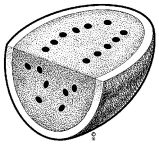
Department of Chemistry & Physics ✦ 100 Campus Drive ✦ Weatherford, OK 73096-3089

# PHYSICS ALUMNI NEWSLETTER

Spring 2007

http://swosu.edu/academics/physics ✦ physics@swosu.edu ✦ Terry Goforth, Editor



## MOUTH-WATERING FARE

Dateline....Saturday , May 5, 2007, Crowder Lake University Park, 6 p.m. The annual Physics Shish-kebab will feature an unbelievable array of mouth-watering foods, plenty of outdoor activity, good company and conversation, and (of course) the annual Ignoble Awards (for honors of dubious distinction). Join us for a relaxing evening. We'll be looking for you!

## MEN OF DISTINCTION

As reported here last year, two SWOSU Physics grads were named SWOSU Distinguished Alumni in 2006. **Mr. John Aaron** ('64) and **Dr. Benny Hill** ('57) were the speakers at the 2006 Convocation Ceremony last May. Graduating seniors were inspired by the advice and vision offered from two ordinary Okies with very extraordinary accomplishments achieved by valuing life-long education, a solid work ethic, and a well-grounded view of what is possible. Congratulations John and Benny!

## COME ONE, COME ALL

You are graciously invited to join us at Banquet XXVI. The 26th annual Spring Physics Banquet will begin at 7:00 p.m. on Saturday, April 21, 2007, in the newly-remodeled SWOSU Student Union Ballroom. Come check out the new decor while dining with old friends and applauding the accomplishments of our hard-working students. The evening will be topped off with a presentation by 1991 Alumnus **Royce Snider**. Tickets are $12 and may be paid for at the door. We do request advance reservations by April 18 so we can provide a head-count to the caterers. Call us (580-774-3109), drop us a note (100 Campus Dr, Weatherford, OK 73096), or e-mail us at physics@swosu.edu to let us know how many will be in your party.

*A new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die out, and a new generation grows up that is familiar with it.* –Max Planck

## THIS YEAR'S SPEAKER: ROYCE SNIDER

**Royce Snider** ('91) has graciously agreed to speak at the 2007 Spring Physics Banquet. Following his graduation from SWOSU, Mr. Snider completed an M.S. in Aeronautical Engineering from The George Washington University in 1993. He was employed for Boeing Defense and Space Group, Helicopter Division supporting the RAH-66 Comanche Analytical Integration IPT, Comanche Acoustic flight test and the V-22 Acoustic Loads Survey, and more recently has been at Bell Helicopter in the role of Senior Engineer/ Engineering Specialist in the Structural Dynamics and Acoustics groups. In December 2004, Royce was promoted to the position of Senior Engineering Specialist, Structural Dynamics while supporting the H-1 Upgrades flight test program at Patuxent River, MD. He then made the transition back to the Acoustics group since completing the flight test program in 2005. Royce's primary responsibilities are to provide overall technical direction and oversight for the Acoustics Group research efforts, manage the program and budget and communicate with government/internal customers and Bell, management

of the status of technologies and projects that impact their business. He has established himself as the primary POC for internal noise reduction and sonic loads technical efforts. He has managed multiple IRAD and CRAD programs and authored various technical specifications supporting the BA609 Tiltrotor Analytical Integration IPT and has participated in the highly successful joint NASA/Army/ BHTI flight test program. During this test program, the XV-15 tiltrotor aircraft was flown over a large area microphone array deployed near Waxahachie, TX. While maintaining handling qualities and safety under IFR conditions, approach profiles were designed achieving a noise reduction of 6 dB or more, a Level 1 Milestone of the Short Haul Civil Tiltrotor Program. Royce currently lives in Haslet, TX, with his wife and two children.

*There is something fascinating about science. One gets such wholesale returns of conjecture out of such a trifling investment of fact.* –Samuel Langhorne Clemens (Mark Twain)

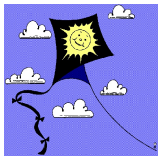
## WAY TO GO GRADS!

SWOSU's Class of 2006 included three freshly-minted B.S. Engineering Physics graduates. **Moin Khan** (Karachi, Pakistan) took a job with Chesapeake Energy in OKC. He has since decided to pursue graduate studies in mathematics. **Santosh Bhatt** (Kathmandu, Nepal) will be finishing an M.S. in Nuclear Engineering from the University of Cincinnati in the Summer of 2007. Since U Cincinnati is phasing out their Nuclear Engineering program, Santosh plans to transfer next fall so he can complete a Ph.D. in the same field. **Chantz Drake** (Elk City) graduated in December and is now employed by Schlumberger.

*Reality is that which, when you stop believing in it, doesn't go away.* –Philip K. Dick

## BE A HERO

Would you like to support the physics scholarship funds? It's easy to do. Just send your tax-deductible check either to Dr. Goforth in the Physics Program or directly to the SWOSU Foundation Office. Be sure to specify which fund you wish to contribute to (JR Pratt, Arthur McClelland, or Physics Unrestricted). You may be able to double your contribution–be sure to check on your employer's policy on matching contributions. It's as simple as that. Remember, every little bit helps. If you can't make it to the banquet, consider contributing the cost of a banquet ticket. It may not seem like much, but it does add up, and the students who receive scholarships are truly appreciative of the assistance.



## UP, UP, AND AWAY

The Physics and Engineering Club held a rocket competition early last fall. The rockets were made of paper and launched using compressed air. The trick to achieving long distances is stability. The traditional solution is to include at least 3 fins to achieve static (rotational) stability (two are stable only in a plane). Interestingly enough, our winner used a single curved fin that spun the rocket up enough to give it dynamic stability. We are also investigating the theory and design of simple hovercrafts. The club is currently working toward obtaining all of the materials necessary to build one or more working models.

## A ROADMAP FOR SUCCESS

Dr. Tony Stein led a question-and-answer session for the Physics and Engineering Club to discuss scholarships, internships, how to build a strong resume and provide positive material to help the faculty write strong letters of recommendations, and many

other practical tips to help students succeed at Southwestern Oklahoma State University and beyond.

## ONE FOR THE ROAD

Many of our students are considering graduate school, so a trip to visit the physics laboratories at OSU seemed like the perfect fall outing. Unfortunately, extreme weather forced us to re-schedule the event. We are currently planning to make the trip on March 15.

No other trips are planned for this spring, but we are always looking for ideas for future trips. National labs, industrial labs, space centers, SPS/APS/AAPT regional meetings, and job fairs are just a few of the places we've visited in the past. If your company or organization is open to providing tours for student groups, please feel free to contact us.

## AND THERE WAS MUCH REJOICING

All work and no play makes Jack a dull boy. With that in mind, the Physics and Engineering Club always schedules a healthy dose of recreation to relax the body and renew the mind. What is a trip to Houston without a visit to Galveston Beach? The heavy city traffic was a bit unnerving to folks accustomed to the more leisurely pace of rural western Oklahoma, but it was well worth the effort.

The annual shisk-kebab provided a break during spring finals. Crowder Lake proved to be an idyllic setting. SWOSU now owns and operates Crowder Lake University Park where activities include rappelling, a rock-climbing wall, canoeing, and a nature trail. As always, no one went away hungry, but a few lucky (?) souls walked away with an Iggie (Ignoble)–the "award" that no one really wants to write home about.

We opened the new school year with our traditional hamburger fry. This year's venue was the Yard of the CPP building just outside of our back door. Returning students, new students, faculty, family, and friends gathered to enjoy the food and fresh air. The Halloween party 'featured' a Halloween 'movie' that is probably best forgotten (at least until our next Iggy awards). The semester's activities wrapped up with a round of Dirty Santa at the Physics Christmas and Holiday party which was graciously hosted by Dr. Stein and his wife Ann.

## AND THE AWARD GOES TO...

*April Fool's Day, 2006.* Despite threats of thunderstorms, hail, and possibly worse, the Physics Spring Banquet went off without a hitch. With university personnel keeping an eye on the weather forecasts for us, some 40 physics students, faculty, administrators, family, and friends shared a pleasant (indoors) evening. Honors and awards were bestowed, recognition was given, and imaginations were sparked. The SWOSU Chapter of Sigma Pi Sigma grew by two members –**Tyrel Crall** (Sr, Weatherford), and **Melissa Gard** ('89, Houston, TX) joined the honor ranks. **Moin Khan** (Sr, Karachi, Pakistan) received the J.R. Pratt Award for the Outstanding Student in Physics and **Jonathon Wallace** (Jr, Weatherford) was recognized as the Outstanding Midclassman in Physics. Newcomer **Justin Silkwood** (Fr, Norman) was selected as the Outstanding New Physics Club Member. Graduating seniors **Moin Khan** and **Santosh Bhatt** (Kathmandu, Nepal) were presented with medallions to wear during convocation designating them as Graduating with Honors and recognized for being selected to Who's Who.

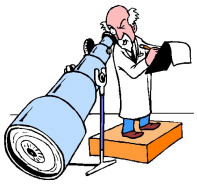
Several scholarships were awarded to recognize achievement and to assist and encourage continued success. **David Chantz Drake** (Sr, Elk City) received the $1,000

J.R. Pratt Scholarship. A $750 Arthur McClelland Memorial Scholarship was awarded to **Justin Silkwood**, and three $750 Physics Alumni Scholarships were given to **Bhaskar Basnet** (Jr, Kantifajpath, Nepal), **Vishnu Pokhrel** (Chetrapur, Nepal), and **Ashis Shresthra** (Jr, Weatherford). These scholarships are made possible through the generous contributions of alumni, faculty, and friends of the physics program, and we wish to express our sincerest gratitude to all who support the scholarship funds. We were also pleased to announce that **Jonathan Keahey** (Jr, Crawford) had been selected to receive a $250 Arts & Sciences Dean's Scholarship.

The grand finale of the evening was a wonderful presentation by alumna **Melissa (Missy DuBiel) Gard** ('86), Sr Manager of the ISS Mission Evaluation Room at NASA's Johnson Space Center in Houston. Missy entertained and educated us with descriptions of the challenges of designing, assembling, and maintaining the International Space Station, and provided us with some insight into the management needed for such a large project. She also gave us a glimpse of the technological, scientific, and political achievements realized with the ISS. At the end of the evening, Oklahoma's spring weather threat had failed to develop, so friendly conversation continued long after the formal program ended.

*People may believe correct things for the damndest and weirdest of wrong reasons.*
–Stephen Jay Gould

**Mini Adventures of Micro Man**
*by Dr. Charles Rogers*



Occasionally students do ask good questions. No, don't sneer! They really do, I myself have been asked many–well, OK, probably less than a dozen over 35 years of teaching. But in my last class we were discussing the tensile and compressive strength of various materials and someone asked if the 50-foot woman would have been able to walk. Now that is a good question because it was both pertinent and it captured the class's attention. You haven't heard about the 50-foot woman? She was in a 1958 film, "Attack of the 50-Foot Woman." Apparently her husband was cheating, she complained, but he ignored her. Then she came across a huge alien in the California desert, and although she managed to escape and tell about it, no one would believe her. However, the alien had exposed her to some radiation that later made her suddenly grow 50 feet tall. No one could ignore her now! She went around seeking revenge and wrecking stuff.

Suppose she started out as 5 feet tall and weighing 100 pounds. If she were scaled up by a factor of 10, her weight scales like the volume and would go up a factor of $10^3$ to 100,000 pounds, but her strength goes up like the cross-sectional area of her muscles which scales only as $10^2$ or a factor of 100. This is the famous "square-cube" law. Her strength relative to her weight is *10 times less* than before. A leg is about 15% of a person's mass. When she was small, suppose her leg muscles could have lifted twice that or 30% of her mass; in other words she could have walked with a 15 pound shoe on each foot. But after she grew giant sized, her leg muscles could only lift 1/10 of that or 3%. Now that is an impressive 3,000 pounds, but her new legs weigh a more impressive 15,000 pounds–each. She probably couldn't lift a foot to take a step!

I was still thinking about that while sitting at my desk after class. My door was shut, it was warm and quiet, and I became very sleepy. I took out a pillow that I keep for such occasions and put it on my desk. It might be time for a new pillow since this one was shedding feathers. As soon as I placed my head on the pillow, I suddenly found not just my head, but my whole self on the pillow. I must have been only a centimeter or two tall, because the pillow lay all about me and looked as big as half of a football field. My heart was beating so fast that it hummed–I'm sure it was hundreds of beats per minute. As I breathed, the air seemed noticeably viscous in my throat. Becoming light-headed, I sat down to think.

"I seem to have been down-scaled," I thought. I wished I had a ruler so I could measure my new height. As I looked about I saw a 4' x 8' sheet of brightly painted Masonite. When I walked up to it I saw it wasn't Masonite, it was a bookmark with a convenient centimeter scale along one edge. Lying beside it, I saw that I was now 1.75 centimeters tall. That was convenient since my normal height is 1.75 m, so I had been scaled down by a factor of 100. My need for oxygen should scale like my volume, so I needed $100^3$ less, but the area of my lungs where oxygen passes into my blood stream is only $100^2$ times less, so I was probably getting too much oxygen. I concentrated on shallow breathing and breathing less often. It helped, but it was hard to remember to control my breathing when I was used to breathing taking care of itself.

Now what else should I expect? Poiseuille's law that resistance to flow went like the inverse fourth power of the radius of the conduit meant that air flowing through my throat and lungs experienced $100^4$ times more resistence– probably the reason I wasn't having more trouble with over-oxygenation. What about air drag? That depended on area and velocity squared. Area would be down by $100^2$ , but what about velocity? 0.9 meters per second, or half a body length per second, would be an unhurried walking speed. At my current size, that would be about 0.009 meters/second, or 100 times less. No surprise there. Squaring the velocity would reduce the drag force another factor of $100^2$ for a total reduction of $100^4$. Air drag should be no problem, and I had noticed none.

Suddenly I felt really cold and famished. Let's see. I generate heat in my volume which decreased by $10^3$ and radiate it according to my area which only decreased $10^2$ –no wonder I was cold! A white, curiously flat, tumble weed drifted by. No, it wasn't a tumble weed, it was a feather, and several more of them were lying around. My fingers trembling with the cold, I managed to undo a few shirt buttons and stuff feathers under my shirt. The insulation helped, but I was still ravenously hungry. I walked over to the edge of the pillow, taking care not to slip off. I was five or six times my height above the desk, but there was a beautiful saucer of grapes not far from the pillow. Food!

I probably could have jumped up at least 10% of my height when I was big. That would go up by 100 now, so I should be able to jump 10 times my current height. Further calculations would have to wait because in spite of my care, I found myself slipping over the side. I worked to keep my feet under me as I slid and fell to the desk. Bracing for impact, I inadvertently sprang up as my feet struck the desk and found myself sailing twice as high as the pillow. As I struck the desk a second time, I stumbled a bit but managed not to sail off again. I walked quickly to the grapes and sprang adroitly onto the saucer. With teeth and fingernails, I broke through the skin of the nearest grape and began eating handfuls of grape insides. Suddenly a large, ugly dog pulled the grape away from me; no, not a dog, but a great red ant! Determined that he would not keep my grape, I ducked under the menacing mandibles and seizing the ant's foreleg, I whirled him over my head, and threw him off the desk. But instead of hearing the distant thud of an ant hitting the floor, I was awakened by the sound of my head slipping from the pillow and hitting the desk.

Groggy, but returned to my rightful size, I stood and looked down. A wild and very angry ant was racing around like a two-year-old toddler on a sugar high. Besides, ants are full of formic acid, and that can't be good for the disposition. He kept stopping and looking at my shoe, no doubt looking for the best way up so he could bite my leg. I had one obvious choice, I stepped on him. Being the size nature intended has its advantages.

## A DEMO IS WORTH A THOUSAND PAGES...

Physics and Engineering Day continues to be a major event for the Physics Division and the Physics and Engineering Club. Approximately 125 area high school students visited SWOSU early in November and were wowed and amazed by a variety of educational demonstrations of physics performed by both faculty and students. The goal of this activity is to pro-

mote better understanding of physics and science in general, and to familiarize high school students with SWOSU and the Engineering Physics Program.

*Truth does not change because it is, or is not, believed by a majority of the people.*
–Giordano Bruno

## SUMMERS ARE FOR LEARNING

Physics faculty managed and/or taught for several summer science camps last summer. **Dr. Charles Rogers** assisted in three camps. SMART (Science and Mathematics Academy for Rural Teachers), brings in area science and math teacher to expand their knowledge in their chosen fields and to provide them with simple demonstration equipment and instructions how to effective use the demos. High school students interested in science and math can attend the Summer Science and Math Academy (SSMA) to be challenged and hopefully to foster their interests in these fields. The SureStep program selects minority and female students with an interest in majoring in science, math, or engineering fields. These students are in their senior year in high school and attend the summer academy in the summer before they enter college. **Dr. Wayne Trail** coordinated and managed the Bernard Harris ExxonMobile/ NASA Summer Science Camp, which is aimed at minority junior high students with an interest in science. **Dr. Tony Stein** assisted with and taught classes for the Bernard Harris Camp. **Dr. Terry Goforth** taught classes in physical science and ACT preparation for Upward Bound, a program that identifies high school students with the potential to succeed in college who lack a college-graduate role model in their immediate family.

**Dr. Stein** and **Dr. Goforth** did some learning of their own as well by attending one-week sessions of the Activity-Based Physics Faulty Institute at Dickinson College in Carlisle, PA. The institute was a crash-course in using activities rather than lectures to teach physics in the classroom.

*Any sufficiently advanced technology is indistinguishable from magic.* –Arthur C. Clarke

## PRETTY AS A PICTURE

GRAND RE-OPENING

The remodeling effort on the first floor of the north wing of the Chemistry/ Physics/Pharmacy building is (almost) complete. We were able to move into our nearly-like-new classrooms and labs at the start of the Fall 2006 semester. New features include ceiling-mounted projection systems, new insulated windows, and a new student lounge, complete with refrigerator, sink, and cabinets, in the space that was once a computer lab just outside the physics offices. A few details remain to be completed such as shelves in the new stockroom and in the remodeled introductory lab. Come on by–we'll give you a tour!

## STOP AND SMELL THE ROSES

Some of you may be aware that **Dr. Ray Jones** (faculty, retired) has been battling a malignant melanoma on his leg for several years. This particular malignancy has been extremely slow-growing, making it slow to spread but also very difficult to fight with traditional cancer treatments which generally target cells with high metabolic rates. Unfortunately, the cancer has now spread beyond the one leg. But the folks at MD Anderson in Houston believe that with continued treatment Dr. Jones can continue his projects and studies for years to come. Our thoughts are with him during his chemotherapy treatments, and we continue to enjoy his company when he has a chance to visit us.

*The trouble with people is not that they don't know but that they know so much that ain't so.*
–Henry Wheeler Shaw (Josh Billings)

## What Is Gravito-magnetism?

*By Stan Robertson*

We in the U.S. have spent about $700 million to conduct the Gravity Probe B experiment. It is incredibly elaborate and it is well worth the time to it takes to learn a little about it (see http://einstein.stanford.edu/). The Gravity Probe B satellite carried four spinning quartz spheres the size of ping-pong balls coated with superconducting film and machined to micro inch tolerances. The spinning spheres' gyroscopic axes were expected to precess a few thousandths of one second of arc in the gravitomagnetic field of earth in one year. General Relativity is the most prominent of the gravity theories that provides predictions of the precessions to be measured. It also provides predictions of subtle oscillations in the earth-moon distance that can be measure to centimeter accuracy by laser lunar ranging. Some understanding of these effects can be gained by considering the analogy with electromagnetism.

(1 - Background)
In E&M we learned that electric and magnetic fields can exert forces on a charged particle according to the Lorentz force law:

$$\mathbf{F} = q\mathbf{E} + q\mathbf{u} \times \mathbf{B}$$

where **F** is the force on charge q, **E** and **B** are the electric and magnetic field vectors and **u** is the velocity of q through the fields. In modern physics we learned that magnetic fields can be regarded as side effects of motion. What may seem like a magnetic field in one frame of reference can appear to be an electric field in a frame moving with the charges that constitute an electric current.

To provide a concrete example of this, let charges -q (negative) and +Q (positive) be separated initially by a distance b along the y axis. Imagine that Q is fixed to the origin of coordinates and let both charges be moving along the x-axis at speed v. In a frame moving with the charges, the only force that affects the charges is an electrostatic attraction. Under its influence, -q should be attracted toward +Q and will take some time, say T, to fall some distance toward +Q. We could consider this arrangement to be an interval timer, with the time T determined by the distance to be traversed down the y-axis.

In the frame with respect to which the charges are moving at speed v, (call it the lab frame) things are a little different. The charges moving down the x-axis are somewhat like electric currents and they will repel each other a little due to the magnetic force between them. More exactly, the charge +Q will produce a magnetic field due to its motion given by

$$\mathbf{B} = (\mathbf{v} \times \mathbf{E})/c^2$$

where c is the speed of light and **E** is the electric field due to +Q. When this expression for **B** is put into the Lorentz force equation above, and we recognize that -q is also moving with speed u=v, then we find that the overall force on -q is weaker by the factor $(1 - v^2/c^2)$. This is very interesting because in this lab frame the weaker force will have the effect of lengthening the time of fall by the factor $(1 - v^2/c^2)^{-1/2}$. This is exactly the time dilation that we could have expected on the basis of just considering the two charges as an interval timer. Magnetic forces give us a mechanism for producing time dilation.

(2 - Gravity)
In relativistic gravity theories there are some similarities with E&M as long as particle speeds are quite a bit less than the speed of light and the gravitational fields are not too strong. In this low-speed weak-field limit, there is a force analogous to the Lorentz force, which can be written as

$$\mathbf{F} = m\mathbf{g} + m\mathbf{u} \times \mathbf{B}_g$$

This gives the force on mass m, with **g** and $\mathbf{B}_g$ the gravitational and gravitomagnetic fields and **u** the velocity of m, as before. In this weak field limit, **g** is considered to be the Newtonian gravitational field ($g=GM/r^2$ at distance r from a point mass M). This last equation has been used as the basis for analyzing small oscillations in the earth-moon distance that are believed to be due to the gravitomagnetic force terms. (See //xxx.lanl.gov/abs/gr-qc?papernum=0702028, to be published in Physical Review Letters.).

It is pretty clear that if gravitomagnetic fields were completely analogous to magnetic fields then for the gravitomagnetic field of M we would have $\mathbf{B}_g = (\mathbf{v} \times \mathbf{g})/c^2$, and the charges in our previous interval timer could be replaced by masses m and M and we would get the same time dilation for the

lab frame. (This is explored in detail in http://xxx.lanl.gov /abs/gr-qc?papernum=0502088.) Unfortunately, life is not so simple if one uses General Relativity. According to the low-speed weak-field limit of General Relativity the gravitomagnetic field of M is exactly 4 times larger at

$$\mathbf{B}_g = 4(\mathbf{v} \times \mathbf{g})/c^2$$

This makes gravitomagnetic fields 4 times larger than is required to account for time dilation. Nevertheless, these larger fields have been used as the basis for predicting precessions of 0.042 arcsec/yr for the gyroscopes of the Gravity Probe B experiment. Results of the experiment are to be announced April 7.

I believe that there are reasons to question the factor of 4 as the only correction needed for the gravitomagnetic force. One is that if one regards mass M as that of the earth, then in a frame moving with the earth, the equation of motion of the moon, m, can be obtained exactly in General Relativity. Then if one does a Lorentz transformation to a frame moving at -30 km/s at right angles to the line joining earth and moon, one essentially obtains the analogue of the earth and moon at new moon, moving at 30 km/sec away from the original sun-moon-earth line, (which would be the "lab frame" y-axis). If the moon were just in free fall toward earth, it would do so with the time dilation required by special relativity. In this exact description of the motion of m there is no conflict between General Relativity and special relativity. Both predict the same time dilation effect. The way that this happens is that the Lorentz transformation affects **g** in a velocity-dependent way and modifies its form from that obtained from Newton's law. The end result is that the analysis of lunar range oscillations using the Newtonian **g** with the 4 times larger $\mathbf{B}_g$ is flawed. It remains to be seen if the prediction for Gravity Probe B is similarly flawed. In that case, the $\mathbf{B}_g$ field arises from the rotation of the earth, analogous to the magnetic field that would be produced by a rotating electrically charged sphere.

Other questions arise if you consider what would happen if you charged masses M and m, with charges +Q and +q, respectively and balanced them so delicately that they remained at rest, separated by distance b along the y-axis. Now what would happen if they were moving at speed v down the x-axis. Consider the cases with and without the factor of 4 in the expression for $\mathbf{B}_g$. Have fun!

*The difference between genius and stupidity is that genius has limits.* –Albert Einstein

## HAIL THE NEW LEADER

After leading the Department of Chemistry and Physics for two years, Dr. Don McGurk will be retiring at the end of the semester. Taking up the reins of leadership as departmental chair will be Dr. Bill Kelly. We wish Dr. McGurk a long and happy retirement, and we look forward to working with Dr. Kelly to face the usual and occasionally unexpected challenges of maintaining a healthy, vital physics program.

## FROM THE GRAPEVINE...

**Wendell Riseley** ('81) lives in Weatherford and is President at Cyan Co. Inc. (*cyanok.com*) a local company with a wide range of services in the electronics/electronic engineering/computer areas including repair, design, development, assembly, testing, etc. Wendell says he is now working part-time and biking full-time, a passion matched only by his passion for playing pool.

**Ken Elkins** ('82) has moved from California to a position as branch manager at the Naval Surface Warfare Center Indian Head Detachment, McAlister Division. (Welcome back to Oklahoma!) Ken also has a movie to his credit. He recently worked as an extra in the movie *Flicka*. Some of his scenes actually survived editing, so if you look quickly you might catch a glimpse of him during the rodeo scenes.

**Carl Jantz** ('89) still works with 3M in a production facility in Columbia, MO. 3M posts job opportunities on their web site at *www.3M.com*. Click on United States then Careers. He says most postings there are good for two weeks.

**Justin Whipple** ('01) is a sales rep for Reed Hycalog. The job keeps him on the road to various oil field drilling sites. He drops in to visit now and then when he's driving by. It's always a pleasure to chat with him.

**Michelle Schuldt** (attended 2004-05) is now fully engaged in the meteorology program at OU. She's working and studying in the newly-built National weather Center on the OU campus that now houses the School of Meteorology, the National Severe Storms Lab, the National Weather Service, the Storm Prediction Center, and the Oklahoma Climatological Survey. It's exciting to work with all those professionals around, but we wonder, who'll track the storms if that place gets hit by a tornado?

**Scott Poarch** ('91) is a process engineer for MAXIM-Dallas Semiconductor. We thank him for notifying us about available internships last spring. Thanks, Scott!

**Casey Wells** ('05) is working toward a Ph.D. in biomedical sciences at Wright State University in Dayton, OH. This year has been course work and lab rotations, next year he'll be a TA and then it's dissertation research to the finish. Good luck, Casey!

**Patrick Heys** (attended late 80's) works for PepsiCo providing computer support for Frito-Lay North American as well as Quaker, Tropicanna, Pepsi, and some international users. He is living and working in the Dallas area.

**Bob Burrahm** ('80) has been promoted to senior program manager for the Office of Automotive Engineering at the Southwest Research Institute. With this promotion, Bob has relocated to Beijing, China, for three years where he serves as the chief marketing representative of the SwRI China Liaison Office. This promotion follows the completion of a successful two-year effort, led by Bob, to develop and commercialize SwRI's FOCAS technology which uses a gasoline-fueled burner with an integrated, computerized control system to age catalytic converters.

**Dr. Stanley Robertson** (faculty, 1990-2004) has moved from Weatherford to Broken Arrow, OK. Dr. Robertson used to drop in on a regular basis to visit and occasionally have lunch with us. We certainly miss seeing him and hearing the latest updates on his research. It is strongly suspected that the decision to move has something to do with the location of certain grandchildren that we frequently hear about, but we really shouldn't start rumors...

**Joanna Blevins** ('01) is working for UPS as a management trainee in the Industrial Engineering Department where her duties are primarily as a business analyst. She is working on an MBA at the U. Washington, doing volunteer business consulting for local non-profits, and slowly working on a novel. She is interested in making contacts in the business consulting field or with any employer who would appreciate an employee with two Master's degrees (Eng & Bus).

**Joe Beisel** ('97) completed his Ph.D. in Mechanical Eng from OSU in December. He works for Halliburton in Duncan in the reliability group doing measurement and anaylsis using Finite Element simulation to match and eventually predict vibration results.

## REMEMBERING MR. PRATT

**James Bates** ('62) recently shared a memory of Mr. J.R. Pratt with us: "Mr. Pratt taught us much more than physics. A story I remember every time I hear our National Anthem: Many times through my college physics classes with J.R. Pratt, he would tell us that every morning he would turn on the TV at the beginning of the broadcast day, and when they played our National Anthem, he would stand and place his hand over is heart while it was playing. That story is the kind that sticks with you. Of course there are many others."

## STAYING IN TOUCH

Once again we've had the great joy of updating you on the activities and successes of SWOSU Physics Program and its alumni. We especially enjoy hearing from you and passing news of your achievements on to your friends. But we're not mind readers, nor are we clairvoyant. You need to keep us up-to-date. It's as simple as dropping us an e-mail or a quick note, or coming in for a visit if you're in the neighborhood. Of course, we need to keep up with your addresses (e-mail for quick contact and snail mail just to send you the newsletter), too. Be sure to let us know when things change so we don't lose touch.

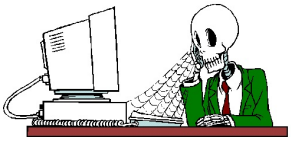
## YOU KNOW WHERE WE ARE

You can send mail to us at 100 Campus Drive, Weatherford, OK 73096-3098, send a FAX to 580-774-3115, or e-mail us or call us at

| | | |
|---|---|---|
| Dr. Terry Goforth | (580) 774-3109 | terry.goforth@swosu.edu |
| Dr. Charles Rogers | (580) 774-3108 | charles.rogers@swosu.edu |
| Dr. Tony Stein | (580) 774-3107 | tony.stein@swosu.edu |
| Dr. Wayne Trail | (580) 774-3124 | wayne.trail@swosu.edu |
| Mary Lou Scouten (Secretary, Department of Chemistry & Physics | (580) 774-3266 | marylou.scouten@swosu.edu |

or just send your e-mail to physics@swosu.edu. We'll see that it gets to the right person.

## WE'RE JUST A CLICK AWAY



You can find us at www.swosu.edu/academics/physics. Click on the Alumni link for the newsletter (past and present) and other news.

## ALUMNI EMAIL ADDRESSES

If you are a SWOSU Alumnus, drop us an e-mail at physics@swosu.edu and we'll send you the complete list of alumni e-mail addresses that we have on file.

## PHYSICS ALUMNI BANQUET 2007

Saturday, April 21, 2007 7:00 p.m. SWOSU Student Union Ballroom $12/person

Name _____ No. Persons Attending _____

Address _____ Phone _____

_____ Email _____

*Please return to*: Dr. Tony Stein ✧ 100 Campus Drive ✧ Weatherford, OK 73096

*We need to provide a head-count to the caterers by April 18, 2007*

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## SHISH KEBAB 2007

Saturday, May 6, 2007 6:00 p.m. Crowder Lake University Park

Name _____ No. Persons Attending _____

Address _____ Phone _____

_____ Email _____

*Please return to*: Dr. Tony Stein ✧ 100 Campus Drive ✧ Weatherford, OK 73096

*If you plan to attend, letting us know will help us in planning the food, but feel free to drop in!*

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**Or...** just give us a call or e-mail us to confirm for either/both event(s).