

## Utah State University SPS Annual Report – 2006-7

The SPS chapter at Utah State University enjoyed an unusual year of accomplishment in 2006-7. The highlights include: (1) hosting the Zone 15 meeting, October 6-7, 2006; (2) resurrecting a long dormant chapter of Sigma Pi Sigma and inducting 22 new members, March 23, 2007; (3) holding a star party attended by over 200 people, April 13, 2007; (4) engaging nearly 150 students in a trebuchet competition, April 27, 2007; and (5) initiating a middle school educational outreach program (ongoing). In addition, we are pleased to report that our members garnered a number of national (a Goldwater Scholarship, a Goldwater Honorable Mention, and a Fulbright Student Scholarship) and local awards (the College of Science Outstanding Undergraduate Researcher for 2007 and three Willard L. Eccles Undergraduate Research Fellowships) for their scholarly work.

*Zone 15 Meeting:* The Zone 15 meeting was held in conjunction with the APS Four Corners Fall Meeting, here at USU. At that meeting several of our members presented posters and talks. Keith Warnick presented a poster titled, “Reconstructing Systems of Nonlinear Differential Equations from Time Series”, Steven Hart presented a poster titled “Electric Field Induced Hopping Conductivity: An Investigation of Electric Field-Dependent Resistivity in Polymers”, Jennifer Albretsen, our chapter secretary, presented a poster titled, “Production and Examination of Nanocrystalline Copper”, and Jodie Tvedtnes, our chapter president, presented a poster titled “Comparison of Satellite and Ground-Based Data on Polar Mesospheric Clouds”. Aided by a grant from the national SPS office, we also provided a luncheon at the meeting and were given a talk by Gary White, Director of SPS. The other major way our members were involved in this meeting was through student introductions of the invited speakers. SPS members from two other Zones attended this event as well. A full report on the Zone 15 meeting can be found at: <http://www.spsnational.org/meetings/reports/2006/zone15.pdf>

*Other research presentations by SPS members:* Heidi Johnson, at the APS-DPP meeting in Philadelphia, October, 2006; Steven Hart, at the 2007 APS March Meeting in Denver, March, 2007; Sydney Chamberlin, at the Utah Posters on Capitol Hill, January, 2007 and the Utah Undergraduate Research Conference, February, 2007; Jan Marie Andersen, at the National Conference on Undergraduate Research at Dominican University in California, April, 2007; and 12 other poster presentations at the USU Student Showcase Celebration (left), April, 2007.

*Induction Ceremony for Sigma Pi Sigma:* Held on March 23, 2007, in conjunction with the Idaho-Utah Section of the American Association of Physics Teachers meeting in Logan. We inducted 22 people (right) into the honor society and followed the ceremony with a pasta dinner. This event, partially funded by another grant from SPS, included representatives from several other chapters in Zone 15 as well. A full report on our induction ceremonies is at: <http://www.spsnational.org/meetings/reports/2006/zone15.pdf>

*Star Party:* On April 13, 2007, we co-hosted a Star Party with the USU



Astronomy Club. That activity was a public event including a lecture on astronomy and observing the sky. Afterward, we had a dozen telescopes out for people to view Saturn, the Orion Nebula, and Venus. We also had star tours and sold concessions to raise money for our outreach efforts.



*Trebuchet competition:* No doubt the promise of extra credit in two introductory physics courses helped produce a hoard of eager applied classical mechanics at our event. To get their credit, students were supposed to predict length and height of trajectories given dimensions of the trebuchets (there were two, left) and the weights used.

We launched water balloons and gave prizes to those who could catch them without the balloons breaking. The ingenious method shown on the right might be called “The Spandex Solution.”



In addition to the large crowd of students, faculty, and passersby, we were delighted to find a returning alum – Tracy Schwab ('93) – lurking about (left). Tracy is responsible for creating web pages for the national SPS site and more photos of our trebuchet event taken by him can be found at

[http://www.spsnational.org/meetings/reports/2007/photos/usu\\_trebuchet.htm](http://www.spsnational.org/meetings/reports/2007/photos/usu_trebuchet.htm)



*Various other activities:*

- We co-sponsored a Pumpkin Catapult in October with the Electrical Engineering Club IEEE.
- In November 2006 USU Professor Michael Taylor gave us a presentation on upper atmospheric phenomena.
- Also in November, we took a trip to Thiokol (the company that manufactures the solid fuel booster rockets for the Shuttle) to view a static test of one of their rocket boosters during Fall 2006.
- To celebrate our receiving the 2005-6 Outstanding Chapter Award – thank you, SPS – we enjoyed a movie night where we ate pizza and watched an episode of Star Trek.
- We also had an informal movie night where we watched *Galaxy Quest* and ate popcorn.
- We reviewed and discussed articles out of Science magazines.
- On November 23<sup>rd</sup> we were able to have lunch with one of the department's colloquium speakers, a graduate student from Michigan Tech on a recruiting trip, named Jacob Fugal.
- In March, we had a Physics Demo Night where we showed all of our members the demonstrations that we are going to take into grade school classrooms.
- In order to recruit more students we set up a table at A-Day on the Quad, a

campus wide club recruitment event. • We began a mentoring program for incoming freshman in which they were paired with a junior or senior in the department so they could be shown around and introduced to some of the professors, and given information about what resources were available to them.

*Service projects and plans for the future:* We participated in a campus wide blood drive and continued repair work at the Bear Lake Observatory. We are planning another clean-up trip to the observatory as well as opening up the possibility of doing group research there using a meteor radar which some of our members are helping to design and build. We have also begun taking demonstrations into local classrooms. Our first visit was to Children's House, a pre-school on the USU campus. We also have plans to go, in the next month, to Millville Elementary to do demos for a 2<sup>nd</sup> grade and a 4<sup>th</sup> grade class, as well as doing demos at a local middle school. We will be continuing these trips into the summer. Next year we are planning to incorporate the Physics Quest program into our outreach efforts by taking the kits into the classrooms and either working through them with the students or walking the teachers through them so they can go through them more successfully with their students. Finally, we plan to produce a Department Yearbook in the fall and will have a regular column in the twice-yearly Department newsletter.

Our involvement in other SPS programs included mustering a write-in vote campaign for Associate Zone Councilor and the submission of a nomination for the Outstanding Advisor Award. During the past year our chapter has grown considerably and has become a well-established presence on the USU campus. We made an impact on the community through our efforts in outreach and with the star party and our membership has increased immensely since the chapter was revived in Fall 2005. More about USU SPS can be found at

[http://www.spsnational.org/programs/awards/2006/outstanding\\_chapters.pdf](http://www.spsnational.org/programs/awards/2006/outstanding_chapters.pdf)

and at

<http://www.usu.edu/ust/index.cfm?article=13657>

Submitted by Jodie Tvedtnes, President USU SPS, April 27, 2007