



# SOCIETY OF PHYSICS STUDENTS

An organization of the American Institute of Physics

## Marsh W. White Award Proposal

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<b>Project Proposal Title</b>	Observatory Outreach
<b>Name of School</b>	Tarleton State University
<b>SPS Chapter Number</b>	7080
<b>Total Amount Requested</b>	\$500.00

### Abstract

The Tarleton State University Observatory will be hosting small groups of elementary age children for a fun day of science based activities and demonstrations, as well as a tour of one of the best research telescopes in the state of Texas. This event will feature speakers and activities ranging from rockets to black holes. The focus of the event is both to awaken and stimulate passions for STEM in youth, as well as driving awareness of the Tarleton Observatory facility.

# Proposal Statement

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

The proposal at hand regards an outreach event at the Tarleton State University Observatory located at the Hunewell ranch. The event is forecasted for November 19th from 11 a.m. to 3 p.m., with a back-up date of Dec 3rd or Dec 17th. The event will feature a keynote speaker on astronomy and engineering, a presentation from the Tarleton Rocket Club, 2 activities led by the Society of Physics Students, a presentation on the observatory from physics faculty, and a bag lunch.

The activities planned are black hole simulations utilizing hidden magnets, and balloon rockets. To simulate singularities, small neodymium magnets are glued to the underside of a framed canvas. Participants are able to roll metal balls along the canvas to see how the deflection from the “gravity well” affects motion, and the simulated “event horizon”. The balloon rockets feature simple balloons with a straw taped inside. After air is blown into the balloon, a second straw, the “rocket,” is inserted. The straw is then launched at a target. Tape can be used to create fins, wings, and airfoils to demonstrate changes in flight patterns and simple foundational aerodynamics

The event is aimed at elementary age children, specifically 3rd to 5th grade. The purpose of the event is twofold. First is STEM outreach and engagement. By introducing children to scientific topics in relatable, tangible ways, we awake the sense of wonder that drives the growth of future scientists. Secondly, we wish to raise awareness of the Tarleton Observatory. Many, even locals to the Tarleton area, are unaware of the existence of the Tarleton Observatory, one of the largest research observatories in Texas. How much less, then, is awareness of the Observatory to potential clients and consumers remote to the facility that would be renting use of the facility for their own astronomical research. To this end, one focus of the event is attracting media presence to assist in spreading awareness.

## **How Proposed Activity Promotes Interest in Physics**

Many of us can remember the first time physics affected our lives. For myself, it was an Astronomy textbook on the bottom shelf of the public library when I was 7. For hours I was lost in the universe of nebulas, galaxies, supernovas and quasars. The goal of this event is to awaken that magic and fascination in the minds of these children. Too often, people hear ‘physics’ and think of difficult math and too-brilliant minds, while completely ignoring the day to day interactions that define most of their life in an instinctual way. It is only by allowing impressionable minds to interact with physics in relatable, tangible ways that we can demystify physics and start attracting new blood.

This event is repeatable, scaleable, and affordable. It can be duplicated annually, monthly, weekly, even multiple times a day. Once the event occurs and it serves as proof of concept, the goal is for it to become a standardized event offered to local elementary schools for field trips and special occasions. In this way an event designed for 30 students will have a lasting impact on hundreds, and secondary effects on thousands every year.

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

The event is being planned by Stephen Bardowell, the Tarleton SPS President. It has been cleared and vetted by the department head, the observatory director, the event coordinator, and is awaiting final approval from the Dean. Coordination is being worked out with Tarleton's communications department to assist in marketing and networking to ensure dissemination of the event through local news, social media, and word of mouth.

Manpower is being provided from the Tarleton SPS, the Tarleton Rocket Club, and additional manpower is being requested from other Tarleton clubs. Some of the Tarleton faculty will also be performing in pivotal positions. Roles being filled include crowd control, food preparation, activity leads, guides, speakers, and demonstrators.

The project has a strong backing, as Dr. Goderya, the observatory director regularly holds events at the observatory aimed at high school and college age individuals; and Mr. Jacks is responsible for many of the events held on behalf of the College of Science and Mathematics at Tarleton. Mr. Bardowell has a plethora of planning experience from his time leading teams and groups during his Army service.

Total funding required is \$800. Funds beyond award are being sourced privately and from the University.

- \$30 for activities
- \$200 for lunch (feeds 60)
- \$200 for tents (2 10x10 with walls)
- \$300 for heaters (2, if weather requires)
- \$70 for porti-potty (\$70 per portipotty, services 40)

## Project/Activity/Event Timeline

The event was originally planned for November 19<sup>th</sup>, and that is still currently the goal. Extenuating circumstances has pushed the final approval meeting back to November 8<sup>th</sup>, which may result in the event being pushed back to one of the back-up dates, December 3<sup>rd</sup> or the 17<sup>th</sup>. Final arrangements and reservations only require a week of prior notice, but the desired marketing campaign requires a minimum of 3 weeks to publicize. If all dates fail, the event will be shifted into the spring semester, and planned for early March.

## Activity Evaluation Plan

Event success will be measured on awareness metrics. Key metrics include how many viewed the advertisements, how many inquired about the event, how many children attended the event, the existence of a wait list or lack thereof, requests for additional events, child participation, and displays of understanding and enlightenment of discussed topics. Most of these metrics will be collected by the marketing team, while the rest are observational, and collected by the staff during the event.