

Students, Faculty Attend Joint Physics Meeting in San Antonio

From a contribution by John Calvin Martinez (Senior, Physics)

Members of the Society of Physics Students (SPS) as well as members of the Physics Department faculty recently attended the Fall 2010 Joint Meeting of the Texas Sections of the American Physical Society (APS) and the American Association of Physics Teachers (AAPT), in San Antonio. Most of the SPS students are regular attendees of these conferences, and are encouraged to go by the department faculty. At an APS Conference, students are introduced to a wide variety of research topics in physics; they get a chance to see what graduate school is like, and to meet well known and respected physicists from universities and colleges all over the State of Texas.

In the past, Texas A&M-Kingsville has been represented by faculty giving talks in their various fields of expertise. This time; however, not only did Dr. Hewett, the Chair of the Physics and Geosciences Department, deliver a talk, but senior physics major, and Vice President of the SPS, John Calvin Martinez also presented a talk. Dr. Hewett gave an interesting talk on "Intuitive Solutions to Paradoxes in Special Relativity", and John Calvin discussed work he had done this summer at Texas A&M's Cyclotron Institute, as a participant in an NSF sponsored REU program.



Standing on the balcony of the University Center on the UTSA campus are (left to right) students John Budd, John Calvin Martinez, Jose Trevino, and Marki Shedd, and professors Lionel Hewett, Wayne Kinnison, Charles Allison, and Paul Cox who attended the Joint TSAPS/TSAAPT/SPS Zone 13 meeting that was held there on October 21-23, 2010.

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Session topics at the Conference included: High Energy and Nuclear Physics, Atomic and Optical Physics, Astronomy, and Nanoscience, among others. Participants can either stay for a whole session, or move between sessions for talks of particular interest. These conferences are a very beneficial experience for the students, and the more involved students become in the conference, the more they will be able to get out of it.



Physics Majors Receive Scholarships for the Fall 2010

Rico Garza receives Burgin Dunn and Olan Kruse Scholarships

Marki Shedd receives Alumni and Olan Kruse Scholarships

John Calvin Martinez receives NRC Workforce Development Scholarship...

so did Paco Trevino...

and John Budd.

NRC Workforce Development Scholarships are for \$12,000 per year.



Rico Garza was awarded the \$300 S. Burgin Dunn Scholarship and the \$500 Olan Kruse Scholarship for this semester. Rico is a junior physics major interested in astronomy. He is currently working with Lecturer Charles Allison on an undergraduate research project to upgrade the department's 16-inch astronomical telescope to use a photometer to study variable stars.



Marki Shedd was awarded the \$300 Alumni Physics Scholarship and the \$500 Olan Kruse Scholarship this semester. Marki is a sophomore double majoring in Physics and Chemical Engineering. She is one of our most active role models whose activities include serving as current president of the Society of Physics Students chapter.



John Calvin Martinez received a \$6000 NRC Workforce Development Scholarship this semester. He is a senior physics major, vice president of the Society of Physics Students chapter, and will graduate in December 2010. His senior project was on Fractal Radio Antennas and he plans to enter the graduate program in Nuclear Engineering at Texas A&M University upon graduation.



Jose F. ("Paco") Trevino received one of the \$6000 NRC Workforce Development Scholarships this semester. He is a junior physics major taking the Applied Nuclear track in order to pursue a career in nuclear engineering.



John Budd also received one of the \$6000 NRC Workforce Development Scholarships this semester. He is a sophomore physics major also taking the Applied Nuclear track to pursue a career in nuclear engineering. He is an active member of the Society of Physics Students, currently serving as secretary.

Full-Ride Academic Scholarships for Nuclear Science

Scholarships in the amount of \$12,000 per year are available to sophomore through senior physics majors who have an interest in nuclear science. These scholarships are made available through a grant from the United States Nuclear Regulatory Commission for students who have an interest in any aspect of nuclear science including nuclear engineering, nuclear power, radiological safety, health physics, regulatory activities, etc. For further information, see the scholarships page on the physics web site at physics.tamuk.edu.

The Texas Nuclear Power Institute Career Fair 2010

Five students from the Texas A&M-Kingsville Society of Physics Students (SPS) chapter, Marki Shedd (sophomore, president), John Calvin Martinez (senior, vice president), John Budd (sophomore, secretary), Klint Mann (junior, treasurer) and Jose "Paco" Trevino (junior), went to Texas A&M-College Station for the Nuclear Power Institute's (NPI) first annual career fair on September 16, 2010, with Dr. Kinnison, a member of the Texas NPI, and Physics Professor at Texas A&M University-Kingsville. (TAMUK is a partner institution in the NPI.) Several of the students attending the career fair had participated in the new Nuclear Operations Certification Program at Texas A&M-Kingsville, which started last Spring. The students met with recruiters from several organizations who hire students with a nuclear science background to full-time jobs or for summer intern positions. Students who attended submitted resumes that were made available to all the industry representatives, so that the students could be considered for internships, or prospective future employment. The career fair opened with brief talks from the representatives of each sponsoring organization, including: the NRC, Idaho National Labs, Southern Power Company from Georgia, the South Texas Project, and others. Each representative shed light on different aspects of the current needs of the nuclear power industry, from replacing an aging workforce, to creating a workforce for new plants currently under construction, to research and development of new reactor technology and industry regulation. An added benefit of the trip was that Texas A&M's College of Arts and Sciences was holding its annual career fair the same day, so after the NPI career fair was over, the SPS students were able to look at what was available at the Arts and Sciences' career fair.

While at A&M, the group met with TAMUK graduate and former SPS member David Daumiller (BS '10, Physics), who is now a graduate student in the Physics Department of Texas A&M



Marki Shedd, Paco Trevino, Dr. Kinnison, Klint Mann, John Budd and John Calvin Martinez (left to right) during the tour of the Mitchell Institute for Fundamental Physics and Astronomy Building at Texas A&M while on the NPI Career Fair trip.

University-College Station. David was able to give the group a tour of the two new physics buildings on A&M campus, the Mitchell Physics Building and the Mitchell Institute for Fundamental Physics and Astronomy.

*Five majors attend
Nuclear Power Institute
Career Fair 2010 in
College Station*



Local SPS Officers

Meets Thursdays in Hill Hall Library, 12:15 PM

SPS participated in College Night Out, Alice HS College Night, and Javelina Preview so far this fall.

TAMUK Society of Physics Students (SPS)

The TAMUK Chapter of the Society of Physics Students officers for 2010-2011



Marki Shedd
President



John Calvin Martinez
Vice-President



Klint Mann
Treasurer



John Budd
Secretary

The Society of Physics Students is a national organization whose purpose is the advancement and diffusion of knowledge of the science of physics and the encouragement of student interest in physics throughout the academic and local communities. Membership in the local SPS chapter is free and open to anyone who has or might develop an interest in physics or science in general. The local chapter holds regular meetings beginning at 12:15 PM each Thursday in the library in Hill Hall. Everyone is welcome.

Recent Activities

The local chapter of the Society of Physics Students has gotten off to a fast start this term. So far they have been a major hit at the College of Arts and Sciences College Night Out. That is an annual event where the various programs in the college have students and faculty



John Budd and John Calvin Martinez demonstrate conservation of angular momentum to a visitor at the physics display during College Night Out while Paco Trevino discusses the telescope with another visitor in the background.

describe their program to students who visit. At that event SPS and faculty demonstrated conservation of angular momentum by determining who could spin the fastest and stay on a rotating platform. Other exhibits included a telescope from the astronomy section and a demonstration of Lenz's Law with the jumping rings.

The SPS has also gone to Alice HS for their College Night in addition to participating in a session of the Javelina Preview for prospective TAMUK students, demonstrating similar activities. Wherever they go they have successfully shown that physics can be fun.

Departmental Contributors

Mrs. [Lucy Kruse](#), a great friend and strong supporter of the Physics Program at TAMUK, made a generous donation on behalf of the Physics Program at TAMUK to the State University of New York Cortland, Department of Physics during the summer of 2010 which cleared the way for SUNY Cortland to donate their 470-KeV Van de Graaff Proton Accelerator to TAMUK's Physics Program. Details of the accelerator and its future impact to the physics program are found elsewhere in this issue.

Majors News

[David Daumiller](#) became the Department's most recent graduate at the end of the Spring 2010 semester. Daumiller, who came to TAMUK as a freshman in Fall 2006, graduated *summa cum laude*. David is now a physics graduate student working towards his Ph.D. at Texas A&M University.

During the summer, [John Calvin Martinez](#) (senior, Robstown) participated in the Research Experiences for Undergraduates (REU) at Texas A&M University in the Cyclotron Institute under Dr. Carl Gagliardi as his mentor. John Calvin helped to develop new trigger logic for the STAR detector. STAR is one of the two premier detectors running at the Relativistic Heavy Ion Collider at Brookhaven National Laboratory. John Calvin presented a talk on his work at the recent APS meeting in San Antonio as well as at the American Physics Society Division of Nuclear Physics (DNP) meeting in Santa Fe, NM. The DNP presentation was funded by the REU program because of the high quality of the work during the REU.

During the Spring 2010 Semester, one of our physics majors, [Pilar Longoria](#), was called up for active duty by the United States Navy. Pilar plans to return to TAMUK after his tour which will include almost six months in Afghanistan. Our well wishes and prayers go out for Pilar's safe return.

Outreach Activities—GEAR UP

[Dr. Butterworth](#) has become a Faculty Fellow for GEAR-UP (Gaining Early Awareness & Readiness for Undergraduate Programs), assigned to Falfurrias Junior High School. GEAR-UP is a nationwide program designed to improve the chances that students entering college are academically prepared by intervening as early as the sixth grade. Dr. Butterworth will teach the sixth, seventh and eighth grade science classes in a three-week rotation, and assist the teachers both in strengthening their own scientific backgrounds and in planning their science-related classroom activities.

Lucy Kruse facilitates donation of accelerator.

Daumiller graduates summa cum laude and is working towards Ph.D.

Martinez REU garners presentation at Santa Fe DNP Meeting.

Longoria in Navy

Butterworth works with Falfurrias Junior High.

Butterworth at John Paul II in Corpus

Kinnison visits Pan American High

Kinnison and Castanon visit Palacios High School

Outreach Activities—Recruiting Trips

On Wednesday, October 27, 2010, [Dr. Edward Butterworth](#) made a recruiting visit to John Paul II High School in Corpus Christi, a new high school that graduated its first class last spring. He met the principal, Fr. Peter Marsalek, and gave a presentation to the AP Physics class. The students were very enthusiastic, and further events are planned, including another trip, accompanied by TAMUK students, to speak to some of the younger students. They have also expressed interest in having the AP Physics class come to TAMUK to meet the faculty and sit in on some of the physics classes. Three of the students showed definite interest in attending TAMUK.

On November 2, [Drs. Wayne Kinnison](#) and [Thomas McGehee](#) of geosciences visited Pan American High School here in Kingsville. They visited with all of the senior class at the school and described both the physics and the geosciences opportunities offered at TAMUK. There were approximately 35 students present and several filled out cards to get more information about the department's programs. Dr. Kinnison extended an offer to the students to contact him for a tour of the department.

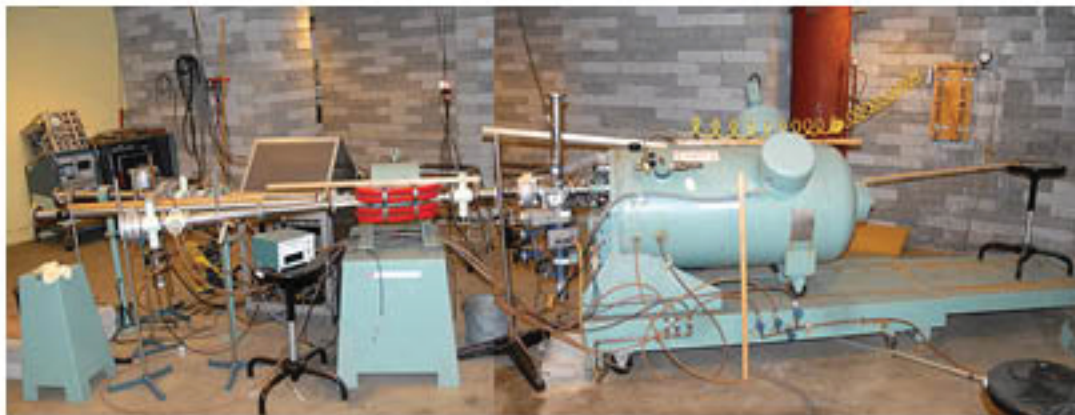
[Drs. Wayne Kinnison](#) and [Thomas McGehee](#) and physics major [Elizabeth Castanon](#) (freshman, Palacios) spent the day of November 4 at Palacios High School. Kinnison and Castanon presented the physics program to approximately 250 students during the morning. During the afternoon the school held its College Day where approximately 10 other colleges including the TAMUK recruiting program met with students. The physics program received 17 requests from students for more information about the program.



Kinnison and Castanon met with students during the morning in several classes at Palacios High School before being part of the Palacios recruiter's program during the afternoon.

Van de Graaff Accelerator Comes to TAMUK

In August 2010, Dr. Wayne Kinnison acquired a 470-keV Van de Graaff positive-ion accelerator for the physics program at TAMUK from the Physics Department of the State University of New York Cortland, for the cost of shipping it from Cortland, New York to Kingsville. Those costs were covered by a generous donation from Lucy Kruse and grants from the United States Nuclear Regulatory Commission and from the Nuclear Power Institute here in Texas in which TAMUK is a partner.



A composite of photos of the Van de Graaff Accelerator before disassembly at Cortland. The meter sticks along its length and height set the scale. The shield wall behind the machine was also disassembled and shipped to TAMUK

Two TAMUK physics majors, John Calvin Martinez (senior, Robstown) and John Budd (sophomore, Harlingen), along with an accelerator technician from College Station, accompanied Kinnison to Cortland to disassemble, package, and assist in the loading of the accelerator and a shield wall for shipment to Kingsville. The last of the shipment left Cortland in mid-August and by the last week of August all of the components of the accelerator had arrived at Hill Hall here at TAMUK.

The accelerator will be refurbished and reassembled during the Fall 2010-Spring 2011 terms. Besides Martinez and Budd, Coy Bolton (Biology senior, Kingsville) and Marki Shedd (sophomore, Corpus Christi) are currently working in Kinnison's lab to get the machine up and running.

Once operational, the initial use of the accelerator will be to accelerate protons and alpha particles up to as much as 500 keV for use in undergraduate research and education, as well as research in nuclear physics, biology, chemistry and engineering. The machine can be used for surface physics studies utilizing Rutherford Backscattering Analysis (RBS) and Particle Induced X-ray Emission Spectrometry (PIXE). Students will learn how to operate the machine for use in student based research and education in accelerator physics and health physics. It will be a valuable tool to students in many senior projects.

*Physics Program gets a
450-KeV Van de Graaff
Proton Accelerator.*

James Regan, 1963 alumni, worked in the NASA manned space flight program.

James Regan and astronaut Buzz Aldrin toured for NASA commemorations of 40th anniversary of Moon Landing.

Alumni Profile

James Regan - BS Physics, 1963

James Regan graduated with a Bachelor of Science in Physics from Texas A&I University in 1963. After graduation he began a 36 year career as an aerospace engineer working in the manned space flight program at the Johnson Space Center in Houston, TX.

Regan was Section Head of the Flight Equipment Section which provided hardware for the astronauts. The main hardware was the photographic equipment used on all missions from Gemini to the Space Shuttle. His group also provided much of the crew's personal equipment. Regan is now retired, but for the last 10 years he worked at NASA as Subsystem Manager for Crew Accommodation on the shuttle vehicles. That section was responsible for basically all equipment relating to or used by the crew inside the crew module of the shuttle vehicle. That includes more than 650 individual items ranging from large complex systems like the crew seats and emergency escape hardware to stowage lockers and consumables.

In 2009 Regan was asked to participate, along with several Astronauts, in marking the 40th Anniversary of the first lunar landing (Apollo 11). Many celebrations throughout the world have commemorated the event. In one Buzz Aldrin and Regan opened an exhibit at the Space Museum in Hong Kong.



James Regan (left; BS Physics, 1963) and Apollo 11 astronaut Buzz Aldrin at the opening of the Hong Kong Space Museum and its celebration of the first manned landing on the moon.

Astronomy News

Astronomy has had two public viewings so far this term. Over a hundred (112) guests signed the log for the observatory's first Public Viewing Night of the term on Wednesday, September 22. The theme was "The Autumnal Equinox"; the equinox, occurring that evening at 10:09, marks the astronomical beginning of Fall. Unfortunately telescope viewing was not possible due to heavy cloud cover and the threat of rain. Nevertheless, the night included several activities. There was a tour of the telescope's dome, an automated PowerPoint presentation (using new equipment from a CCRAA grant) on the equinox, Mars, and Venus, an opportunity to view Venus through the clouds from the dome and from the west deck, and, finally, a video was shown entitled "If the Earth Had No Moon". Several students helped Mr. Allison with the evening. SPS members assisting included Marki Shedd, John Budd, and Jesus Salas. Students from the astronomy class who helped included Gabriel Hinojosa, Amanda Stanley, Nicole Villarreal, and Elvira Escobedo.

The second Public Viewing Night on Thursday, October 14, drew only 66 guests. Guests who did come got good looks at the Moon (waxing just past first quarter) and at Jupiter with its four largest moons all showing. Other views included Mars, Neptune, Uranus, the globular star cluster M13, and the star Fomalhaut (which was recently in the news because a planet has been photographed around it). Downstairs, the new large-screen monitor presented a show marking the anniversary of the Apollo 7 mission (an 11-day Earth-orbit mission testing the Apollo spacecraft). Physics major Emily Mack and astronomy students Orlando Gonzalez and Elvira Escobedo assisted Mr. Allison.

Astronomy Upgrade

The Astronomy program has some new equipment, thanks to a \$8000 CCRAA grant received in Spring 2010 to improve its astronomy research and outreach activities. A large-screen monitor, a telescope (a 190-mm Mak-Newtonian), and three computers are among the items purchased.

The new telescope is intended to be mounted piggyback to TAMUK's 16" Newtonian telescope, to provide images for other equipment. The large-screen monitor, used with one of the new computers, will provide presentations for the public viewing nights that will include live images from the new telescope, as well as astronomy videos. The other new computers are used for capturing images using a digital camera, and for controlling the telescope.

The program also purchased photometric filters and a computer-controlled filter wheel, plus an adaptive-optics device which will reduce problems with atmospheric turbulence and mechanical jitter, both of which cause blurring. This new equipment will enable users, including students, to do basic research by measuring star magnitudes and monitoring them over time.

Two public viewing nights so far this term

CCRAA grant provides new equipment for student research in astronomy.

NPI offers courses to TAMUK for nuclear certification program.

Hewett explains Special Relativity Paradoxes at AAPT meeting

Physics offers courses for Nuclear Power Engineering Technology Certificate.

Other Physics News

On October 4, Drs. Kinnison and Hewett attended the Advisory Committee Meeting for the Nuclear Power Institute (NPI) at Texas A&M University–Prairie View. The NPI consists of a collaboration of universities and nuclear power companies who are concerned about the need to encourage people to enter the nuclear industry. This year a significant thrust has been to develop a series of course offerings which allow physics and engineering students to obtain a Nuclear Technology Certificate with their BS degrees which will make them more appealing for nuclear industry employment. The Department began offering the courses in Spring 2010.

Dr. Hewett, Interim Chair of the Physics/Geosciences Department, presented a paper entitled "Intuitive Solutions to Relativistic Paradoxes" at the Fall 2010 Joint Meeting of the Texas Section of the American Physical Society, Texas Section of the American Association of Physics Teachers, and Zone 13 of the Society of Physics Students, held at the University of Texas–San Antonio, October 23, 2010. The presentation illustrated how one can develop the intuition to resolve many of the apparent paradoxes associated with Einstein's Special Theory of Relativity – paradoxes resulting from length contraction, time dilation, and simultaneity – paradoxes such as the Twin Paradox and the Pole-Barn Paradox. (Google them if you like.)

Nuclear Power Operator Certification Program

The physics program at TAMUK offers five courses which lead to a Nuclear Power Engineering Technology Certificate. The courses are offered in conjunction with Texas A&M University at College Station. Those courses are open to all majors and students. Students in mechanical engineering, chemical engineering, electrical engineering, and physics majors interested in nuclear science careers but who may not want to be a nuclear power operator will still find this certificate especially attractive to future employers. For further information, interested individuals may contact Dr. Kinnison at kfwwk00@tamuk.edu.

Calling All Alumni

We in the Physics Program need your help to [update our database](#) on alumni. Please, go to our website at <http://physics.tamuk.edu> and look at the information we have for our alumni. If your information is not up-to-date or you see other entries that you could help us with, please, send us an email so we can correct it. You may reach us at kfwwk00@tamuk.edu.

Also, [we want to hear from you!](#) Please, send us an email to let us know what you are doing. We would like to have a section in our newsletter from and about alumni. If you would like to write a short article about your career experiences or former experiences at TAMUK (or A&I), we would love to publish it in our newsletter.