

Morehouse Society of Physics Students

Future Faces of Physics Report

In past years, the bulk of the projects and activities which the Morehouse SPS chapter has engaged in have been limited in their scientific scope and focused primarily towards community service. Though we definitely hold no regrets about preserving and fulfilling our commitment to community service, this year we sought to expand the scope of our organization, adding more tangible science to our community outreach. Our goal was to create devices and experiments which could be used as demonstrations for youth whenever we hosted any educational events for children in surrounding neighborhoods. Our two primary projects were a Ruben's tube and a model rocket. The funds which we received from the Future Faces of Physics grant (\$300) was used solely to purchase the materials for the Ruben's tube although we collaborated with another science organization on campus to build the model rocket.

For those unfamiliar with the Ruben's tube and its powerful command of children's curiosity, it is a device which manifests sound in a visual display of fire (simply put). A number of small holes are drilled into a pipe which is connected to a propane tank on one end and a speaker on the other. Once propane begins flowing through the pipe, each hole is ignited, creating a row of 15 to 20 small flames. When music is played from the speaker, the numerous flames fluctuate in response to the frequency of the sound waves emitted by the speaker. In essence, the Ruben's tube is a pyro-graphic equalizer, similar to the standard stereo graphic equalizers which are found in most recording and broadcast studios. While we acknowledge that people (especially children) are typically unfamiliar with the equalizer by name, most would recognize it if they saw one, even if they could not identify its function or purpose. And as can be expected, people are quite fascinated by the seemingly unreal, indiscernible connection between sound and sight which the tube creates.

Though we did complete the Ruben's tube and displayed it to members in our chapter, we were unfortunately denied permission to showcase it at our *Physics in the Phlesh* Demonstration Day due to misgivings campus authorities expressed concerning fire safety within buildings. We mistakenly jeopardized ourselves by petitioning only for clearance to display the tube outside. When we learned of the inclement weather which fate had prescribed to our demonstration day, it was too late for us to gain approval to move the Ruben's tube demonstration indoors. This next year we hope to have another, similar demonstration day and our on-campus fire marshal has agreed to reconsider our device provided that we approach him a bit earlier in the year and test the tube a number of times inside. Even without the Ruben's tube and the model rocket (which was also shelved due to the heavy rain which stormed us that day), our physics day event was quite a success. We used smaller demonstrations (such as a low-Reynold's number fluid, a "disappearing" diffraction grating, and others) to perplex the minds of our young audience and feed their imaginations. Our event ended with a discussion about the many wonderful opportunities available to young scientists. We made it a point to reassure our audience that the STEM community calls out to all those who work diligently to understand science and push it forward. Science is not reserved simply for those who seemingly have a natural command of it.

The Morehouse SPS chapter expresses overwhelming gratitude to the SPS National Office for providing us the financial resources to bring our ambitions to fruition. The Morehouse Physics department consistently encourages academic excellence just as the

accomplishments of current students and alumni serve as evidence. Unfortunately, however, recreational science is too often neglected and undervalued by the collective science community. The culture of Morehouse has often unintentionally bred a “day-job” attitude towards science amongst its students, resulting in the dormancy or nonexistence of science-related extracurricular organizations. Our construction of the Ruben’s tube therefore serves as a trailblazer accomplishment for the Morehouse Physics department, demonstrating to its students that physics can be both a vocation and an avocation. Indeed those who master the science, approach it with an artist’s passion. And the passion which this project stirred in the hearts of our SPS members has spilled over into the students we reached out to, even though they were unable to see this project come to full fruition. We, again, are forever grateful for the sponsorship and support of this project by the National Office of the Society of Physics Students.

Expenditures

Order #1:

- ORDER #[106-1258428-9775405](#)
- TOTAL **\$81.19**



- [Bayou Classic 0-30 PSI Adjustable Regulator/Hose Assembly](#)



- [Worthington 303955 20-Pound Steel Propane Cylinder With Type 1 With Overflow Prevention Device Valve](#)

Order #2:

- ORDER #[108-6186482-3610641](#)
- TOTAL **\$30.58**



- [Eagle Arion ET-AR302-BK 2.0 Soundstage Speakers - 3 Inch Drivers, 40Hz to 20kHz, 12 Watts](#)



- CS Hyde Metalized Mylar Tape with Acrylic Adhesive, 2.2mm Thick, Black Color, 0.5" x 72 yds



- JB Weld 8265S Weld Compound - Epoxy Twin Pack
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Order #3:

- ORDER #108-5926499-3927418
- TOTAL \$17.61



- Oatey 14052 0.25-Inch to 4-Inch Master Flash
-

Order #4:

- ORDER #108-4494307-9541057
- TOTAL \$4.79



Emergency Thermal Blanket 52" x 84" (4 Pack)

Order #5:

- ORDER #108-3563896-1743464
- TOTAL \$30.41



Stainless Steel Cable Ties - 27 inch - 25 pieces

Sold by: [ElectriDuct Inc \(seller profile \)](#)

Pictures



The official Ruben's Tube design and construction team



SPS Members constructing mounts for the Ruben's Tube



SPS Vice President Josh Mann putting the finishing touches on the Ruben's Tube



Local students observing the curious phenomenon of the Low-Reynolds number fluid at our *Physics in the Phlesh* Demonstration day