

Marsh W. White Award Proposal

Project Proposal Title	Hollywood Physics 2.0
Name of School	Drexel University
SPS Chapter Number	1619
Total Amount Requested	\$159

Abstract

Drexel University's Society of Physics Students will visit Philadelphia area high schools to present Hollywood Physics 2.0 – a presentation that examines through interactive demonstrations the plausibility of various physical phenomena featured in popular movies. These sessions will build interest in physics, engineering, and other sciences.

Proposal Statement

Overview of Proposed Event and How it Promotes Physics

While watching movies nowadays it is very easy to become absorbed in the movie and not fully think about whether or not what is being watched is possible or not. Hollywood does a very good job of engrossing its viewers in the fantastic visuals of mainstream movies, however, we would like to ask students to see past some of the amazing physical stunts and test, through demonstrations, whether or not these scenes would be feasible in real life. Our Chapter of the Society of Physics Students would like to revamp our original idea for Hollywood Physics by going to high schools throughout Philadelphia and the surrounding areas and to get students to think realistically about the movies they've seen throughout their lives. Due to its original amazing success, our chapter believes we can revamp the presentation to include different movies and demonstrations and reach even more kids around Philadelphia.

Similar to last time, we would like to set-up the Hollywood Physics session in two separate parts. The first part would include a montage of movie clips that demonstrate physics scenarios that are accurately portrayed, and others that are not. After the montage, small groups will be made to further discuss the practicality of the scenes. Each group will have their own scene to discuss and decide on whether or not it is "good" or "bad" physics. When they decide which type of physics is portrayed, "good" or "bad", we will then perform a demonstration proving the validity of the movie scene. A short discussion will follow explaining the physical phenomenon that is taking place and then the groups will rotate to see the other demonstrations. One specific example we will be using is a scene from *The Dark Knight*, where Batman's cape is used to glide down from the top of a building to another building far away. The students will first decide on the plausibility of a cape allowing someone to glide very far distances and whether or not a cape can provide such maneuverability. Then we would test the theory by scaling down Batman's weight and the surface area of his cape to make a small scale replica of him that we could test to see if we could get to glide. Also we could then show how a different shape of wings, and maybe a parachute could work more efficiently and effectively. Another scene that we would use is the scene in *Mission Impossible: Ghost Protocol* when Tom Cruise puts on "magic" gloves to scale the side of a building. In this scene we can easily discuss the possibility of using magnets to scale a building. We would be able to demonstrate the effects of permanent magnets and electromagnets and discuss their effectiveness in holding human weight.

The goal of Hollywood Physics is to make students rethink what they witness in movies and try to better understand what would happen in real life. This fundamental way of looking at situations helps students to think analytically and practically when presented with problems. This is the basis for engineering and physics and tying physics in with the entertainment field is a great way of generating interest.

This is the second time we propose to utilize the idea of Hollywood Physics and the reason we plan to do it again was because of the amazing success we had when first doing it. Now that different kids are in high school, hopefully we can excite these students just as much as the last ones using new and more unique concepts. High school students do not always learn electricity and magnetism, so we plan to explore these less commonly hit areas to spark more interest in pursuing engineering, science, and math in college.

Plan for Carrying Out Proposed Project/Activity/Event

We have a number of members (roughly 10) who are interested in this project, both old and new. We have two officers heading up this project, and one of them has experience from helping out in the original Hollywood physics event a few years ago. The team will develop the aforementioned demonstrations to accompany the video clips, and we will reach out to local high schools via email. We have a few contacts with local high school teachers from other events we have done in the past, and we will try to network through them first.

Project/Activity/Event Timeline

On receipt of the award, we propose to begin contacting local high schools in the Philadelphia area. Next, throughout the rest of January and February, we will work on deciding the other movie scenes we would like to use in our session and the corresponding demonstrations to be performed. After completion our montage of scenes we will consult our Office of Campus Activities, who aid students in obtaining movie rights for public showing, for any final help we need. Our demonstrations will be assembled and completed in March and we plan to be able to begin traveling to schools late March and April. Any additional funding or materials will be provided by our chapter through fundraising.

Activity Evaluation Plan

We will keep track of how many schools we have this event at as well as keep track of how many students we reach at each school. We will also evaluate how well the students are able to identify “good” and “bad” physics in movies both before and after the event. In addition, after the events at the schools, we will discuss with the students’ teachers what seemed to be the most beneficial demonstrations, and what seemed to be the most engaging parts for the students. We will keep track of the points we discuss to see if we need to adjust our demos in any way for future visits to other schools.

Budget Justification

Our proposed budget is as follows: a strong neodymium magnet and 2 heavy duty suction cups for the demos involving Mission Impossible. These are necessary to test the ways that a building is scaled in the movie. Mini Paratroopers are an inexpensive tool that will help model the gliding scenes in “The Dark Knight”, and the Tyek roll will be used to craft a batman like cape. The video clips will be displayed with software from our own computers, so we do not need funding for anything relating to AV. Any additional funding or materials will be provided by our chapter through fundraising.