



# SOCIETY OF PHYSICS STUDENTS

An organization of the American Institute of Physics

## Marsh White Award Report

<b>Project Proposal Title</b>	Making Waves: The Physics of Sound and Light
<b>Name of School</b>	Indiana Wesleyan University
<b>SPS Chapter Number</b>	3116
<b>Project Lead (name then email address)</b>	Alexander Waters alex.waters@myemail.indwes.edu
<b>Additional Project Leads (two lists: names then emails)</b>	Tom Simons, Jennifer Baker <a href="mailto:tom.simons@myemail.indwes.edu">tom.simons@myemail.indwes.edu</a> , <a href="mailto:jenn.baker@myemail.indwes.edu">jenn.baker@myemail.indwes.edu</a>
<b>SPS Chapter Advisor</b>	Dr. Robert Ramos
<b>Total Amount Received from SPS</b>	\$300.00
<b>Total Amount Expended from SPS</b>	\$300.00

## Summary of Award Activities

Indiana Wesleyan University's SPS chapter held an event to promote the new physics major and a broader interest in SPS and physics to the student body. During this event, we demonstrated everyday uses of physics, focusing on various types of waves, including a fastball competition which taught the use of the doppler effect in radar guns. Through this event, several students expressed interest in the new physics major, and all who attended were thoroughly impressed and excited by the variety of applications physics has.

## Statement of Activity

### Overview of Award Activity

Our project was an outreach project specifically to the student body and more broadly to the Indiana Wesleyan Community as a whole. This project consisted of the SPS membership leading demonstrations in the science building atrium and the lawn out front. In all, there were easily 100 people who were either involved in or participated in the event. The demonstration out front was on the doppler effect and its usage in tracking speed of objects. The demos inside were comprised primarily of wave and wave type demonstrations and were as follows:

- Radar Gun and the Doppler Effect (Fastball Competition)
- Chladni Plates and Resonance
- Non-Newtonian Fluids Demonstration
- Liquid Nitrogen Demonstration

As a result of our project, many members, students and faculty alike, were exposed to not only the physics department as a whole and the physics major specifically, but also were informed of a variety of ways that physics plays into everyday life.

The intended audience of the event was the IWU community at large, but most specifically the students. Several people from the Marion community attended the event as well as a dozen faculty and just under 100 students.

With the recent expansion of the IWU Physics Department to include a physics major, it has been the primary objective of the physics faculty to spread word of its availability and interest in students for the major. This is why we, the SPS officers, felt it appropriate to facilitate interest through this and similar outreach events and meetings in public areas which encourage engagement of the student body with the physics department.

### Highlights

“For me, the best part of the event was being able to share the applicability of physics in day to day life with all sorts of people. For close to an hour, we had a series of athletes coming through outside and trying to outdo one another for the top recorded speed, all the while learning about physics, a subject that they all claimed to despise. The best part was at the end when one of the older chemistry professors walked by and threw a fastball to beat all of their speeds!”

-- Robert Simons, SPS Secretary

## Impact Assessment: How the Project/Activity/Event Promoted Interest in Physics

### Major Goals

- Raise awareness of the Physics major

This goal was met. Through this event, many people who did not previously know we had a physics major learned of its existence and a few left contact information with officers to be passed on to physics advisors.

- Raise interest in Physics

While many of the students who participated in this event stated that they had a disdain for physics, all responded positively to demonstrations presented and were glad that they had learned how interesting, “not boring” physics truly is.

### Description of Evaluation

The event was evaluated by a short, optional but recommended survey offered to students and other attendees before they left. The questions included were as follows:

- Year in School
- Current Course of Study
- Did you know before today there was a Physics major?
- Are you interested in talking with an advisor about the Physics major? (If yes, please provide email address below)
- Comments or Suggestions?

A sheet containing these questions was available to those who attended the event and were proffered and collected by SPS members to those who came.

### Results

Of the surveys completed and returned, the majority of students who responded were upperclassmen (69%). As a result, only a few students indicated an interest in learning more about the physics major for themselves. However, all the students who attended were encouraged to spread the word of the event and the major itself, as well as SPS. All of the University’s departments had majors represented in the event, with the largest coming from the nursing and natural sciences departments. The vast majority of students commented that the liquid nitrogen demonstration was the best part but a significant portion also were very complimentary of the radar gun setup. With entirely positive comments and a few people having had their interest in physics piqued, this event was, in our eyes, an enormous success.

### Key Metrics and Reflection

Who was the target audience of your project?	<b>College students</b>
How many attendees/participants were directly impacted by your project? Please describe them (for example “50 third grade students” or “25 families”).	<b>Approximately 95 students along with 12 faculty</b>
How many students from your SPS chapter were involved in the activity, and in what capacity?	<b>Eight (8) students Three (3) Participated in Planning All Eight (8) in the Activity</b>
Was the amount of money you received from SPS sufficient to carry out the activities outlined in your proposal? Could you have used additional funding? If yes, how much would you have liked and how would the additional funding have augmented your activity?	<b>The amount of money received was sufficient to successfully execute our activities.</b>
Do you anticipate repeating this project/activity/event in the future, or having a follow-up project/activity/event? If yes, please describe.	<b>Yes; we would like to have follow-up events in the future to further encourage participation in SPS and interest in physics to the student body and community at large.</b>
What new relationships did you build through this project?	<b>This event built relationships between SPS and the student body, increasing awareness of both the physics programs and the opportunities available through SPS.</b>
If you were to do your project again, what would you do differently?	<b>We would hold the event in a larger area with a higher amount of foot traffic.</b>

### Press Coverage (if applicable)

<http://www.indwes.edu/news/2015/iwu-physics-group-receives-marsh-white-award-for-project-proposal/>

(Article is copied below)

## IWU PHYSICS GROUP RECEIVES MARSH WHITE AWARD FOR PROJECT PROPOSAL

WEDNESDAY, FEBRUARY 11, 2015

The Indiana Wesleyan University chapter of The Society of Physics Students (SPS) recently received the Marsh W. White Outreach Award for their submitted project proposal, *Making Waves: The Physics of Sound and Light*. The multi-awarded, nationally recognized chapter will receive an awarded \$300 from SPS to complete their project that will culminate in an event showcasing the different phenomena caused by waves.

The event proposal was written by Physics majors Alexander Water and Tom Simons under the supervision of Dr. Roberto Ramos, Associate Professor of Physics. The event is designed to reach IWU students, Grant County high school and middle school students, and local community members in hopes of promoting a general interest in physics, as well as the newly added Physics major at IWU. Demonstrations will include slow-motion videography, the physics of radar guns, liquid nitrogen ice cream and much more.

There are over 700 chapters of SPS across the world. IWU's chapter is among the eight groups chosen for this year's Marsh White Award. This award is the most recent of eight outreach-related awards received by the IWU chapter from the American Institute of Physics since its inception in 2011.

The SPS funds Marsh White Awards through donations made by members of Sigma Pi Sigma, the physics honor society. Since 1975, proposals have been awarded each year for their promotion of physics among students and the community.

The Making Waves event is open to the public and will take place in the spring on IWU's residential campus in Marion, IN.

## Expenditures

The velocity radar gun, baseball, soccer ball, and training screen were all used as an outdoor demo which explained the doppler effect and additionally served as a means of drawing in students walking across campus.

Lines four, five, and six of the Expenditure Table were used for a liquid nitrogen demo and any reusable/leftover materials were utilized later at a function done in conjunction with a local high school.

The plastic mixing bowl and corn starch were used for a demonstration on Non-Newtonian Fluids.

Various poster supplies and advertisement materials were purchased to ensure maximum exposure and information was brought to the student body.

### Expenditure Table

Item	Cost
Velocity Radar Gun (Arbor Scientific)	134.00
Baseball; Soccer Ball	12.00
Champro 6'x6' Multi-Sport Training Screen (Dunham's Sports)	40.00
Stainless Steel Mixing Bowl, Cups, Plastic Spoons, Wooden Spoon	25.00
Flowers, Balloons	34.00
4 Qts of Half & Half, Vanilla, Chocolate Syrup	22.00
Plastic Mixing Bowl, Corn Starch	13.00
Poster Supplies and Advertisement Materials	20.00
<b>Total of Expenses</b>	<b>300.00</b>



## PhotosActivity



SPS President Alex Water explains Chladni plates and resonance to a group of interested students. Credit: Dr. Roberto Ramos



SPS Secretary Tom Simons clocking students' throws after explaining the Doppler Effect. Credit: Dr. Roberto Ramos

## 2013-2014 Marsh White Award Final Report Template



Many students and several professors attended the event in the Science Hall's Atrium. Credit: Dr. Roberto Ramos



A film crew from the University station WIWU showed up to cover the event. Credit: Dr. Roberto Ramos





SPS students setting up demos in the Science Hall's Atrium. Credit: Dr. Roberto Ramos



If you have any questions, please contact the SPS National Office Staff  
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