



SOCIETY OF PHYSICS STUDENTS

An organization of the American Institute of Physics

Marsh W. White Award Proposal

Project Proposal Title	Dobtometry: Helping Western Oklahoma See the Stars
Name of School	Southwestern Oklahoma State University
SPS Chapter Number	6714
Total Amount Requested	\$500

Abstract

We are taking the optical components from old, broken, and unusable telescopes and hand-building dobsonian (altitude/azimuth) telescopes. When finished we will have four or five portable telescopes (in the 6-inch to 16-inch range) for recruiting in remote towns and schools with evening viewing sessions and fun physics/astronomy talks.

Proposal Statement

The entire Proposal Statement should be no more than 2 pages, and organized as follows.

Overview of Proposed Project/Activity/Event

Every year on the first Thursday in November we hold (Southwestern Oklahoma State University) SWOSU Physics Day in which we invite students from area high schools to visit campus for a half-day of physics demonstrations, activities, career talks, and other fun. This has been an effective recruiting tool for our department for more than forty years. However, because western Oklahoma is large and sparsely populated there are a large number of schools that cannot participate. Our goal is to use telescopes and the big beautiful dark western Oklahoma night skies to extend our reach to students in those towns by having an evening star party and physics/astronomy talk. Our target audience is primarily high school students, but we plan to make these events open to the public. We will contact physics/science/math teachers in high schools and try to set up visits through them.

Over the decades, our department has accumulated half a dozen or so telescopes that, for a variety of reasons, are no longer usable. However, the optical systems, and in particular the mirrors of these telescopes are mostly in good or great shape. We are disassembling these telescopes and hand-building dobsonian (altitude/azimuth) manually operated telescopes, which are easily broken down and transported in a car or minivan.

How Proposed Activity Promotes Interest in Physics

Astronomy is an amazing tool for promoting public interest in physics and science in general. So many physics questions arise in astronomy discussions: "How far?" "How long ago?" "How big?" "What is it made of?" "How do we know?" and so on that it is nearly impossible to talk about astronomy without talking about physics. Currently there is not a lot of physics discussion in western Oklahoma. This would be a great opportunity to change that, even just a little. We believe this is exactly what the Marsh white award is about.

Plan for Carrying Out Proposed Project/Activity/Event

The SWOSU Physics club (we have about 8 members) has already undertaken the task of building these dobsonian telescopes. We have completed one telescope and have started number two. We expect to have four or five finished by the end of the spring, certainly enough to begin our star parties in the fall of 2019. The officers of the club will be responsible for arranging the viewing sessions with schools. We have handled a wide range of audiences from elementary school children and boy-and girl-scout troops to the general public, to special clubs and groups.

Our first attempts at marketing will be through the high-school science teacher. Small communities are often well-enough connected for that to be sufficient. If that does not work we will contact city officials or the chamber of commerce to get the word out. We would like to hold four to six of these viewing sessions over an academic year, usually on a Friday or Saturday evening, but possibly on a weekday evening in the winter when the Sun sets early.

We are a small department of three faculty and typically graduate 2-6 students per year. We typically have 2-6 SPS members among our students, presently we have six. Two of our faculty are SPS members. One of our faculty already has some experience building telescopes, including grinding a mirror. We believe we have the expertise to carry out both the building of the telescopes and the arranging the viewing sessions/talks.

We will keep track of attendees at our viewing sessions and talks, and we will ask our incoming freshmen (in years ahead) if they had participated in one of our sessions. We regularly hold viewing sessions at our University observatory.

Project/Activity/Event Timeline

We hope to carry out our viewing sessions in the fall of 2019. We would like to have our telescopes finished by the end of the spring semester 2018, so that we can fix any issues and run some public sessions with them over the summer. We believe this provides a reasonable amount of time.

Activity Evaluation Plan

To track our success, we will keep track of attendees at our viewing sessions, and carry out a short survey also soliciting comments and suggestions. We will also query our incoming freshmen to determine if they had participated in one of our visits.

Budget Justification

All of the budget will be used to purchase the parts and tools we need to build the telescopes. We still need a secondary mirror, spider, and focuser for our 16-inch mirror (which will be built last). Further, for all the telescopes we will need plywood, Formica, Teflon, and various router bits, drill bits, sandpaper, varnishes, and clear coats, and more. We have some University finding to help. When we start the visits we will need travel funds, but we expect the University to help with those.