



# SOCIETY OF PHYSICS STUDENTS

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## Future Faces of Physics Award Report

Project Proposal Title	Physics in the Phlesh
Name of School	Morehouse College
SPS Chapter Number	4523
Project Lead (name and email address)	Hakeem Jones (President)
Total Amount Received from SPS	\$300.00
Total Amount Expended from SPS	\$300.00

### Summary of Award Activity

The Morehouse Chapter of SPS was awarded support for a STEM peer mentoring project called Physics in the Phlesh (PnP). The purpose of the PnP mentoring program will be to provide (1) individualized, peer-to-peer mentoring, (2) retention and recruitment of students who may be considering a career in science, especially with an interest in physics or engineering, and community outreach and service exposure to 1<sup>st</sup> and 2<sup>nd</sup> year students at Morehouse College.



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## Statement of Activity

### Overview of Award Activity

For introductory physics and math courses, professors feel it is imperative to introduce the rigor and discipline required for this field. Under this pressure, many younger physics students stumble or drop out of physics after the second introductory physics course which is Electricity & Magnetism. To combat this, we aim to give the younger students a peer-led support system. Our mentoring program will aim to

1. Improve grades of beginning physics students
2. Allow physics department to retain more students
3. Inform and get new students involved in the SPS

The mentors will:

1. Explain and inform students of department and course expectations
2. Offer informal academic advisement
3. Offer intern and scholarship information
4. Provide a support system and an introduction to the Morehouse SPS
5. Provide a monthly to bimonthly teleconference (Skype) with different SPS/Morehouse Physics Department Alum

### Impact Assessment: How the Project/Activity/Event Promoted Physics across Cultures

The Physics in the Phlesh (PnP) project promoted physics to students of all ages and backgrounds. The PnP project has three subcomponents, each targeting a specific age group to increase awareness and recruitment of students who may be considering a career in science, especially with an interest in physics or engineering. The three subcomponents were

1. Peep to peer mentoring – “qualified” students were matched with freshman students to provide individualized mentoring support bi-weekly.
2. Saturday Tutoring Enrichment in Math and Science (STEMS) - invited middle and high school students of the D.U.K.E.S. Foundation to the Department of Physics at Morehouse College to provide tutors (SPS members) for their math and science courses on a monthly basis.



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3. Physics demonstrations – SPS students and faculty members visited local schools to present physics demonstrations such as the non-Newtonian fluids, Ruben’s tube and liquid nitrogen based experiments for ice cream, bouncing balls, and bottle rockets.

Each component of the PnP project promotes physics to African-American students of all age groups. See the table below that highlighted the targeted age groups of which each subcomponent project impacted.

### Targeted Age Groups of the Physics in the Phlesh Subprojects

	Elementary	Middle	High	College
Peer to peer				X
STEMS		X	X	
Physics demonstrations	X		X	

### PHYSICS IN THE PHLESH (By Category)

#### Peer to Peer Mentoring

The peer to peer mentoring project authored by SPS chapter president Hakeem Jones selected \_\_ “qualified” mentors to provide support to first year science students. The SPS mentor selection committee required each mentor to possess at least a 2.75 GPA and in 12 hours or more of physics courses. The students were paired to a freshman by similar interest. Each mentor was responsible for one mentee. This way each relationship can be more personalized and not become a study distractor for the “qualified” mentor.

There were no records kept of the meeting times and Skype calls between the students.

#### The STEMS Project

The STEMS project authored by former SPS chapter president (2010 – 2012) Joshua Burrow partnered with the DUKES Foundation in order to increase the involvement of Morehouse SPS students in the lives of the young men of the DUKES Foundation. The DUKES Foundation is an Atlanta 501C3 mentoring program which provides local at-risk adolescent males with strong guidance and instruction on the rules of etiquette and the secrets to success within the professional world. Since 2010, the Morehouse SPS Chapter has been consistently involved with the DUKES Foundation through monthly Saturday-morning math/science tutoring sessions in which students of the DUKES program receive aid on their school work and insight into completing high school and making the transition from secondary school to college. Our officers and the founder of the DUKES Foundation, Mr. Horace Dukes, have decided this year that we would like to increase the involvement of



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Morehouse science students in the lives of the young men of the DUKES Foundation to once-per-month tutoring sessions.

On the second Saturday each month, 3 – 7 SPS members met approximately 20 young men at the Department of Physics from 9AM – 1PM. The DUKES Foundation provided transportation for the participants to and from Morehouse College. In each session, the students divided into subgroups based on math topics (Algebra, Pre-calculus, Geometry, and AP Calculus AB). As a wrap up exercise, one student from each group explained one problem or theorem to the entire class. Finally, the DUKES Foundation and the PnP project collaborated to provide lunch to the participants and SPS members where SPS members were able to connect with the young men by answering their probing questions about physics in college.

Due to severe weather conditions in Atlanta, we were only able to hold 4 of the 8 meetings. See Figures 4 and 5 in the Activity Photos section of this Award report of our October and April meetings.

## Physics Demonstrations

The physics demonstrations were given at a local elementary school, a local high school and an all-boys military academy. Over 15 students (a few from the neighboring Spelman College) assisted with several Physics demos at William Scott Elementary School, Westlake HS and the Miller Military Academy for Boys.

On October 22, 2013 from 12noon-3pm, fifteen (15) students and one (1) faculty advisor visited Scott Elementary and presented demos in front of several classes at once. See Figure 1 in the Activity Photos section of the Activity Report.

We first did a demonstration for an AP Physics class at Westlake, and then returned for a 10<sup>th</sup> grade Chemistry class. The SPS members that were in involved were: Christopher Wills, Cedric Hill, Hakeem Jones, Nana Arkorful, Lawrence Jacobs, Khari Rockward, Tristian Pittman and Mekkakhem Kheperu.

## Dates & Numbers

*The details of each physics demonstration were as follows:*

(1) On October 22, 2013, 16 SPS members (15 SPS student members and 1 SPS faculty advisor) traveled to W.J Scott Elementary School to present the Liquid Nitrogen demonstrations to approximately 40 students.

(2) On December 17, 2013, 7 presenters (5 SPS student members, 1 faculty advisor and 1 HS student) traveled to the Miller Military Academy for Boys to present the Rubens Tube and Liquid Nitrogen demonstrations to approximately 72 students.



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(3) On December 19, 2013, 8 presenters (7 SPS student members and 1 SPS faculty advisor) traveled to Westlake High School to present the Liquid Nitrogen demonstrations to approximately 37 students.

(4) On April 22, 2014, 9 presenters (8 SPS student members and 1 SPS faculty advisor) traveled to Westlake High School to present the Liquid Nitrogen demonstrations to approximately 48 students.

*The details of each STEMS session were as follows:*

(1) On September 21, 2013 met to discuss details with DUKES Foundation advisors about details for the 2013 – 2014 school year.

(2) On October 19, 2013 four (4) SPS members met with 13 DUKES mentees from various public schools in the metro Atlanta area.

(3) On November 16, 2013 four (6) SPS members met with 23 DUKES mentees from various public schools in the metro Atlanta area.

(4) On December 21, 2013 the session was cancelled due to school closing for winter break.

(5) On January 18, 2014 four (3) SPS members met with 15 DUKES mentees from various public schools in the metro Atlanta area.

(6) On February 15, 2014 the session was cancelled due to state of emergency caused by a snow storm.

(7) On March 15, 2014 the session was cancelled due to shortage of tutors because students were on Spring Break or traveling on Morehouse's annual graduate school tour.

(8) On April 19, 2014, four (4) SPS members met with 22 DUKES mentees from various public schools in the metro Atlanta area.

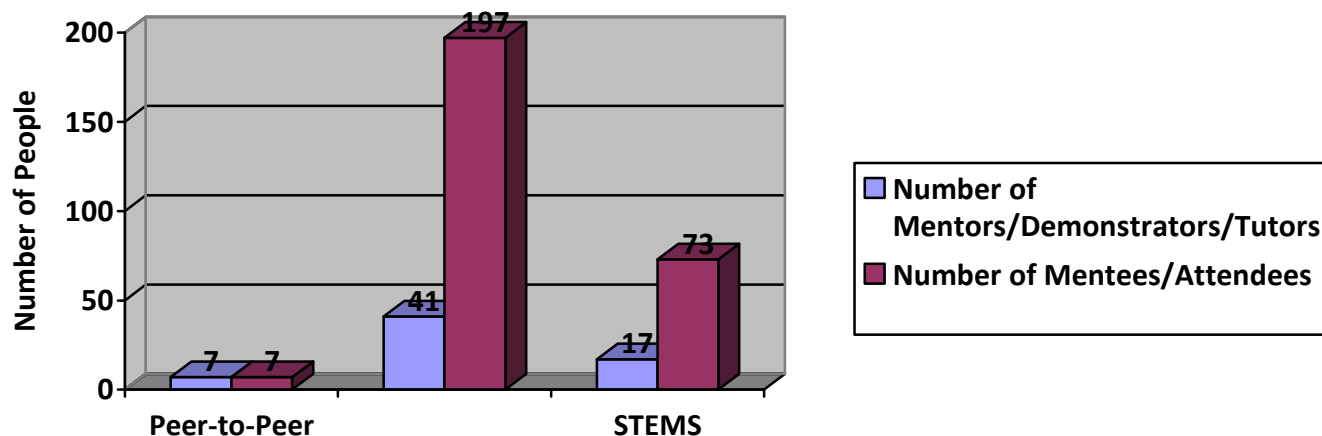
Below is a chart of the total number of students that were impacted by our sub programs in the PnP project.



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## TOTAL NUMBER OF STUDENTS IMPACTED BY EACH PROGRAM



SPS student members that were involved in multiple events were counted for each occurrence.

### Project Goals

- Matched seven (7) freshman students with mentors.
- Presented four (4) demonstrations to local Atlanta Public Schools.
- Bi-weekly STEMS meetings were limited to monthly meetings due to weather and shortage of tutors.
- Held STEMS session in October, November, January and April.

### Project Assessment Plan

The peer to peer mentoring project assisted seven (7) freshman students. \_Four (4) students were able to conduct physics or engineering research at various institutions across the United States during the 2014 summer. (Sentence about the freshman student's GPAs). All the freshman students returned to Morehouse as Sophomores and remained Physics or Applied Physics/Dual Degree Engineering majors. We plan to monitor the mentoring program more carefully.

The STEMS project held half the number of meetings we proposed to. All the students involved in 2 or more of the STEMS sessions passed the CRCT. The CRCT is the standardized test each student must pass in order to go on to the next grade level.



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The physics demonstrations were the most successful of the three (3) subcomponents of the Physics in the Phlesh (PnP) program. Although there is not a grade scale in place for assessment, the number of students our group impacted was outstanding, totaling in nearly two hundred (200) students. We brought a smile to all of our attendees by way of physics!

## Impact Assessment: How the Project/Activity/Event Influenced your Chapter

The outcome was the promotion of physics to potential future scientist. This project helped our chapter become active service members in the metropolitan Atlanta school district. We learned public speaking and leadership, in having to interact with elementary and high school students during the demonstrations. The entire organization chapter was impacted, in that, everyone was allowed to become a participant based on their mature. Freshman and sophomores were able to become participants of the peer to peer mentoring program and demonstrators/tutors/mentors during the outreach activities. Juniors and seniors were able to become mentors in the peer to peer mentoring program as well as and demonstrators/tutors/mentors during the outreach activities. The highlight of the project would be during the outreach visitation at W.J. Scott Elementary School. This physics demonstration impacted the most amount of people. For three (3) hours fifteen (15) college students demonstrated physics to thirty (30) elementary school students. This project truly brought minority students together in the name of physics.



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## Key Metrics and Reflection

<p>The Future Faces of Physics Award is designed to promote projects that cross cultures. What cultures did your project attempt to bring together? (Please be as specific as possible.)</p>	<p><b>The project unified the gap between senior level physics majors and 1<sup>st</sup> year students. As well as, bridged the gap between elementary school students and college students.</b></p>
<p>How many attendees/participants were directly impacted by your project? Please describe them (for example “50 third grade students” or “10 high school volunteers”).</p>	<p><b>See table</b></p>
<p>How many students from your SPS chapter were involved in the activity, and in what capacity?</p>	<p><b>Approximately 10 students served as mentors, demonstrators and tutors for the project.</b></p>
<p>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? How would the additional funding have augmented your activity?</p>	<p><b>Yes the amount of funding was sufficient.</b></p>
<p>Do you anticipate repeating this project/activity/event in the future, or having a follow-up project/activity/event? If yes, please describe.</p>	<p><b>Yes we plan to keep doing physics demonstrations at local schools and continue the STEMS Program.</b></p>
<p>What new relationships did you build through this project?</p>	<p><b>We build relationship between the members in the chapter and aspiring college students in local metro-Atl.</b></p>
<p>If you were to do your project again, what would you do differently?</p>	<p><b>We would make sure the information for the projects is translatable for each group of people in charge, from year to year.</b></p>





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## Press Coverage (if applicable)

N/A



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## Expenditures

### Expenditure Table

Item	Please explain how this expense relates to your project as outlined in your proposal.	Cost
Liquid Nitrogen	Material used for Liquid Nitrogen Ice Cream physics demonstration.	85.99
Ice Cream Cones	Material used for Liquid Nitrogen Ice Cream physics demonstration.	5.79
Plastic Spoons	Material used for Liquid Nitrogen Ice Cream physics demonstration.	2.99
Transportation to and from W.J. Scott Elementary School	Gas to transport 3 vehicles (1 people) from Morehouse College to W.J. Scott Elementary School	15.00
Transportation to and from Westlake High School	Transport 2 vehicles (8 students) from Morehouse College to Westlake High School	10.00
Transportation to and from Westlake High School	Transport 2 vehicles (9 students) from Morehouse College to Westlake High School	10.00
Transportation to and from Miller Military Academy for Boys	Transport 2 vehicles (7 people) from Morehouse College to Westlake High School	10.00
Food	17 attendees (Remaining covered by DUKES Foundation)	40.00
Food	29 attendees (Remaining covered by DUKES Foundation)	40.00
Food	18 attendees (Remaining covered by DUKES Foundation)	40.00



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Food	26 attendees (Remaining covered by DUKES Foundation)	40.00
<b>Total of Expenses</b>		<b>\$299.77</b>

## Activity Photos



Figure 1: Morehouse and Spelman students interacting with students from William Scott Elementary School.



Figure 3: Students of Westlake HS enjoying liquid nitrogen ice cream after our demo.



Figure 2: Hakeem Jones after a demo at Scott Elementary School.

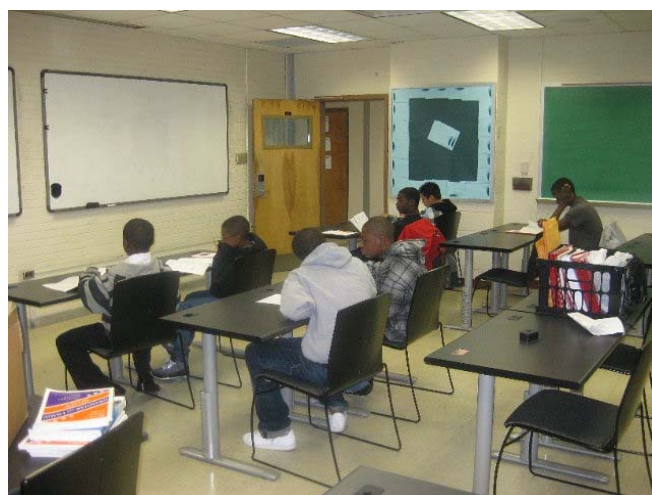


Figure 4: Middle school students of the DUKES Foundation diligently working during the STEMs program at Morehouse College.



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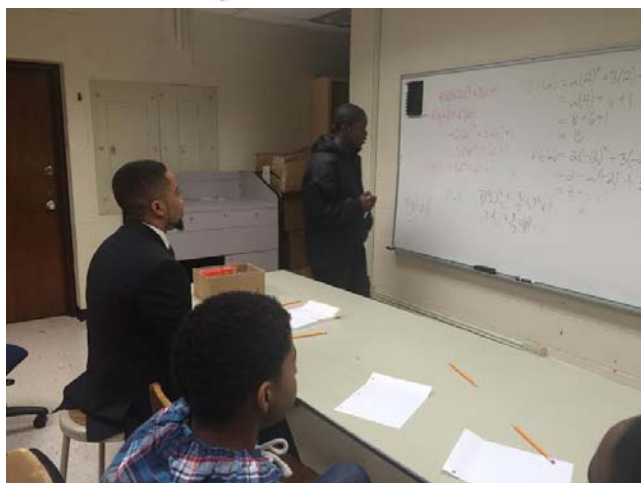


Figure 5: High school student of the DUKES Foundation explain a math problem to his tutor, Joshua Burrow and other two DUKES mentees.



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