



# SIGMA PI SIGMA

The physics honor society

## Sigma Pi Sigma Chapter Project Award Proposal

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Project Proposal Title	What Physicists Can Do to Solve Emerging Issues in Our Environment?
Name of School	St. John's University, Jamaica, NY
Sigma Pi Sigma Chapter Number	303
Total Amount Requested	\$500.00

### Abstract

The St. John's University chapter of Sigma Pi Sigma plans to host its 2016 induction ceremony by inviting local scientists, St. John's University physics alumni, current students and faculty, and local high school students to learn how we can all use physics to solve emerging issues in our environment. The ceremony will start with a water-filter building contest between 5-8 teams, with each team formed by a mix of students, alumni and faculty. Following the contest, new members will be honored and inducted to Sigma Pi Sigma. The main part of the ceremony is for invited local scientists to talk about the emerging issues in energy and environment, and for our alumni to share how they have used physics in their careers to help our environment, and their development from a physics student to a member of society making contributions in various fields. By inviting local high school students to the event, the ceremony will foster interaction between students, alumni, and local communities and inspire St. John's students as well as local high school students to pursue careers in science and engineering fields. The award will be used to cover expenses for the water-filter building contest materials and prizes, souvenirs for alumni, and the ceremony dinner.

# Proposal Statement

## Overview of Proposed Project

The Society of Physics Students (SPS) Chapter at St. John's University, a primarily undergraduate institution, has become a vibrant student organization in the past six years as a result of the strong efforts by its members and help from the school's caring faculty. The Sigma Pi Sigma Chapter was also recently revived and has inducted a total of 56 fine physics undergraduates in the past six years. In addition to encouraging the study of physics and honoring those with outstanding academic achievements, our SPS and Sigma Pi Sigma chapters have also engaged in a variety of activities to assist St. John's students of various majors with their physics courses and to promote a science and engineering education among the local community.

Our SPS chapter has been organizing a series of tutoring events and physics seminars each semester to promote fellowship among students, foster interaction between students and faculty, and encourage undergraduate research. For example, on October 14th of 2015, St. John's SPS and Sigma Pi Sigma chapters co-organized the 1st Annual Physics Mid-term Prep Tutoring Session. We are also committed to promoting education of science and engineering among the general public by participating in various outreach activities. Teaming with St. John's Science & Technology Entry Program (STEP), St. John's SPS chapter has been conducting a total of 12 physics workshops for the students in the STEP program since fall 2009. During these workshops, students from local middle and high schools gain hands-on experience by performing experiments adapted from our College Physics lab class. The workshops were well received by the high school students as reflected by their positive responses on their feedback forms. Working with St. John's Academic Service Learning (ASL) program, St. John's SPS chapter also goes to local high schools and communities to give workshops to stimulate our younger generation's interest in science.



Members of St. John's SPS chapter were assisting middle and high school students in the STEP program at the "Standing Waves in a String" Workshop on October 31st, 2015.

With the generous support of the Sigma Pi Sigma national office and the St. John's University, St. John's Sigma Pi Sigma chapter has successfully hosted six induction ceremonies from 2010 to 2015, honoring the outstanding achievements of our students and alumni. All events were well received by the students and their families and friends, invited guest speakers, and faculty and staff. Students were especially interested in networking with alumni and asked them for career advice.

As the public is becoming increasingly aware of environmental issues like climate change, at this year's Sigma Pi Sigma induction ceremony, we would like to bring our guest speaker, alumni, current students and faculty together to learn how physics can help the environment. As physics majors we have the unique power of understanding and we must use this power responsibly. To the St. John's SPS this means using the physics skills obtained in our education and careers to find innovative ways to help our environment. This year, we have invited Stephen Schwartz of the Brookhaven National Laboratory to give a plenary talk on climate change. Dr. Schwartz is a renowned atmospheric scientist in particular in the area of atmospheric sulfur and acid rain, and served as the Chief Scientist of the Atmospheric Science Program of the United States Department of Energy from 2004 to 2009. We will also invite our physics alumni whose careers are related to energy and environment to the ceremony and ask them to share their stories of using physics to solve various environmental issues.

The Sigma Pi Sigma induction ceremony and the dinner banquet following the ceremony will be held in the evening of April 6th, 2016. About 15-20 physics alumni and their family members, 15-20 Sigma Pi Sigma members including new inductees and their guests, and 10-15 students and faculty members from all science departments of the St. John's University are expected to attend the event. In addition, we will invite 7-8 local high school students plus their parents to the ceremony. A total of 60 attendees are thus expected at the ceremony.

The event will start with a water-filter building contest where teams will compete to build a water filter using simple materials such as sand grains of difference sizes. We expect the contest should bring a lot of fun to the event, especially with the participation of alumni and high school kids. The formal ceremony will be opened by the Chair of the Physics Department, followed by induction of the new Sigma Pi Sigma members. The main part of the ceremony is for our guest speaker and alumni to share with the audience how they have used their physics knowledge to help the environment.

We expect the event will promote students' interest in physics, provide opportunities for students and faculty, alumni, and the local communities to interact with each other, and inspire the younger generation to become tomorrow's leaders in science and engineering fields.

### **How Proposed Project Meets the Purpose of the Award**

- Since 15-20 alumni and their family members are expected to attend the event and interact with our students and local high school students, the event will build community among alumni, new and current Sigma Pi Sigma members, and local high school students.

- We expect to induct 7-8 new members into Sigma Pi Sigma, bringing the total number of inductees at St. John's University to more than 60.
- By inviting local high school students and their parents to our Sigma Pi Sigma induction ceremony, it will raise the awareness of Sigma Pi Sigma in the local community and promote the study of science among the younger generation.
- Our SPS chapter has been named one of the outstanding chapters by the SPS national office twice in the past three years. We will celebrate these achievements at the event and also make our SPS chapter more visible to the community.

### Plan for Carrying Out Proposed Project

- Personnel planning and organizing the event:  
 SPS President: Thomas Campbell  
 SPS Vice-President: Akhtar Mohammad  
 SPS Secretary: Rachel Tyo  
 SPS Treasurer: Sahar Khan  
 SPS Public Relations: Retina Kundu  
 The team will be assisted by Ms. Mary Ann Frohnhoefer, secretary of the Department of Physics and Dr. Huizhong Xu, faculty advisor of SPS.
- Marketing  
 Invitation letters will be sent to alumni and local high school students. Emails will be sent to current students and faculty of St. John's University to invite them to the event. Event flyers will be made and posted on the St. John's University Website and on bulletin boards at various places on campus.
- Sigma Pi Sigma member participation  
 We expect to induct about 7-8 new members into Sigma Pi Sigma at the ceremony. About five to six current Sigma Pi Sigma members are also expected to attend the event. In addition, 10-15 students and faculty members from all science departments of the St. John's University are expected to attend the event.

### Project Timeline

April 6, 2016	St. John's University 2016 Sigma Pi Sigma Induction Ceremony
April 1, 2016	Prizes for the water-filter building contest, and souvenirs for alumni prepared, and banquet items ordered

March 31, 2016	Deadline for alumni, high school students and guests, current students and faculty to confirm attendance
March 15, 2016	Materials for the water-filter building contest prepared
March 10, 2016	Invitations sent out to current students and faculty
March 10, 2016	New inductees' information sent to the Sigma Pi Sigma national office and reception items ordered
March 1, 2016	Deadline for inductees to reply to invitation
February 15, 2016	Invitations sent out to new inductees
February 1-15, 2016	New inductees selected by the committee
January-February, 2016	Invitations sent out to alumni and local high school students

## Project Evaluation Plan

The project will be evaluated in the following aspects. The number of participants will be recorded by asking attendees to sign in at the event and this number will be compared with our expected number of 60 participants. A post-event survey will be conducted to get feedback from the participants. Suggestions and feedback will also be sought by speaking with current students and faculty directly after the event.

## Budget Justification

We will use the award to cover expenses for materials and prizes of the water-filter building contest and the dinner banquet. The remainder cost of the dinner banquet and other necessary expenses on items such as invitations and decorations will be covered by solicited contributions from the St. John's University.

The water-filter building contest will bring a lot of fun to the event. It will require students to apply physics knowledge in conjunction with teamwork to construct a functioning water filter that will be evaluated based on the quality and throughout of the water produced as well as the creativity of the design. We expect participants will be excited about this contest especially given the participation of alumni and high school students.

The dinner banquet will provide all participants of the event opportunities to network with each other and bring our alumni, students and faculty, and local communities closer, spark friendly and productive communications, and promote fellowship among them. These friendly conversations will inspire our students and local high school students to pursue careers in science and engineering and become tomorrow's leaders in their respective fields!