

## Society of Physics Students Zone 10 Meeting

### LaserFest at Southern Miss

March 26-27, 2010

By Xandria McWaters and Nicole Rogers, SPS Reporters

The 2010 SPS Zone 10 Meeting was held on March 26-27, 2010 on the Hattiesburg campus of the University of Southern Mississippi. *LaserFest at Southern Miss* was chosen as meeting theme to celebrate the 50<sup>th</sup> anniversary of the laser.

We had 55 registered participants from 6 chapters as follows: Southern Miss 18, Centenary College of Louisiana 4, University of Louisiana-Lafayette 7, Henderson State 12, Rhodes College 4 and LA Tech 10. Unfortunately, the LA Tech chapter was unable to make it.

The following events were scheduled for Friday, March 26, starting at 11:00 am: registration and welcome luncheon, physics demonstrations session, physics department tours, plenary lecture, conference banquet and a laser tag challenge. We had our booth with promotional materials from SPS and LaserFest set up in the main lobby of the Thad Cochran Center, the student dining and conference center at Southern Miss. We wore T-shirts designed especially for this event.



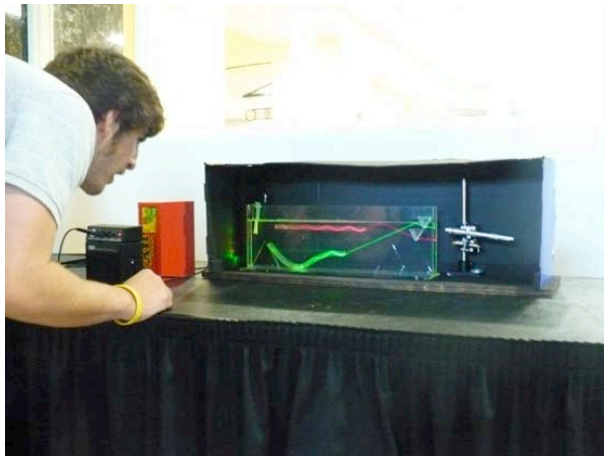
Left: Xandria McWaters and Amanda Palchak. Right: Melanie Brady and Jake Munn

Over the next couple of hours, while we waited for the other chapters to arrive, we had lunch in the Fresh Food Company and we prepared for the next event on the agenda, the *Physics Demonstrations Session*. This event was designed for participants of the Mississippi Science Olympiad, which took place on the Hattiesburg campus the same day. There were several laser demos, liquid nitrogen demos, and a hot-air balloon for everyone's enjoyment. Several faculty of the Physics Department were involved in this event. Being held in a high traffic area in the early

afternoon this event drew a large crowd from the campus community as well. It was a very successful event and we heard many positive comments after the meeting.



*Left:* Dr. Chris Winstead and Tyler Reese popped lots of balloons to demonstrate light absorption. *Right:* Dr. Michael Vera prepares the next generation of physicists



*Left:* Jake loves Brad Crochet's laser demonstration of total internal reflection. *Right:* Amanda used liquid nitrogen to freeze everything she could possibly get from the cafeteria next door



*Left:* Melanie, Ty McCleery and their Zone X Hot-Air Balloon. *Right:* Charles Young and Olivia Hoff scared everybody away with the Van de Graaf generator

After the physics demonstrations session was over, Xandria accompanied the meeting participants to the TEC building for a tour of the Physics Department facilities. We visited the research labs and listened to informal presentations of Dr. Gearba's laser-cooled rubidium experiment, Dr. Winstead's radiation detection experiment, Dr. Vera's computer simulations of acoustic wave propagation, Dr. Pandey's computer simulations of materials, Dr. Mead's equation of the shape of spiral galaxies and Dr. Maung's calculations of meson spectra.

The next item of the agenda was our feature event, a plenary lecture on *Lasers and Their Applications* by Dr. Brian Patterson of the United States Air Force Academy in Colorado Springs. Dr. Patterson gave a spectacular presentation on the history of the laser, how it works, and various Air Force projects that make use of lasers, such as the *Starfire Optical Range* and the *Airborne Laser*. His presentation was very well received by the entire audience. We were very humbled by his knowledge, and stunned by his prowess. Dr. Patterson outstanding contribution to the Zone 10 Meeting was recognized with a plaque and a Zone 10 T-shirt.

After the lecture everyone joined together for the conference banquet. We were excited that Mr. Scott Pfaff, Xandria and Amanda's physics high school teacher was able to join us for the plenary lecture and the banquet. Our chapter visited Mr. Pfaff's physics classes on several occasions.



Conference banquet. *Left:* Xandria and Mr. Pfaff. *Right:* Rhodes College SPS Chapter

We ended the first day of the Zone 10 Meeting with a hearty trip to *Lasermania* for a *Laser Tag Challenge*, where we all had fun experiencing the laser in action. It was a very rewarding and bonding experience that made us grow as a group.

Saturday, March 27, 2010 was the second day of the Zone 10 Meeting. The schedule included the business meeting, undergraduate research presentations, a Sigma Pi Sigma Congress panel discussion, a hands-on session on making holograms, chapter reports and a viewing of the classic movie *Real Genius*.

We started at 9:30 am with the business meeting. Dr. Alina Gearba, our faculty advisor and Zone 10 Councilor led the meeting. She extended a particular welcome to the Henderson State Chapter who attended their first Zone meeting. She congratulated the 2009 Outstanding SPS Chapters: Rhodes College, Henderson State and Southern Miss. She reminded everyone that in order to be considered for the outstanding chapter award, each chapter must submit a chapter report by June 15<sup>th</sup> of each year. Next, the SPS members running for the Associated Zone Councilor position were asked to introduce themselves to the voting membership. Kayli Birdsong from Henderson State and Charles Young from Southern Miss were present at the meeting. Josh Fuchs from Rhodes and Quinton King from Southern Miss were represented by Elizabeth Hook and Dwana King, respectively. Dr. Troy Messina, faculty advisor at Centenary College told us about what his chapter is planning for the 2011 SPS Zone 10 Meeting. Henderson State Chapter volunteered to host to 2012 SPS Zone 10 Meeting. Finally, Dr. Gearba brought up Josh's idea of organizing an "outreach week" in the zone, where every chapter in the zone performs some sort of outreach event during that same week. The idea was unanimously embraced and we agreed to have the first *Zone 10 Outreach Week* in the fall semester. Josh will be in charge of coordinating this outreach event.

There were only three undergraduate research presentations. Kobe Ledet from the University of Louisiana Lafayette gave a presentation called *Determination of the Elastic Constant of Galfenol*. Charles Young from Southern Miss gave a presentation on *Laser cooling and trapping of rubidium atoms in a magneto-optical trap*. Xandria McWaters from Southern Miss gave a presentation on *Cosmology*.

The Sigma Pi Sigma panel discussion was highly effective. Dr. Gearba started the discussion by giving an overview of Sigma Pi Sigma and its mission, the 2008 Congress at Fermilab, and its theme *Scientific Citizenship*. Then she presented us with the 2012 Congress theme, *Connecting Worlds through Science and Service*, and the *Statement on Diversity*, both adopted by SPS at the 2009 Council Meeting. Then she turned over the discussion to Dwana who divided us into groups of four or five people. Each group was given a list of questions related to the theme of the 2012 Congress. Each group brainstormed on ideas for the Congress and presented them to the other groups. These ideas will be compiled by the Southern Miss Chapter and will be submitted to the congress committee for their consideration.

We had to wrap up the Sigma Pi Sigma discussion since lunch was already being served. The chapter reports were done right after lunch. We learned that each chapter that attended the meeting is actively performing outreach in the community. The chapters that are active right now are doing a great job. However, we need to work on getting other universities in our Zone to revive their SPS chapters. This Zone 10 Meeting seemed small, and we hope that in the future there will be more chapters attending.

Next was the holography session, which was a lot of fun! This was a competition, so each chapter had their own kit. The kit was fragile, and a bit difficult to use. The instructions were a little confusing too. However, most of the holograms turned out ok, and some of them looked excellent. Each chapter was allowed to take back home the holography kits for further

enjoyment. After the holography session, some of the chapters had to leave, so we took a brief break and said our goodbyes.



*Holography in Action: Melanie, Amanda, Dwana and Steven Bunkley*

Towards the end of the meeting, we decided to combine the dinner and the movie. We watched half of the movie, then ate dinner, then went back to finish the movie. Setting up the movie was a challenge. It was in a room that we were not familiar with so we didn't know how to get the video and audio to work. Immediately all the students started investigating different buttons and knobs until somebody got it to work. It was funny to see everyone racing to be the first to solve the problem. Somehow that blended very well with the idea of the movie we were watching.

The 2010 SPS Zone 10 Meeting, *LaserFest at Southern Miss*, concluded at 6:00 pm. Thank you all for being part of this exciting event. We are looking forward for the 2011 SPS Zone 10 Meeting at Centenary College of Louisiana.

P.S. Henderson State Chapter sent us a “thank you” card in black and gold, the Southern Miss colors. We absolutely love it!