and physics tutors for the TeenSHARP program, and participated in the Philadelphia Science Festival.

Although we have temporarily moved away from a long-term outreach commitment with one particular school, we are excited about the opportunity to reach more students by visiting a larger number of schools with shorter one-day outreach events. With this goal in mind, we are planning to organize a physics carnival. We were inspired to host a carnival by our recently-acquired miniature roller coaster demonstration (Roller Coaster System, PASCO ME-9812), so we started brainstorming all of the different types of physics found at a carnival, from light to forces, motion, and much more. We also liked the idea of a carnival as a way to introduce physics as a more exciting subject to students who might have previously considered it uninteresting. We plan on bringing our carnival to several schools in the Philadelphia area starting in February 2013, as well as the Philadelphia Science Festival and the Drexel University Kaczmarczik Lecture Open House in the spring of 2013.

Since we are hoping to bring the physics carnival to several middle and high schools throughout the Philadelphia area, we have designed it with portability and adaptability in mind. It must be portable for ease of travel and the physics behind the presentation must be easily adaptable to suit the particular age group that day. The carnival will be organized into stations with each one containing a fun hands-on demonstration relating to some aspect of a carnival.

This will mean using materials and tools that are smaller versions of things one would see or interact with at a carnival and that they are set up so that they do not immediately look like science experiments. We hope that this approach will make the physical concepts more accessible rather than taking a more technical approach, which could appear less interesting and relevant to the students.

In particular, one station will utilize our new miniature roller coaster demonstration, which consists of small cars that run on a low friction track that supports multiple configurations, including loops, and that has photogates to measure velocity. This will allow us to discuss topics such as conservation of energy, centripetal force, and weightlessness. We will also set up a carnival game station with games like a rigged stand-up bottle to discuss center of mass and some variation of a toss game to discuss kinematics. In another station, we will set up a small fun house with mirrors to explain optics. Finally, we will have a food station with ice cream made with the help of liquid nitrogen.

In order to make our physics carnival possible, we are requesting funding to supplement our existing physics demonstrations as well as to purchase supplies, such as small prizes and decorations, in order to make our carnival more captivating and realistic. Our proposed budget is listed in the following table.

Item	Amount
Fun House Mirrors	\$100.00
Carnival Games	\$75.00
Liquid Nitrogen Ice Cream Supplies	\$85.00
Small Prizes	\$25.00
Decorations	\$15.00
Total	\$300.00