

## APPLICATION FOR THE BLAKE LILLY PRIZE

Rowan University's Chapter of the Society of Physics Students has continued to expand its outreach program over the past two years. Last year, the chapter assigned chief responsibility for our outreach program to the chapter's vice president. To begin, he acquired the contact information of all New Jersey high schools within 40 minutes of campus and began contacting them to inquire as to the feasibility of putting on our presentations. For practical reason, we started with schools from which chapter members were alumni or where Rowan alumni were presently teaching.

Last fall, the chapter planned a successful trip to Glassboro High School to provide one full day of what we called "Physics Phun." We demonstrated optics, electricity and magnetism, sound waves, and the law of conservation of momentum to four different class periods. The students were amazed and excited to see that we chose to study physics and wanted to learn more about the demonstrations that we brought with us. The equipment that we brought included two SOCKs, a van der Graaf generator, and a Tesla coil made by the chapter and partially funded by a Marsh White Award.

Near the end of the spring semester, we visited Clearview High School, but this time instead of individual classes, all 80 Clearview students taking physics came for a single assembly. A favorite of the crowd was the liquid nitrogen brought by us; we demonstrated its usefulness, its dangers, and its "coolness." Everyone was given the opportunity to get involved by freezing bits of apple and finding how brittle they became by smashing them. As for the van der Graaf generator, the students urged their teacher to go over to it and make her hair stand on end. They then formed a human chain and found that they could shock people from one end of the room to the other. Most of the students took their chance to come up and spin on a turntable to learn about angular momentum, and to experience what it is like to be a figure skater on ice, using weights to change their moment of inertia. The most confounding demonstration that we offer is a bicycle wheel that is spun and dropped, but which does not fall; it precesses in an upright position due to angular momentum conservation. We conclude each demo by explaining how physics offers solutions to these seemingly magic tricks.

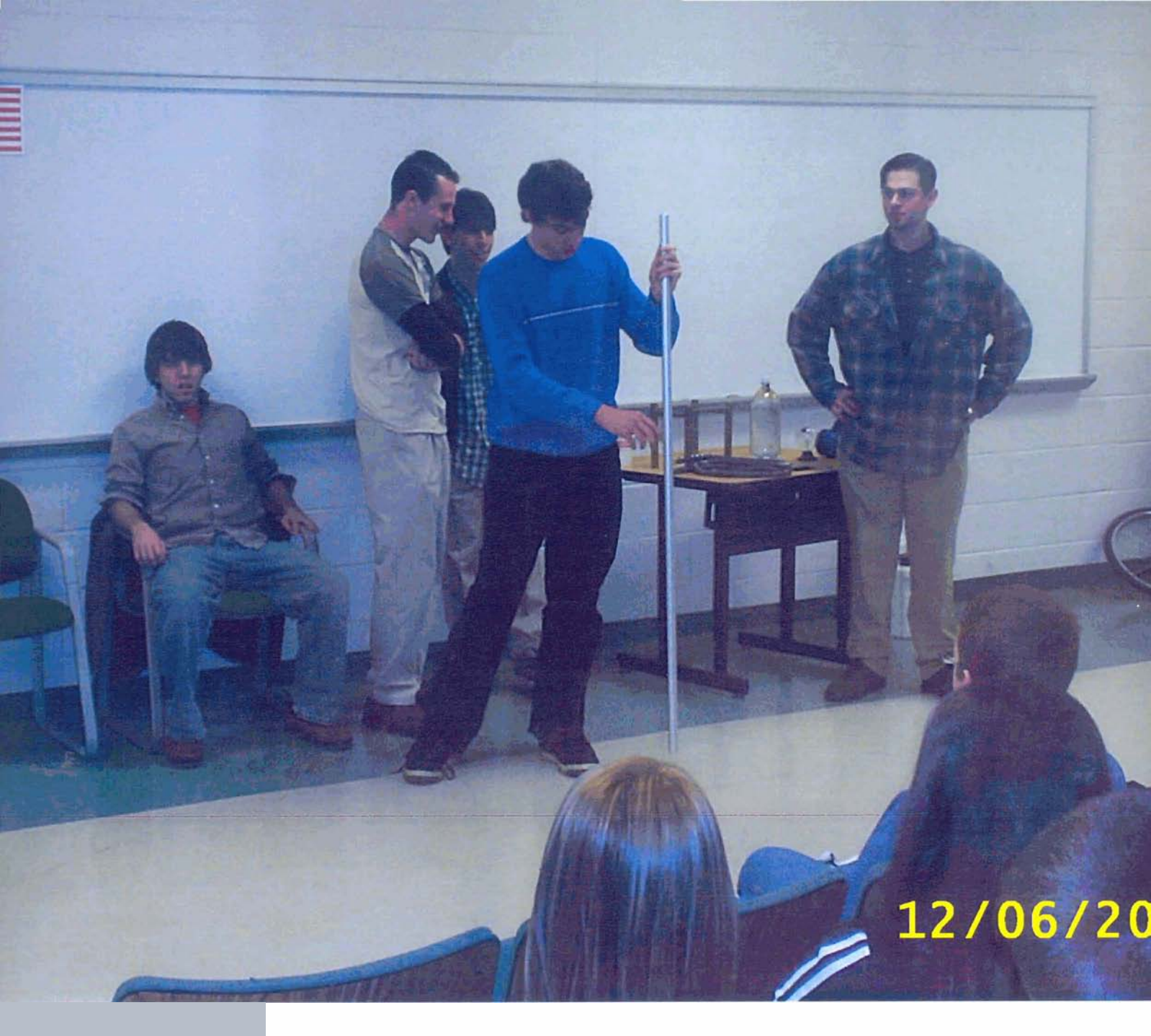
After that semester, we received response from a physics teacher at Clearview stating that many students were inspired and seemed to be more eager in learning more physics in her classes. Also during the break, a couple of the students from Clearview that attended the assembly came to Rowan for a tour of our labs to meet the professors of the Physics Department and to let us know that they plan to be physics majors at Rowan next fall. Unfortunately, the students that we have thus far been able to present to were already taking physics courses. In the future we would like to do our presentations to non-physics students, to encourage kids to take physics electives in high school, and then study physics at the college level.

Early this spring we reserved a table for two days in the Rowan Student Center to show college students of different majors that most anything and everything can be related to physics. We were engaged the entire time, explaining the physics demonstrations to the many students who were attracted to our table while passing by. The demonstrations that we brought ranged from simple kinematics to optics, electricity and magnetism, and of course, more liquid nitrogen. They dealt with conservation of angular momentum, Faraday's Law, and Lenz's Law and many other phenomenon

common in everyday life but often overlooked. Students passing by were drawn in when they saw some “weird things” on our table and were surprised that we were not selling anything. Students loved it so much that the next week they talked about us to their friends and they petitioned us to come back with more exciting demonstrations. We went back for two more days, and students who visited previously came back and brought their friends over to learn more about physics. We have just enough time before the end of the year to make one more trip to the Student Center for another two-day Physics is Fun table.

When our new science building was completed a few years ago, one of the new features that we received was a planetarium. The planetarium is used for the astronomy classes, but it also houses showings on the weekends that are open to the public. Unfortunately our planetarium has been closed for repairs, but it has recently reopened. With this reopening we plan to send some of our members to the weekend public showings to do demonstrations and encourage the kids in the audience to study physics. Not all school districts allow field trips, but in addition to our regular outreach presentations, we would like to start inviting high schools to bring their students on evenings or weekends, possibly offsetting the bus costs with our university funding.

Our current plans include trips to visit Buena, Burlington, Pitman and Salem High Schools during April and May to do presentations to physics classes. Our presentations typically include all of the club’s executive board officers as well as many of other members. Rowan’s neighboring high school, Glassboro High School, has often had our chapter visit and present, as many Glassboro High students end up coming to Rowan. We have scheduled to meet their “Fiziks Klub,” as they are called, and give them a tour of our science building. The tour will include all of the physics laboratories, giving them an idea of some of the things that comprise modern physics research. Along with our many other laboratories, our physics department boasts a laser cooling lab, where we can show students how atoms are cooled to extremely low temperature, an ideal opportunity to encourage students to learn more through the upcoming ‘Absolute Zero’ special. The outreach we perform gives us the opportunity to encourage students to come to Rowan and join our physics club, but it also promotes a broader physics education at the high school level than just kinematics and vectors.



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