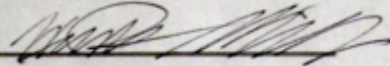


## Marsh W. White Award Proposal

Project Proposal Title	Physics Fair: A Presentation of Archival Material
Name of School	Sonoma State University
SPS Chapter Number	6474
Total Amount Requested	\$300

Principal Proposers:

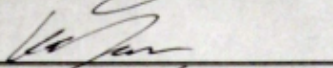
Hunter Mills:

x 

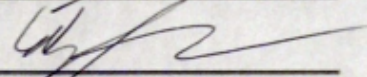
Ben Cunningham:

x 

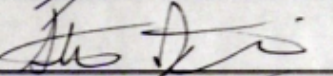
Kevin Zack:

x 

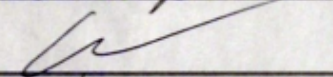
Cody Johnson

x 

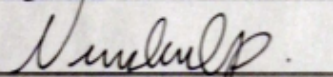
Stephan Jackowski

x 

Aaron Own

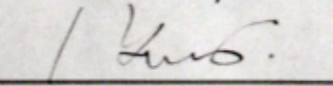
x 

Nicole Peyko

x 

Faculty Advisor:

Dr. Hongtao Shi:

x 

## Abstract

The SSU chapter of SPS will orchestrate a physics fair in conjunction with the physics department's Public Viewing Nights. To aid in this effort, we will digitize academically valuable lecture slides and videos from the "What Physicists Do" lecture series. Select slides will be presented during the fair and all content will be made publicly available through a website.

## Proposal Statement

### **Overview of Proposed Project/Activity/Event**

The Sonoma State University's (SSU) Department of Physics and Astronomy hosts Public Viewing Nights throughout the year since the spring of 1976, providing education and outreach to SSU students and the general public. Sonoma State University's chapter of Society of Physics Students would like to host a physics fair in conjunction with the Physics and Astronomy Department's Public Viewing Nights (image 1).

The intended goal of the physics fair will be to demonstrate the connection between physics and astronomy. We intend to use hands-on demonstrations and visual presentations to spark interest in physics and astronomy among attendees. In support of this event we would like to digitize slides and videos (image 2) that are currently inaccessible to the public, and display selected material in a presentation at the fair.

There are a number of spectacular materials presently sitting in storage and not being utilized, including: slides of the moon from Apollo 8, slides of earth from Gemini, and over 20 hours of videos from the Physics and Astronomy Department's public lectures. Many of these presentations are from speakers are recipients of prestigious awards in science, such as 14 Nobel laureates, 10 National Medal of Science laureates, and 17 others. When digitized, these materials will be made available at <http://whatphysicistsdo.sonoma.edu>.

Additionally, we hope to contact local schools and teachers to inform them of the website which can be a valuable resource. The content of the website can be used by teachers to augment lesson plans as well as using the slides and videos to raise interest amongst their students. We believe that the webpage, with free access to the slides, videos, and lecture materials, will be a source of continuing public outreach long after the physics fair has ended.

## How Proposed Activity Promotes Interest in Physics

This project will arouse attention in physics through the public presentation and the availability of previously underutilized lecture materials. The SSU chapter of SPS would enjoy sharing this information with the public to bring interest in Physics and Astronomy. The public impact and promotion of physics from this project will continue long after its completion. These images and videos are a source of direct promotion of physics by being publically accessible while also having a secondary impact when students and teachers incorporate these images and videos into their own presentations, papers, and/or lesson plans.

The Public Viewing Nights are held often at the observatory, located on the Sonoma State campus, where members of the community can come out and are able to view various astronomical bodies with guidance provided by professors and student volunteers. Two hours before a viewing night begins we will host the physics fair. We will utilize a number of demonstrations to not only educate the attendees, but also help to promote the Public Viewing Nights. This will start with a hands-on demonstration, where we will show attendees what a comet is comprised of by having them make their own. This will serve as a hook to gain their interest. It will be followed by other demonstrations showing the connection between physics and astronomy. One example would be providing diffraction grating glasses so that attendees can look at the stars, street lights, and other light sources to see the spectral lines. We would then explain why the spectral lines are observed and why these are important to physicists and astronomers.

## Plan for Carrying Out Proposed Project/Activity/Event

The plan to fulfill this project is as follows:

- Personnel: The Principal Proposers will be responsible for planning and execution of the project and make sure the project proceeds within accordance of the project timeline.
- Internal Marketing: The materials and presentation will both be advertised during the Public Lecture Series at SSU, and will also be advertised by Professors and Students in Physics and Astronomy classes.
- External Marketing: We will contact local science teachers to inform them how they can use the materials on the website.
- SPS Personnel:
  - Presentation: (1-2 Students)
  - Physics Fair: (5-8 Students) led by Cody Johnson and Nicole Peyko
  - Slide Conversion: (3-5 Students)
  - Web Design: Ben Cunningham, Hunter Mills, and Cody Johnson

## Project/Activity/Event Timeline

The timeline is as follows for the project. First, we will begin digitizing the videos that are currently in storage. Simultaneously, Hunter Mills, Ben Cunningham, and Cody Johnson will be responsible for creating the website. Training and file type/naming conventions will be completed by mid-December. If our project is selected we will then purchase an external hard drive and a digital slide scanner/converter at the end of January. Upon receipt of the converter and hard drive the digitization process for the slides will begin. Digitization of slides and videos will be an ongoing process with an absolute end date of April 20th, 2014.

A webspace and URL for the digitized slides and videos has already been created. A website framework will be created by the first of January. During the last week of each month there will be updates to the website where new images and videos are added. All digitized videos and images will become accessible no later than May 1st, 2014. The approximate monthly time table and a soft end date of May 1st are used instead of hard dates because the website's completion is dependent on the digitization process.

In February we will finalize the outline of the demonstrations that will be presented at the fair. We will then create and post fliers around campus to inform people of what they can expect from the physics fair. A week prior to the fair we will hold a practice session to get the student presenters formalized with the demonstrations and capable of conveying the ideas behind each activity. The dates for the Public Viewing Nights have not yet been finalized. There will be a show held in March and in April. The physics fair should be held in March, weather permitting, otherwise it will be held on a backup date in April.

## Activity Evaluation Plan

There will be multiple factors in a successful evaluation of this project.

- Completion of the website with content
  - Visitation of the site by local educators and general public
- Digitized slides and videos
- The implementation of cohesive demonstrations with common ideals
- Well received physics fair
- An increase in attendance for the Public Viewing Night

To Judge the success of the physics fair we will collect vocal feedback from the professors and students, who regularly run the Public Viewing Night. In addition we will have an anonymous comment box so attendee's can voluntarily provide feedback.

The website will be judged using the free Google Analytics feature which will allow us to determine how often and from what geographical locations the website is visited.

## Budget Justification

We currently have support of the Physics and Astronomy Department at Sonoma State University to undertake this project. We have been allotted webspace from NASA Education and Public Outreach at SSU. Digitization of the lecture videos and slide sets will require the purchase of both a large external hard drive and a digital slide scanner/converter. The external hard drive will be used to hold and organize all of the material's being digitized which will be done in the highest format quality reasonable for archival purposes and use on the website. The slide scanner/converter will be used to convert the stored slides into a digital format to be stored electronically and distributed online. Many of the demonstrations that will be used during the physics fair will be loaned to the club, by the department, at no cost. Lastly, there are costs that cover miscellaneous supplies for select demonstrations, simple decorations, and refreshments for the guests of the fair.

## Referenced Programs and Web Locations

Public Viewing Nights at SSU Observatory:

<http://www.phys-astro.sonoma.edu/publicviewingnight.shtml>

What Physicists Do:

<http://www.phys-astro.sonoma.edu/wpd/wpdhistory.html>

Future Website for the Digitized Slides and Videos:

<http://whatphysicistsdo.sonoma.edu>

## Images



Image 1: Public Viewing Night at Sonoma State Observatory on Friday, November 8th, 2013.  
Credit: STAR // Annalyse Butler



Figure 2: Small sample of videos and slides.