

# SIGMA PI SIGMA POSTER SESSION ABSTRACTS

## FRIDAY EVENING POSTER SESSION

**PRESENTER:** Anderson, John; Rochester Institute of Technology; Invited, Former SPS Councilor Zone 2

**POSTER SESSION:** Friday Evening

**TITLE:** Zone 2 Celebrates the World Year of Physics

**ABSTRACT:** To celebrate the World Year of Physics, a variety of events are being planned in the state of New York and the provinces of Quebec and Ontario (Zone 2 of the Society of Physics Students). This poster will highlight these coming events.

**PRESENTER:** Chaturvedi, Ram; SUNY at Cortland

**POSTER SESSION:** Friday Evening

**TITLE:** Chandrasekhar Venkata (C.V.) Raman: A Home Grown Genius

**ABSTRACT:** Raman was born on Nov. 7, 1988. He received his BA and MA from Madras University at the age of 16 and 18 years respectively. After that he devoted his life to do research in Physics which was recognized internationally, winning him the Nobel Prize in 1930. He passed away at the age of 82.

**PRESENTER:** Claxton, Tim; East Central University (ECU); Invited, SPS Chapter Challenge Winner

**POSTER SESSION:** Friday Evening

**TITLE:** ECU Outreach for World Year of Physics

**ABSTRACT:** We want to reach students in the secondary school system and general public by means of making a video about the twin paradox and how Einstein's relativity must be used today to correct GPS systems. We then will distribute these videos to local schools during visits in hopes of inspiring young minds through humor and science.

**PRESENTER:** Gaither, Michael; Austin Peay State University; Invited, SPS Chapter Challenge Winner

**POSTER SESSION:** Friday Evening

**TITLE:** Del Square Psi's Relative Outreach Plans for WYP2005

**ABSTRACT:** The Chapter at Austin Peay State University is planning several events to celebrate WYP2005 including our award winning chapter challenge proposal. The events and activities that our SPS chapter, Del Square Psi, have planned will involve community, campus, astronomy events, seminars, Einstein appearances, T-shirts, and, of course, tons of fun with physics.

**PRESENTER:** Gregg, Allison; University of Louisville; Invited, SPS Intern

**POSTER SESSION:** Friday and Saturday Evenings

**TITLE:** 2004 Analysis of ComPADRE Resources

**ABSTRACT:** ComPADRE is a web-based network of collections designed for faculty and students to find and share physics and astronomy teaching and learning resources. In the summer of 2004, an analysis was conducted to examine the content and structure of the ComPADRE resource database. The classification of materials by topic, grade level, and usage was studied. Our findings include large amounts of resources within general categories and few resources in others. The specific findings and recommendations for balance are discussed.

**PRESENTER:** Jessica Guidry; University of South Alabama

**POSTER SESSION:** Friday Evening

**TITLE:** Investigating Neglected Binary Star

**ABSTRACT:** The University of South Alabama chapter of the SPS received a Sigma Pi Sigma Undergraduate Research Award to purchase a bifilar micrometer to use with a telescope and begin a program of study of "neglected" double stars as listed in the Washington Double Star Catalog (WDS). We have calibrated the micrometer and made detailed measurements on a neglected double star.

**PRESENTER:** Gustafson, Karl; University of Colorado

**POSTER SESSION:** Friday Evening

**TITLE:** Bell's Theorem and the Einstein-Podolsky-Rosen (EPR) Dilemma

**ABSTRACT:** It is generally believed that John Bell's famous Theorem/Inequality was definitive in resolving the Einstein-Podolsky-Rosen (EPR) proposal that quantum mechanics was incomplete. I will show how much of the Bell Theory may be placed within a

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general operator trigonometry which I developed for totally different reasons in the late 1960s. From that mathematical viewpoint, certain key issues in the EPR-Bell debate are seen as “just geometry” and unrelated to nonlocality.

Reference: K. Gustafson, *Bell's Inequalities, in The Physics of Communication*, World Scientific, 2003.

**PRESENTER:** Harris, Brett; Middle Tennessee State University

**POSTER SESSION:** Friday Evening

**TITLE:** Femtosecond X-ray Diffraction

**ABSTRACT:** Femtosecond (fs) laser technology is used in order to investigate atomic motion within solids. A high-powered, femtosecond beam is split up into two parts, one visible and one x-ray. The visible beam acts as “pump” pulse, i.e., it excites or “pumps” the superlattice sample by creating a phonon within the lattices. Then the x-ray beam acts as “probe” pulse, i.e., it examines or “probes” the structural changes due to the pump pulse. Hence the term “pump/probe” spectroscopy. High repetition rate lasers give results which detect a phonon on the picosecond time scale.

**PRESENTER:** Jacobs, Diane; Eastern Michigan University; Invited, Former SPS Councilor, Zone 7

**POSTER SESSION:** Friday Evening

**TITLE:** Building Student Interest in Physics Through SPS Zone Meetings

**ABSTRACT:** Zone meetings are an exciting forum where undergraduates from very diverse colleges and universities can gather to share information about what it means to be a physicist. The students can make professional presentations of their research work in an environment more nurturing than a traditional APS meeting. They can also discuss what attracts students to study physics and what role the Society of Physics Students can play in retaining majors. A synopsis of the past five meetings in Zone 7 will be presented along with some plans for activities that celebrate the International Year of Physics.

**PRESENTER:** Rosell, Sharon; Central Washington University; Invited, Former SPS Councilor, Zone 17

**POSTER SESSION:** Friday Evening

**TITLE:** 2005 World Year of Physics in Zone 17

**ABSTRACT:** This poster will describe some of the activities that are being planned to celebrate the 2005 World Year of Physics in Zone 17 of the Society of Physics Students. Zone 17 is located in the Pacific Northwest. It comprises Washington State, Oregon, northern Idaho and Alaska.

**PRESENTER:** Schuhmann, George; University of Louisville; Invited, SPS Chapter Challenge Winner

**POSTER SESSION:** Friday Evening

**TITLE:** WYP Rates a Ten!

**ABSTRACT:** The University of Louisville Chapter of SPS is embarking on 10 activities to publicize the World Year of Physics in its locale. Among them are a series of public lectures in a planetarium, appearing on morning TV talk shows, suggesting feature articles for the print media, letters to editors, press releases on special WYP chapter meetings, and five more you can learn about by visiting our display Friday evening.

**PRESENTER:** Shanks, Matthew; Rhodes College; Invited, SPS Intern

**POSTER SESSION:** Friday Evening

**TITLE:** Educational Outreach and Science Policy an SPS Summer Intern Perspective

**ABSTRACT:** Ask a physics student to name three important physicists and he might answer, Einstein, Newton, and Bohr. However, ask him to name three important people to science policy making and he might respond with, uhhhh and a shrug of his shoulders. Just like the growing apathy for political policy, this chasm in science policy interest is a problem that needs to be solved. Unless interest in science policy is increased, national funding for future physics and science research could be decreased or cut out altogether. In addition to encouraging the current generation to take initiative in policy, interest in science must be stirred in younger generations to continue the process of science in both the scientific and political realms. This summer I worked as an SPS intern. During the eight weeks I was in Washington D.C., I staffed a booth at a congressional science lobbying event and helped create an outreach tool designed to stimulate interest in science.

**PRESENTER:** Williams, Karen; East Central University

**POSTER SESSION:** Friday Evening

**TITLE:** Beam Profiling with PTDS

**ABSTRACT:** Photothermal Deflection Spectroscopy (PTDS) is a common method used in flame studies, but it may also be used to capture the beam profile of a laser beam in real time as the laser pulses. The physics behind PTDS and integration of the signal to obtain the beam profile will be shown.

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