

Given that fact that urban areas like Hartford have problems in encouraging students to seriously pursue a science education, the Trinity College Society of Physics Students aims to promote science and science education. We have decided to do through a program of regular outreach demonstrations and an annual physics fair event. Using this dual approach, Trinity SPS hopes to inspire students through physics and to motivate students through competition and prizes.

Using Marsh W. White funds to expand our outreach program, we were able to work with five different groups this year in the surrounding Hartford area. Particularly, these were Rising Stars, Vision Academic Mentoring Program, Connectikids, Dream Camp, and especially Hartford Magnet Middle School (Compass). These groups represent middle school students from several schools in Hartford, numbering approximately 150 students, so that we were both able to promote physics and SPS in a broad segment of the student population. All of these organizations have given us feedback that the students enjoyed and found the program very stimulating. In addition, all of them were excited to work with us again. This would later prove crucial in getting word out about the physics fair. The members of SPS also revealed their great joy at doing this kind of activity, and we plan to continue to expand the program to serve more areas and students.

Our philosophy in our physics outreach demonstration is one of undirected learning. We do not believe that at this level that a highly detailed explanation of the physics principles at work would make any sense; we set up our demonstrations in the location, sometimes on campus and sometimes off campus. We usually aim to have around 8-12 stations so that students will be able to see most of the demonstrations in the hour total spent at the demonstration. Our members spend about 2-5 minutes explaining or showing some aspect of the demonstration, and students are then supervised in their exploration of the phenomenon at the station. Given the nature of this work, we have also designed our demonstrations to be completely hands on or to have some experimental component to them. Our demonstrations include: lasers and blackbody radiation windmill (Crooke's radiometer), angular momentum conservation frictionless wheel, linear momentum conserving rails, lasers and young's double slit setup, lasers and plastic tubes with glycerin for ray optics experiments, toy pig in a reflecting box, Kundt's tube, solenoid with different metallic guns for Lenz's law experiments, a mechanical-to-electrical energy generator, a miniature catapult, tubing with magnets to demonstrate slow falling (due to magnetic induction), polarization lenses, and magnet-iron powder in oil setup for magnetic field demonstrations. While students play with the demonstrations, SPS members ask questions to lead students to a deeper understanding of the phenomena.

After our program of outreach and establishing of various contacts, we held the Physics fair early in the spring semester to give students an opportunity to bring their middle school projects. We of course accepted only projects exploring physical phenomena. These students had worked hard for months on their projects, which were not trivial in scope. Students in sixth, seventh, and eighth grades had conducted sophisticated science exploring pertinent topics such as biofuel energetics, forensic physics of splattering, optimal geometries for parachutes, and the effect of temperature on battery life. The students competed for prizes including a telescope, science fair tickets, and an iPod Nano. Choosing winners among the presenters was not easy as the scientific potential in the room was high; the judges went around the room and listened to student presentations, judging on traditional aspects such as depth of understanding, rigor, experimental design, and organization but also on aspects such as creativity, originality, and clarity of presentation. Daztar Pagdiwala, an eight grader, brought first place with "Falling Water Ballon Impact", investigating the physics behind splattering as potentially applied in forensics; when asked what the motivation was behind the project, he sheepishly grinned and said, "I like watching CSI". Celeste Gigliotti, a sixth grader, and JD Walsh, a sixth grader, won second and third places with their projects "Ready, Aim, Fire", an incredibly accurate and impressive catapult, and "More Drain, Less Pain", a study on the geometries of storm drains.

While the Physics fair was once again successful with over almost forty presenters from several different groups, we hope to keep expanding the Fair through expanding the outreach program and to continue encouraging students to explore and become engaged with science.

### Financial Statement

Item	Quantity/Description	Price
<b>Physics Fair Prize: Telescope</b>	1xCelestron	\$100
<b>Physics Fair Drinks</b>	Soft Drinks/Water	\$50
<b>Lasers for Laser Demonstrations</b>	1x Green Laser (\$50) 2xRed Lasers	\$100
<b>Total</b>		\$250

The Marsh W. White Funds were spent mostly on the fair and somewhat on outreach equipment as itemized above. It must be noted that the Trinity SPS was able to raise over \$1000 dollars in addition funds to help pay for fair and outreach costs this year.

### Photography from Physics Fair and Physics Outreach

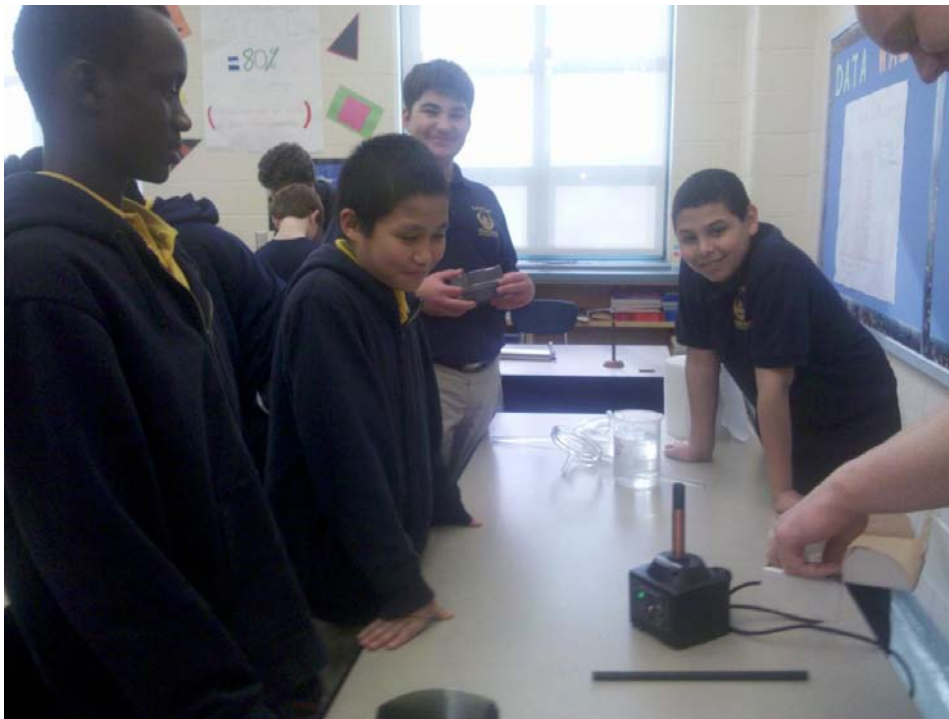
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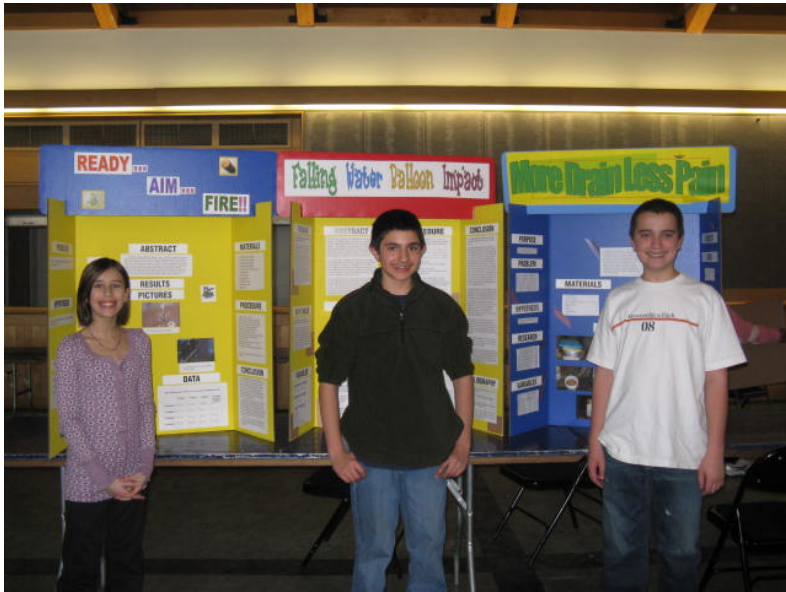
John Bower and Solenoid Setup



Bradon Clary and HMMS Students



John Bower and Solenoid Setup



Fair Winners



Fair Participants waiting to be judged



1<sup>st</sup> Prize winner and judge