TEXAS A&M UNIVERSITY KINGSVILLE JAVELINAS
PHYSICS PROGRAM

Physics Newsletter

Volume 2, Issue 2
Spring 2011

SPS Students Attend National APS Meeting in Dallas

From a contribution by Rico Garza (Senior, Physics)

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Several members of TAMUK's Society of Physics Students (SPS) attended the 2011 American Physical Society (APS) meeting between March 17th and 19th in Dallas, Texas. The students attending were John Budd, Rudy Gonzalez, Rico Garza, John Calvin Martinez, Jose 'Paco' Trevino and Marki Shedd (all physics majors). They were accompanied by Professor Kinnison. The meeting was a national meeting (the first national APS meeting held in Texas in nearly 20 years). It drew several thousand participants which consisted of students, faculty, and researchers from around the world. Presentations were made almost exclusively in parallel sessions. The presentations varied from research at the frontiers of physics to how students could enhance their graduate education. The full conference lasted the entire week, but in order to cut down on the number of missed classes for the students, the group only attended the last two days of the conference. The conference was held in the Dallas Convention Center in the heart of downtown Dallas.

The TAMUK group in Dallas was John Budd, John Calvin Martinez (in his hat), Jose 'Paco' Trevino, Rudy Gonzalez, Prof. Kinnison, and Rico Garza. Marki Shedd (not pictured) was also present.

The meeting was an exciting opportunity for the students to attend presentations and expand their knowledge into the fields of physics beyond those which are emphasized at TAMUK. One of the more challenging parts of such a large conference is choosing which of several interesting, simultaneous sessions to attend. The SPS students also used this time together to get more acquainted with one another than they have been able to just in the classroom. The location of the conference afforded the attendees the opportunity to explore downtown Dallas on the last day at the end of the conference.

The trip was seen as an overall success by SPS members.

TEXAS A&M UNIVERSITY KINGSVILLE

Physics Majors Receive Scholarships for the Spring 2011

Rico Garza receives Burgin Dunn and Olan Kruse Scholarships

Rico Garza was awarded the $500 S. Burgin Dunn Scholarship and the $500 Olan Kruse Scholarship for this semester. Rico is a senior physics major interested in astronomy. He is currently working with Lecturer Charles Allison on an undergraduate research project to use a photometer to study variable stars. Rico will graduate in May.

Maxy Tassy receives Alumni Scholarship.

Maxy Tassy was awarded a $500 Alumni Scholarship this semester. Maxy is a sophomore physics major.

Emily Mack also receives Alumni Scholarship.

Emily Mack was awarded a $500 Alumni Scholarship this semester, also. Emily is a freshman from central Texas and one of our newest majors. Emily has been an active participant in the Society of Physics Students.

Paco Trevino received both a Health Physics Scholarship and an NRC Workforce Scholarship...

Jose F. "Paco" Trevino received both a $1250 Health Physics scholarship and a $6000 Nuclear Regulatory Commisson Workforce Development scholarship. He is a junior physics major taking the Applied Nuclear track in order to pursue a career in nuclear engineering.

and so did John Budd.

John Budd also received both a $1250 Health Physics scholarship and a $6000 Nuclear Regulatory Commisson Workforce Development scholarship. He is a sophomore physics major also taking the Applied Nuclear track to pursue a career in nuclear engineering.

Jesus Salas received both an Olan Kruse Scholarship and a Health Physics Scholarship.

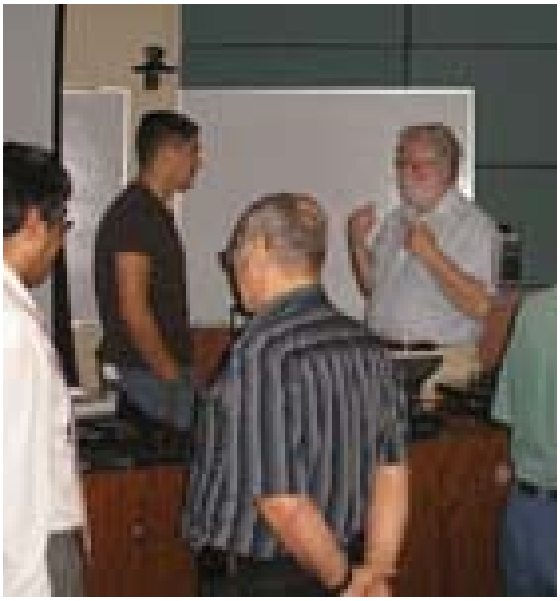
Jesus Salas was awarded an Olan Kruse Scholarship for $500 and a Health Physics scholarship for $1250. Jesus is a freshman physics major and an active participant in the Society of Physics Students.

Jennifer Qualia also received an NRC Scholarship.

Jennifer Qualia (not pictured) was awarded an NRC Workforce Scholarship for $6000. Jennifer is a junior from Corpus Christi who is interested in a career in nuclear power.

7th Annual Olan Kruse Lecture

Sixty people attended the Seventh Annual Olan Kruse Lecture on the evening of March 9. The invited speaker was Dr. Leif Svalgaard who is currently a researcher at Stanford University. Svalgaard is a noted expert in solar activity and the talk was titled "The Sun in Time." His presentation covered solar variability and features of solar activity, including sunspots, flares, and prominences. He also discussed the recent history of solar variability, the methods of sunspot counting and determining sunspot variability, and possible relations between solar activity and climate. Svalgaard discussed what we think, or guess, we know about the causes of those varied activities of the Sun. He pointed out that as we rely more and more on space-based capabilities the forcasting of "space weather" becomes important in the same way that regular weather forecasting is important. In both forms of weather forcasting the goal is to help in protecting assets and warning about extreme events due to nature. A PDF version of Dr. Svalgaard's talk is available on the Physics web site (http://physics.tamuk.edu).



Seen in discussions after the lecture are Dr. Bashir (Chemistry), Rico Garza, Dr. Hewett, and Dr. Svalgaard.

As is the usual case, the Physics and Geosciences Department faculty and friends along with Mrs. Lucy Kruse, had an enjoyable dinner with Dr. and Mrs. Svalgaard at King's Inn Restaurant on Baffin Bay in Riviera earlier in the evening before the talk. Also as part of his visit, on the day after the formal lecture, Dr. Svalgaard met with physics students and faculty and presented another slightly more technical talk on the development of the science of space weather. At the culmination of the second talk, he used the equipment of the Physics Observatory to provide a hands-on demonstration of sunspot counting methods.

The Olan Kruse Lecture series was established in 2003 in honor of Dr. Olan Kruse. Dr. Kruse spent over 50 years in the physics program here. He began as a student and went on to be major player in helping to shape not only the Physics Department but the University as it exists today. Dr. Kruse continued to teach at TAMUK until 2000.

The Olan Kruse Lecture Series Endowment Fund was established in 2003 for the purpose of bringing distinguished physicists to Texas A&M University-Kingsville to make presentations to the students and faculty on current events in physics and astronomy. It is supported by private contributions.

7th Annual Olan Kruse Lecture by Dr. Leif Svalgaard discussed solar science.

TAMUK Society of Physics Students (SPS)

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

Local SPS Officers

Marki Shedd
President

John Budd
Vice-President &
Secretary

Klint Mann
Treasurer

Meets Thursdays in Hill Hall Library, 12:15 PM

The Society of Physics Students is a national organization whose purpose is the advancemnt and diffusion of knowlege 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 during long semesters in the library in Hill Hall. Everyone is welcome.

Recent Activities

SPS worked with Cub Scout troop.

The SPS chapter reached out to the community through an educational demonstration for four local Cub Scouts, held on the evening of Nov. 8, 2010, in one of the lab rooms of Hill Hall. The scouts needed to earn the scientist activity badge in order to qualify for the Arrow of Light Award which is considered the highest award in Cub Scouting. For this they needed to learn about three scientific principles: Bernoulli's Principle, Pascal's Law, and Newton's First Law of Motion. SPS members Marki Shedd and John Budd made those presentations. Marki presented Bernoulli's Principle and John covered the other two principles. SPS member Klint Mann then conducted demonstrations of the less familiar principles: a Cartesian Diver illustrated Pascal's Law; while Bernoulli's Principle was shown by effects of a steady stream of compressed air acting on the pendulums of a Newton's Cradle and also supporting various balls in midair. Another demonstration consisted of heating an aluminum can filled with water and then dunking it in ice water: atmospheric pressure on the water crushed the can. The scouts greatly enjoyed each of the demonstrations, and learned a good deal about the physical principles involved. The SPS members enjoyed teaching the scouts about physics, and feel that our club left a good impression on the community.

SPS worked worked with Javelina Preview

SPS members Marki Shedd and Paco Trevino along with physics faculty members Drs. Hewett and Butterworth provided a department recruitment demonstration as part of the Javelina Preview Day. The event was a program put on by the University in the Memorial Student Union Building on Saturday, April 15. The students set up a booth with various pieces of apparatus

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News of Majors

On January 25, physics majors Marki Shedd and Paco Trevino attended the Texas A&M University College of Engineering job fair in College Station. This is a huge job fair open to students from any A&M System campus. At the fair were several hundred employers. Though the employers came to the fair looking mostly for engineering majors and soon-to-be graduates, several showed considerable interest in physics students. Both Marki and Paco found the experience both enlightening about job hunting and interesting in the variety of opportunities.

Students Marki Shedd and Paco Travino attend A&M Engineering Job Fair...

The next day, January 26, was the Nuclear Power Institute job fair, also at College Station. Again Marki Shedd and Paco Trevino attended. The job fair was specifically aimed at jobs and summer internships with nuclear power related employers. There were consequently far fewer potential employers present, and both students were able to meet with all of them. Dr. Kinnison accompanied the students on the trip to College Station.

...and NPI Job Fair in College Station.

Outreach Activites—Visit from John Paul II High School

John Paul II students enjoy the rotational apparatus in a physics teaching lab while Dr. Butterworth (in red) observes.

The senior AP Physics class from John Paul II High School visited the TAMUK campus on April 5. Ten students and the school's counselor for junior and senior classes came to see our facilities, meet several of the professors, talk physics, and have fun with the rotational apparatus. The group had lunch with Dr. Butterworth in the loft at Young's Pizza where they talked on many subjects including physics.

Visit by AP physics class of John Paul II High School in Corpus Christi.

Outreach Activites—Visit from Palacios WIT

WIT students from Palacios visit Accelerator Laboratory. Palacios teacher Marylin Phillips is shown to the right.

On April 1 Cindy Johnson and Marilyn Phillips accompanied approximately 12 students from Palacios High School who are involved in the Nuclear Power Institute sponsored Workforce In Training (WIT) program. The group first enjoyed a tour of the entire TAMUK campus. Dr. Kinnison and Mr. Allison then showed them around the physics department. Dr. Kinnison showed them the Accelerator Laboratory and Mr. Allision showed off the Observatory. Many of these students have interests in science and engineering.

WIT students from Palacios High School visit campus and physics.

Outreach Activities—Recruiting Trips

Elsa Hinojosa hired as outreach coordinator

This semester the Physics Program has had a very full schedule of outreach activities. That was in part due having been able to hire Mrs. Elsa Hinojosa for the semester as an outreach coordinator for the Physics Program. Hinojosa was funded by a grant obtained by physics professor Dr. Kinnison from the Nuclear Power Institute. She can set up outreach trips for the faculty and staff to high schools and colleges. She can be contacted at (361)593-2860 or by email at elsa.hinojosa@tamuk.edu.

Hewett recruited around the state as well as with Allison in our own back yard.

Recruiting for the department since the last newsletter included a trip by Dr. Hewett to Victoria College on November 17 where he met with both students and faculty. As soon as the spring semester began Dr. Hewett kicked it off with a recruiting visit to the physics classes at Rusk High School on January 18. On all of the trips demonstrations were given which involved such phenomena as Newton's laws of motion, properties of sound, interference of laser light, electrical discharge, magnetic levitation, gyroscopic action, and various properties of alpha, beta, and gamma radiation. Career opportunities in physics, astronomy, nuclear engineering, and health physics were also discussed. Dr. Hewett and Mr. Allison went to H. M. King High School in Kingsville on April 4 to recruit locally for the department. They met with a total of approximately 75 high school students distributed among 3 AP/Pre-AP physics classes taught by Mr. James Beltran. The very next day Dr. Hewett met with approximately 20 students at Alamo College in San Antonio. On that trip the emphasis was on possible transfer students or students who want to continue their education beyond an Associate's degree.

Kinnison visits 8 institutions to talk up the physics program

Dr. Kinnison started a full semester of recruiting trips by attending the College Day activities at Palacios High School, Palacios, Texas, on January 27. On that trip he had the opportunity to show off the Department to all of the Palacios students in grades 7-12. Several of the more advanced students showed considerable interest in the program. On March 1 Dr. Kinnison went on a recruiting visit to Southwest Texas Junior College in Uvalde, Texas. He was invited to give a talk by the head of their physics department, Mrs. Mary Beth Monroe. The talk was presented to approximately 20 students and faculty about the department with emphasis on the nuclear science program and the plans for a health physics program within the physics program. Dr. Kinnison went on another similar trip to San Jacinto College in Houston, Texas at the invitation of Dr. Ann Cartwright, chair of the Science Department, on March 22. In that talk there was an audience of approximately 60 students and faculty, many of whom expressed particular interest in a health physics program as well as nuclear science. Dr. Kinnison was on another trip to South Texas on April 5 and 6. On the first day he visted both Med High and Sci-tech, regional science academies in Mercedes, TX. He made a presentation to a large combined audience of the two academies. The Med High students naturally showed interest in the planned health physics program since it is more closely related to their life science interests. Sci-tech students are more physics and engineering oriented. In total approximately

(Continued at "Recruiting Trips" on Page 11)

Physics Hosts Nuclear Power Institute Meeting

On April 1 the Board of Advisors of the Nuclear Power Institute held their semiannual meeting at TAMUK. The event was hosted by Drs. Lionel Hewett (interium chair) and Wayne Kinnsion (associate professor), both of the Physics Program. The Nuclear Power Institute (NPI) is a unique statewide partnership led by the Texas Engineering Experiment Station and headquartered at Texas A&M University. NPI brings four-year universities, two-year technical and community colleges, and public schools together with the nuclear power industry, state and local organizations, and state, federal, and international agencies. Together, they work to meet the challenge of providing the trained workforce needed to operate new and existing reactors in Texas. NPI has developed educational programs now in place at two-year technical and community colleges, four year universities, high schools, middle schools, and elementary schools. Other key partners include science and math teachers, state government, federal agencies, and elected and civic leaders. The university and college partners are Brazosport College, Hill College, Prairie View A&M University, Tarleton State University, Texas A&M University, Texas A&M University–Kingsville, Texas A&M University–Corpus Christi, Texas State Technical College, The Victoria College, Weatherford College, and Wharton County Junior College. The nuclear power industial partners are the South Texas Project, NRG Energy, Exelon Corporation and Luminant. Dr. Kinnison has been a member of the Board of Advisors since the NPI was founded.

Members of the NPI Board of Advisors meet at TAMUK.

The April meeting, which was attended by representatives from almost all of the partners, was kicked off with opening remarks from Drs. Rex Gandy (TAMUK Provost), Scott Hughes (TAMUK Dean of Arts and Science) and Stephan Nix (TAMUK Dean of College of Engineering). The meeting was very successful with discussions about future directions of the NPI. The group also had the pleasure of hearing from a senior offical of Tokyo Electric Power Corporation about the ongoing problems with the Fukushima Daiichi power plant.

Meeting of the Board of Advisors of the Nuclear Power Institute was hosted by Physics at TAMUK.

Don D. Smith is a 1989 graduate who has worked in industry and is now pursuing a PhD.

Alumni Profile

Don D. Smith, BS 1989

Don Smith graduated in 1989 with a BS in Physics and after leaving Kingsville he began graduate work at Texas A&M University, College Station in high energy accelerator physics with Dr. Peter McIntyre's group. As part of that effort, he did research on semiconductor field emission devices. After receiving an MS in 1994, he switched to industry, and began working for Cypress Semiconductor in Round Rock, Texas. He worked at Cypress for 8 years, doing process engineering, test engineering, device engineering, and some engineering management. At the end of that period, Don went back to College Station, where he has finished the coursework for a PhD in Applied Physics. For financial reasons he returned to industry, first at Cypress and then in 2004 he moved to Freescale Semiconductor. Don still plans to finish his PhD. Now in 2011 he is studying with Dr. Alexey Belyanin, a semiconductor device theorist at Texas A&M. Mr. Smith is married with four children and a young grandchild.

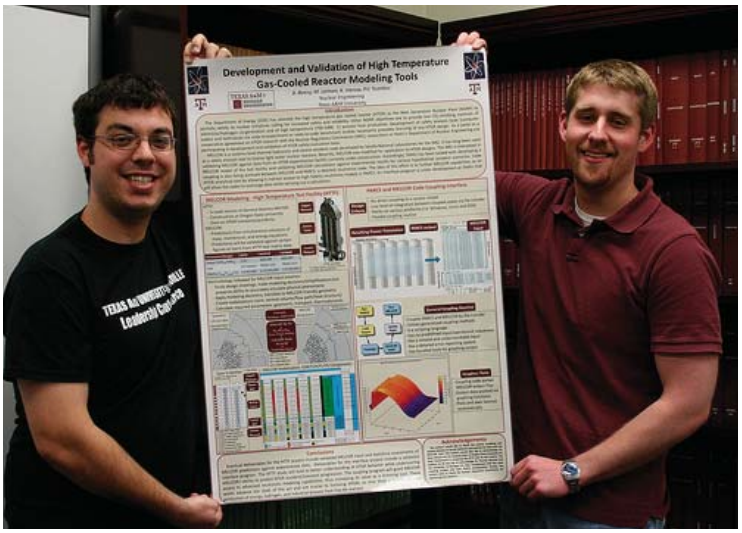
Alum Wins Prize

Mike Leimon (BS 2009) has award winning poster at Texas A&M Energy Forum.

TAMUK physics alumnus Michael Leimon (BS 2009), along with Brad Beeny, another Texas A&M, College Station, graduate student in nuclear engineering, won a poster contest with their entry "Development and Validation of High Temperature Gas-Cooled Reactor Modeling Tools" in the inaugural Energy Forum 2011 sponsored by Texas A&M University's Energy Engineering Institute.

Leimon and Beeny won the top honor out of more than fifty posters submitted across the entire College of Engineering. The award included a monetary prize of $1000.

Congratulations Mike!



Michael Leimon (left, wearing TAMUK shirt) and Brad Beeny show off their award-winning poster.

Astronomy News

The third Public Viewing Night of the fall 2010 semester was held on November 11. It drew 177 guests, which was the most participants in several years, for an evening of excellent viewing. The main targets were our Moon and Jupiter with its moons. Other objects viewed during the evening included Uranus and the Andromeda galaxy. The latest telescope upgrade, which allows for a quick change between left and right Newtonian eyepiece sockets, was tested with some success. It will still need some additional work to insure that proper alignment is maintained during the switch. SPS member Emily Mack and astronomy students Elvira Escobedo and Orlando Sanchez assisted Mr. Allison.

In the spring term, the first Public Viewing Night which had been scheduled for February 3 was canceled when the campus was closed due to expected icy weather. The second evening of viewing was on March 10, and it drew 76 guests to view the winter sky. Guests enjoyed the views of Betelgeuse, the Great Nebula in Orion, Rigel, and Hind's Crimson Star. On April 14 the third Public Viewing Night was held, and it drew about 35 students. They had a look at the waxing gibbous Moon followed by an observation of Saturn. Saturn's rings were visible but still near the on-edge appearance of 2010 which gives them the appearance of ears on the planet. Haze and clouds developed making the Great Nebula in Orion, the intended third viewing target, unrecognizable.

Public Viewing Nights are scheduled approximately monthly during the University's fall and spring terms. They begin at 7 PM Standard Time or 8 PM Daylight Time.

Public Viewing Nights at the observatory are big hits with guests.

Dr. Butterworth Working on New MRI Techniques

Dr. Edward J. Butterworth has received a University Research Award for $8,900. The award will be used to develop improved data acquisition and reconstruction strategies for use in Single Shot Parameter Assessment of Retrieval from Signal Encoding (SS-PARSE). SS-PARSE is a novel technique used in Magnetic Resonance Imaging (MRI). Many of the faster and more sophisticated imaging techniques now in use produce distortions in the image while discarding data that could provide usable information if properly analyzed. This is especially true for those techniques needed to generate images of human brain function in real time. In this research Dr. Butterworth is working with Dr. Edward G. Walsh of Brown University. Walsh is a pioneer in SS-PARSE techniques. Butterworth's role on the project will be to help develop the mathematical and computational methods necessary to make the SS-PARSE technique more widely useful. He will spend the last week of May at Brown University working with Dr. Walsh and other colleagues to move the project forward.

New MRI techniques being developed in collaboration with Brown University.

Other Physics News

Hewett presented paper on how grades are "curved" on tests.

Dr. Hewett, Interim Chair of the Physics/Geosciences Department, presented a paper entitled "Curving Grades, Why and How" at the Spring 2011 Joint Meeting of the Texas Section of the APS, the Texas Section of the AAPT, and Zone 13 of the SPS, held at Stephen F. Austin State University, Nacogdoches, TX, March 3-5, 2011. The presentation explained why everyone curves grades and discusses how this is accomplished in practice. More specifically, it tried to answer such questions as: What does testing mean? What does a test score mean? What does a grade mean? What grading scales are commonly used to quantify grades? What methods are commonly used to curve grades? What are the advantages and disadvantages of each method? And, is there a best or ideal way to curve grades?)

Dr. Edward Butterworth was a presenter at "Got College Day" at Gillett Intermediate School in Kingsville on November 18. He addressed seven groups of fifth and sixth graders, 185 students in all, and gave demonstrations related to electricity and rotational motion. Students were curious and eager to participate in demonstrations. He presented again on January 20 and will do so again for the last one of the year on May 19.

In January, Dr. Kinnison recieved an increment of $32,000 to his previous grant of $40,000 from the Nuclear Power Institute to continue the upgrade of the newly acquired Van de Graaff Accelerator and to continue the outreach program.

Dr. Butterworth gave a presentation entitled, "Bringing Preparatory Physics to TAMUK" to the conference: "Winds of Change: The University of the Future," the Fifth Conference on the Scholarship of Teaching and Learning, Texas A&M University-Kingsville, 10-11 February 2011.

Dr. Butterworth was awarded a grant in the amount of $5520 under the College of Arts and Sciences Faculty Research and Scholarly Activity Awards program. Title: "Longitudinal electromagnetic waves? An investigation into the peculiar observations of Monstein & Wesley, and a possible explanation."

On April 21, Dr. Kinnison gave a presentation to the department and interested comers about some of the issues concerning the Fukushima nuclear incident in Japan. The purpose of the talk was to shed some light on what was actually happening and provide students some facts about radiation dangers.

Recruiting Trips (continued from Page 6)

40 students attended the meeting and met with Kinnison afterwards. On the second day of the trip he made presentations to classes totalling approximately 50 students at South Texas College in McAllen, Texas. Those students would more likely be transfer students. On April 11 and 13, Kinnison recruited at Ben Bolt High School and Del Mar College in Corpus Christi, respectively. At Ben Bolt he met with the physics class. At Del Mar Dr. Kinnison was accompanied by recent alum John Calvin Martinez (BS 2010). Together they met with approximately 15 science and engineering students who might have interests in transfering to Kingsville after they receive an Associate's degree at Del Mar.

Last October and again this April Dr. Butterworth visited students at John Paul II High School in Corpus Christi. Those students and their teachers in turn visited TAMUK in April (see related story earlier in newsletter). Dr. Butterworth represented the TAMUK Physics program at the annual Career Awareness Day at Falfurrias Junior High School on May 12. About 200 sixth, seventh and eighth grade students took part in the event, meeting with presentors from local colleges, businesses, police, fire and other emergency personnel, and the Army and National Guard. Dr. Butterworth discussed rotational motion and other topics in physics to several enthusiastic groups of students.

Butterworth recruits at John Paul II High School and Falfurrias

Javelina Preview (continued from Page 4)

to show physics principles. The audience consisted of high school and junior college students and teachers. As students and teachers came by, the SPS students would discuss and answer questions about the TAMUK physics program. The physics booth worked together with the Nuclear Power Institute booth, set up and run by Mrs. Jay Haynes of NPI, to recruit students for the nuclear and health physics activities here at TAMUK as well as the overall physics program. As can be seen in the accomanying pictures taken during the event, the two booths were the hot spots of the entire Javelina Preview event.

Marki Shedd (in white shirt) talks to potential students, parents and current teachers about the Physics Program and nuclear science opportunities at TAMUK during Javelina Preview Day.

Physics offers courses for Nuclear Power Engineering Technology Certificate.

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 majoring in mechanical engineering, chemical engineering, electrical engineering, and physics who are 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.

Offer to High Schools and Colleges

If your school or organization would like to have either faculty or students from the Physics Program here at Texas A&M–Kingsville to make a presentation about your program and facilities, we would be very happy to do so. Please call Mrs. Elsa Hinojosa at (361) 593-4894 or by email at elsa.hinojosa@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.