

## 2008 Quadrennial Congress Meeting Highlights

By Amanda White, Sajjan Mehta, Alyssa Wilson,  
& Jerome Mlack, SPS Reporters

The Drexel chapter of SPS was extremely excited to attend the 2008 Quadrennial Congress at Fermilab. Five students from our university were able to attend the congress. We presented four posters at the Saturday session, including a poster on our outreach efforts and a poster on the outcome of our research on variable stars. We were so excited to be at the congress that we started learning before we even arrived in Chicago. The first thing we learned was to never say “We’re home free now;” your flight might very well be canceled!

The congress was a great experience for our chapter’s participants. Not only did we have a chance to learn from the lectures given by renowned members of the scientific community, but we were also able to interact and learn from fellow physics students from around the country. The given talks, rather than being discussions of advanced research that would baffle most of us undergraduates, were based on a subject matter that we could all understand and that was highly relevant to us all as aspiring physicists. The fact that the workshops were held not only as a method for improving our understanding of the issues facing the scientific community in general, but also to help Sigma Pi Sigma determine what should be done by a large, national organization to aid with such issues showed that this conference was highly student-oriented. The encouragement of student involvement in the congress process was also very impressive; whether it was helping to plan the congress events, introducing speakers, presenting posters or artwork, or simply ensuring that their voices are heard in the voting process, student participation was a significant and valued component of the congress.

One of the most compelling pieces of the congress was the lecture by Mr. Fred Jerome and Mr. Rodger Taylor. Like many others, we had not been aware that Einstein was an outspoken figure on the front of racism and equality and had only viewed him as a scientific figure, not as a civic dignitary. It was surprising that no previous biographical works on Einstein mentioned his efforts in the civil rights movement. Einstein’s outspoken opposition to racism in the United States truly represented the concept of scientific citizenship. It showed us that we need to be willing to focus not only on our scientific duties, but also our civic responsibilities.

Our group’s points-of-focus during the congress were Margaret Murnane’s plenary lecture on “How to Watch Electrons Sing, Atoms Hop, and Molecules Dance,” and the art contest in Wilson Hall. Both events made lasting and somewhat unexpected contributions to our idea of what it means to be a citizen scientist.

Dr. Murnane's talk focused on her work at the Joint Institute for Laboratory Astrophysics (JILA), through the University of Colorado. She is in the business of controlling light, and using it to understand the nature of nature: she and her colleagues have successfully created controlled

light pulses of as little as 80 attoseconds (that's  $80 \times 10^{-18}$  seconds), and have focused these light pulses on inert gases to create an x-ray laser. As Dr. Murnane explained, such lasers can be used for a plethora of useful applications. We were particularly interested to learn, for instance, that x-ray lasers can be used to probe molecular dynamics as they happen. We also found out that these lasers can be used in lenseless microscopy techniques, which can be used to make very accurate images of objects like thick cells. We were all amazed by the inventiveness of these technologies, and their wide range of applications, from helping scientists understand the world to providing us with technology that can improve the lives of others. To that end, Dr. Murnane's talk was a reminder that scientists often act as citizens and serve their peers directly through their work.

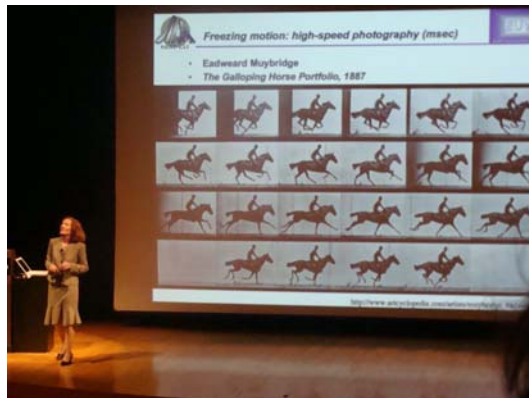
After the lecture, our group had a chance to speak with Dr. Murnane, and it was then that we realized there was a second point to her talk. She was curious to know whether we were able to follow her explanations. Her talk had been very concise and engaging and we told her so. She told us then that it was very important to her to tell a coherent “story” every time she spoke. If people could not comprehend what she wanted to say, she said, there was no point in speaking at all. Thus, we were all given an important reminder that, as a citizen and a public servant, it is the scientist's responsibility to make sure people can understand and appreciate his or her work.

The art contest followed Dr. Murnane's talk. Before the judging commenced, a brief presentation on science and art was given by Lori Napoleon, a guest artist at Fermilab specializing in holography. We got a chance to explore the pieces submitted by many of our peers. The art was vibrant, and in many cases demonstrated the beauty and intricacy of physics. One photo that stood out showed an image of feet in a funhouse mirror; others showed the sky at sunset, for instance. Some of the work, however, was just a reminder that scientists are people, too: another photo showed a scientist hiking through the woods with his young son, hoping to get him interested in the world around him. The art served as another reminder of the many roles we as scientists are expected to play, and we had a great time looking at it all.

Although there were several, sometimes quite humorous, hiccups in the entire process, the congress turned out to be great success. Each of us left Chicago with exciting stories, new knowledge, as well as new friends and contacts. We learned what we can do to spread awareness of the importance of scientific advances as well as the need for better science curricula in schools. We all left with a sense of what kinds of responsibilities we have as the Future Faces of Physics not only to just scientific community, but to society as a whole.



Our group, Alyssa Wilson, Jerome Mlack, Amanda White, Sajjan Mehta, and Andrew Eshelman waiting for the bus to Fermilab



Dr. Murnane giving her plenary lecture on “How to Watch Electrons Sing, Atoms Hop, and Molecules Dance”



Congress participants view the artwork on display in Wilson Hall.



Our group, Sajjan Mehta, Jerome Mlack, Andrew Eshelman, Alyssa Wilson, and Amanda White with artist Lori Napoleon.



Artwork on display in Wilson Hall



Artwork on display in Wilson Hall