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

PHYSICS ALUMNI NEWSLETTER

Spring 2017

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

2017 Banquet

Save the date, and make your plans to attend the 35th Annual SWOSU Physics Alumni Banquet on Saturday, April 8, 2017, at the Stafford Air & Space Museum. Service for the buffet dinner will begin around 7 p.m., but the museum will be open at 6 p.m. for anyone who wants to take a tour though this gem and check out the many displays detailing man's historic travels through the air and into space. Of course, plenty of your fellow alums will be around if you just want to visit. After dinner we'll have a chance to honor several students and present scholarships for the 2017-18 academic year. We'll round out the evening with a presentation by **Justin Silkwood** ('10) about his adventures at the intersection of physics and medicine. (More on that below.)

Tickets are $25 per person. You may pay in advance or at the door. We only request that you let us know if you are attending and how many will be in your party by Wednesday, April 5, so we can give a head count to the caterer.

Every mind was made for growth, for knowledge; and its nature is sinned against when it is drowned in ignorance. - William W. Channing

Justin Silkwood

('10) received his B.S. in Engineering Physics and Mathematics from SWOSU. In 2013, he graduated from Louisiana State University with an M.S. in Medical Physics. Upon graduation, he entered into a Medical Physics Residency at Mary Bird Perkins Cancer Center in Baton Rouge, LA, which he completed in 2015. He now works at Oklahoma Cancer Specialists and Research Institute in Tulsa, OK as a therapeutic medical physicist.

The main goal of radiation oncology is to treat a patient's tumor such that 95% of its volume receives at least 95% of the intended radiation dose while at the same time keeping doses to healthy tissues as low as possible. Medical physicists work as a team to ensure that goal is met by maintaining the software used to design treatment plans, evaluating proposed treatment plans created by that software for potential errors, monitoring patients under treatment to ensure the plan is being delivered according to physician intent, and maintaining the equipment used to image the patients and deliver their treatments. Radiation producing machines, known as linear accelerators, are used to treat the majority of patients in a cancer center and require Quality Assurance testing with increasing rigor on a daily, monthly, and annual basis. Medical physicists design and carry out these tests. To achieve all these things in sync with clinic flow, physicists have to be extremely efficient. This profession demands exceptional time management skills, as the acquired images used to plan treatments can become "stale" if too much time passes between initial consultation and first treatment. The patient's tumor could have grown too much or changed shape since it was imaged, decreasing the chances of cure by geometrically missing the target. Most clinics strive to get the first treatment underway within 1-2 weeks of the initial patient consultation. This career provides new challenges daily, is exciting to participate in, and provides fulfillment. A job well done means our

patients get more time with loved ones, more time to take trips or have new experiences, and more time to create lasting memories.

Justin is currently helping install a new linear accelerator (the Center's fourth machine) to provide greater service to patients including increased availability, longer access times, and more efficient response in general.

Justin and his wife Candace live in Tulsa.

2017 Shish-kebab

The 2017 installment of the Physics Shish-kebab will be held at the Crowder Lake Classroom on Saturday, April 29. As always, this event will feature a dazzling display of delectable dishes centered around the deliciously diced and grilled-to-perfection beef, chicken, and veggies. The food will be served around 6 pm, but of course we'll be there early for preparation and presentation. Feel free to come out earlier to enjoy the park's many activities such as hiking and canoeing, or to sit and enjoy the view and some good conversation. We hope to see you there!

A single fact can ruin a good argument. - Confucius

Physics Club Officers

President:	J.P. Wood
Vice-Pres:	Brennon Cupp
Secretary:	Jaxon Taylor
Treasurer:	Garet Crispin
Sponsor:	Dr. Wayne Trail

No amount of belief makes something a fact. - James Randi

Congratulations!

Connor Holland completed a B.S. in Engineering Physics in May, 2016, receiving his diploma and graduating with honors at the convocation ceremony in Milam Stadium on May 7. Connor is currently working for Oklahoma City. He is hoping for an opening in an Engineering position somewhere in the Oklahoma City area for now since his wife has a job there. However, an attractive opportunity elsewhere will not be ignored!

J.R. Pratt Information

The SWOSU Physics Program is hoping to document the influence of Mr. J.R. Pratt on the American effort to land a man on the moon. To this end, we are gathering information about graduates from Southwestern State College (now SWOSU) with majors or minors in physics in the years 1956 to 1964 who went on to work in the space program and contributed to NASA's Lunar Program.

If you are one of these graduates, we would love to collect any information or stories about Mr. Pratt, what job (or jobs) you held, or about your experiences in this great American triumph. Information we'd like to get include 1) What year did you graduate?, 2) What class or classes did you take with Mr. Pratt?, 3) What memory or memories of Mr. Pratt stand out for you? 4) Anything else you'd like to share? We are hoping to document these stories to share with current and future generations of students.

Please feel free to send anything you'd like to share to Terry Goforth. You can send it by email to physics@swosu.edu or by snail mail to 100 Campus Dr., Weatherford, OK 73096.

Thank you so much for any information you provide.

The most beautiful experience we can have is the mysterious…the fundamental emotion which stands at the cradle of true art and true science. - Albert Einstein

Physics Banquet 2016

April 2, 2016, was a gorgeous spring day when the alumni, students, and faculty of the Physics Program gathered at the Stafford Air & Space Museum with friends and family to celebrate and honor the achievements of our hard-working students. Following a delicious dinner served by SWOSU's Food Services, we began the festivities with the induction of three new members to ΣΠΣ, **Kaleb Prough** (Jr, Edmond), **Ian Ray** (Sr, Hinton), and **Lonnie Rich** (Jr, Elk City). **Jaxon Taylor** (Fr, Mustang) was named the Outstanding New Physics Club Member, and **Kaleb Prough** was recognized as the Outstanding Midclassman in Physics. **Connor Holland** (Sr, Duncan) and **Steven Blake Scott** (Sr, Gracemont) were recognized for being named to Who's Who, and **Connor Holland** was presented with a Graduating with Honors medallion to wear during graduation designating him as an Honor Graduate (GPA 3.5 or better). The 2016 recipient of the J.R. Pratt Award for the Outstanding Student in Physics also went to **Connor Holland**. Finally, several scholarships were awarded to deserving students who greatly appreciate the support provided by the generosity of those who came before them. (These will be detailed below.)

The culmination of the evening was a presentation by **Preston Barber** ('82), Airport Radars Systems Manager for the FAA in OKC. He discussed the three types of systems for radar surveillance of aircraft and weather: Primary Surveillance Radar, a passive "talk and listen" system primarily for weather tracking, Secondary Surveillance Radar, an active "ask a question" system that expects and answer from aircraft, and Automatic Dependent Surveillance Broadcast, which collects information that is automatically broadcast from aircraft. Some of the challenges in radar tracking include following trans-oceanic flights where there is a lack of ground-based radar stations and covering less-heavily-trafficked regions where radar coverage is less dense and many airports are without radar.

Preston provided some advice to the students (and everyone). A few gems were: Do what you love. Have a plan, but don't overdo it. Concentrate on bettering yourself rather than simply preparing for a job.

At the end of the evening, there was time for a little more visiting, one last look at a few museum exhibits, a few photos and handshakes, and fond farewells with promises to see each other again.

The important thing in science is not so much to obtain new facts as to discover new ways of thinking about them. -Sir William Bragg

Investing in the Future

Financial aid is simply a necessity for college students as the state-funded fraction of higher education constantly drops, leaving students and their families to foot more and more of the cost of a college degree. In 2016, the Physics Program awarded over $9,000 in assistance, mostly through the generosity of our alumni and supporters. The Arts & Sciences Dean's Scholarship (supported through the Dean of A&S Office) was presented to Dakota Davis (Jr, Woodward) for the amount of $285.50. Two Physics Alumni Scholarships for $1,000 each were awarded to Albaro Nino (So, Commerce) and Boubacar Wane (Fr, Bamako, Mali). Dakota Davis received The Arthur McClelland Memorial Scholarship for $1,000, and the Ray C. Jones Scholarship for $1,250 was presented to Ian Ray (Sr, Hinton). We presented three $500 Benny J. Hill Scholarships to Garet Crispin (Jr, Thomas), Brennon Cupp (Jr, Woodward), and

Jaxon Taylor (Fr, Mustang). Because of your great support, we presented not one but two J.R. Pratt Scholarships, each for the amount of $1,500, to John Paul Woods (Jr, Weatherford) and Sushant Bhatta (So, Kathmandu, Nepal).

2016 Shish-kebab

Last year's annual Physics Shish-kebab was held on a warm late-April day at Crowder Lake. A large crowd of more than two dozen assembled to enjoy the activities in the park and to partake in the fine fare that is the hallmark of this affair. Once everyone's appetites were sated, we followed with the usual induction of new Physics Club officers, swearing them in on a copy of Tipler's *Physics* with oaths that won't quite make Bartlett's Quotations. As the evening waned, Drs. Trail and Stein presented an array of Iggy (Ignoble) Awards to various students for, shall we say, noticeable (if not notable) achievements during the academic year. After a final attack on the desserts table, it was time to clean up, pack up, and say goodbye to the lake, but with good memories (and full tummies) to carry with us.

Getting a Facelift

The bonds have been approved, and the plans are being finalized to complete the remodeling of the CPP building. A decade ago, the east wing and then the north wing were gutted and remodeled. Starting this summer, the west wing (including the faculty offices, seminar room, and a couple of labs and stockrooms) will be cleared out, reshaped, and modernized. Plans include space for a student and faculty research area, an updated lab room with a more efficient stockroom, a reorganized seminar room to better serve our needs, and updated faculty and office spaces. The HVAC system will also be brought up to date for greater efficiency and comfort. We have a lot of moving ahead of us (and about a year of being displaced), but we look forward to the new, improved look and functionality.

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

SWOSU Foundation "Launches" New Physics Scholarship Campaign

From the SWOSU Foundation

SWOSU physics is "go for LAUNCH!"

The Southwestern Oklahoma State University physics program in Weatherford has begun a new scholarship campaign– "LAUNCH!" The campaign is sponsored by the SWOSU physics faculty and the SWOSU Foundation to help raise money for more scholarships to be given to students pursuing a degree in physics at SWOSU.

The SWOSU physics program has many notable alumni that helped shaped America's space exploration history.

In the early 1960s, SWOSU Physics Professor **J.R. Pratt** saw a newspaper clipping for employment opportunities at the National Aeronautics and Space Administration. The newly formed space agency was looking for employees to run a communications office on the ground called "Mission Control."

Several SWOSU physics graduates followed their professor's suggestion of applying and joined NASA to become some of the first

employees in Mission Control. Some of these graduates include John Aaron, Tommy Weichel, James Bates, and Gilbert Carman. Each of these men made history even as it was unfolding around them.

James Bates (‘62) was one of the very first Mission Control analysts to assist in the flights of the first space mission, Mercury, and the Gemini and Apollo missions. Bates was inducted into the SWOSU Distinguished Alumni Hall of Fame in 1993.

John Aaron (‘64) was a flight controller during the Gemini and Apollo programs. He is credited with saving Apollo 12 when shortly after launch it was struck by lightning. He was also a crucial part in the efforts of saving Apollo 13, which earned him the highly regarded nickname of “steely-eyed missile man.” Aaron was inducted into the SWOSU Distinguished Alumni Hall of Fame in 2006.

Tommy Weichel (‘64) was a flight controller during the Apollo missions and was part of the team that reconstructed the equipment to be used on board Apollo 13, saving the astronauts while using the Lunar Module as a lifeboat.

Gilbert Carman (‘67) joined NASA shortly after graduating and became a NASA mission planner during the Apollo and Space Shuttle programs. He was trained in the specialized field of mechanics and quickly became an expert in the maneuvers that would get the Lunar Module to the surface of the moon and back. He then worked with the Space Shuttle and became the acknowledged expert in Shuttle entry guidance and trained many controllers who were responsible for the landing of the Shuttle. Carman was awarded the SWOSU President’s Award of Merit in 2015.

Now, there’s a new generation of SWOSU physics students who hold the same promise. The SWOSU physics program is one of the most comprehensive in the state and region. The “LAUNCH!” campaign will help fund scholarships to help encourage more physics students and to help “launch” a new generation of SWOSU scientists and engineers.

To make a gift or pledge to the “LAUNCH!” SWOSU Physics Scholarship Campaign, go online to www.GiveToSWOSU.com and choose “LAUNCH!”on the drop-down menu, or mail a check made payable to “SWOSU Foundation”with “Launch! Physics” in the memo line to: SWOSU Foundation, Burton House, 100 Campus Dr, Weatherford, OK 73096. *(If you prefer, you can mail the check directly to Dr. Terry Goforth, Dept. of Chemistry & Physics, 100 Campus Dr, Weatherford, OK 73096 and I’ll be sure to hand-deliver it to the Foundation!)* For more information, visit www.SWOSUFoundation.com or call Brandi Rizzi at 580-774-3156.

Meeting John Glenn

by Jim Bates (‘62)
NASA ’62-’04

It was only a month or so after I graduated from Southwestern State College (Weatherford, OK) with a BS in Physics and Math in May 1962. I reported to NASA June 6th and began my life as a Project Mercury Flight Controller trainee, which involved two or more months of ‘basic’ training with booster rockets, space capsules, tracking stations, and the detailed systems that made everything work and communicate with each other. We were all in constant training and refreshers after the ‘Basic.’ The following occurred after I had been at NASA only for a few weeks (my ears were still damp).

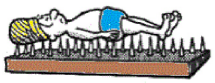
John Glenn had recently returned from space, had a ticker tape

parade in New York, and had just returned to Houston from water skiing with Jackie Kennedy (which was on the 6 o'clock news the night before). At NASA, all the Flight Controllers and Astronauts were in a training session to learn about the new and improved Mercury capsule for the next flight in October. The McDonnell "factory rep" (builder of the Mercury capsule) had handed out the new detailed systems manuals, that included updated drawings and functions which we had to learn.

We were all assembled in a small training room, almost full, but with a couple empty chairs, including one immediately to my right. We were following the lecture and tracing the drawings with our fingers, when the chair next to me scooted out and a voice said "I'm sorry I'm late," and then said "I forgot my books. Can I look on with yours?" I said, "sure," and then turned and saw it was JOHN GLENN! Our HERO, who had just gotten back from water skiing with Jackie Kennedy, which I had seen on last night's news, and now he was sitting next to me, sharing my book and pointing out the new systems schematics and commenting to me on what was new and what was deleted! I tried not stare, and didn't (well, maybe a slight peek) at JOHN GLENN! When the briefing was over he said "thanks" and left.

I will always remember that meeting, when ALL of us in NASA were young and in our prime. Thanks, John Glenn, for being one of those golden memories.

The effort to understand the universe is one of the very few things that lifts human life a little above the level of farce, and gives it some of the grace of tragedy. -Steven Weinberg



Bed of Nails

by Wayne Trail

Need to get a good night's sleep? Maybe the SWOSU Physics and Engineering Club can help! This fall we have constructed a bed of nails and a "pad" of nails for use in demonstrations in the classroom and at Physics Day. The bed is about 15 inches by 31 inches, fits roughly under your torso, and has about 450 four-inch nails. It is currently not quite as comfortable as we would like so we are considering adjustments to nail sharpness as a means for reducing pressure and improving sleep quality. The "pad" is about 15 inches by 15 inches and is used to allow someone to be in a "nail sandwich," in which the pad is placed nails-down on the chest and weights are placed on top of it. The effect can look quite scary to anyone unfamiliar with the concept of pressure, so this makes a very effective teaching demonstration.

Making a Difference

by J.P. Woods
SWOSU Class of 2017

I'm currently a senior at SWOSU. I will be graduating this May with a B.S. in engineering physics and a B.A. in chemistry. SWOSU was at the top of my list when I began looking to attend college, mostly because it was affordable, and my dad (Dr. John Woods, Mathematics) had retired from the school just a few years earlier. To make a long story short, I found myself meeting with some of the engineering physics faculty, and I knew I had found the program for me. To provide a little background, I decided to leave my job and attend college in hopes of pursuing a career in medicine. I know, you're thinking "engineering physics, medicine, what?" I wanted to find an undergraduate program that would teach me the basics of science, how to think about solving complex problems, and one that might set me apart from other applicants. As I said, I had decided that this was that program, and it has most definitely delivered. I've been chosen to attend the University of Oklahoma Health Sciences Center M.D./Ph.D. Program. This program normally admits two students per year, and applicants must be accepted to the medical school to participate. Per the OUHSC website, "Consideration

is based upon research experience, a competitive GPA and MCAT score, letters of reference, tangible attributes such as work experience, volunteerism and leadership, and intangible personal qualities that indicate a likelihood for academic and professional success in research and clinical medicine." The program is intended to last 7 years. I will attend the first two years of medical school followed by 3 years of graduate research. Next, I will defend my dissertation and earn my Ph.D. before returning to finish the last two years of medical school. The program is fully funded, so I will be able to finish relatively debt free, and I'll receive a yearly stipend throughout. I can confidently say that I would not have been able to meet the standards mentioned above if it weren't for the mentorship and scholarships that I've received from SWOSU faculty and alumni.

Editor's Note: J.P is a top-notch student, a standout even among the best students on campus. He has been the recipient of several Physics scholarships over the past three years. This financial assistance no doubt helped him concentrate on his studies, culminating with his acceptance into the coveted MD/PhD program. YOU, our generous contributors, are a part of his success. Thank you!

How YOU Can Help

As J.P.'s story above (and so many others) shows, your donation makes a difference. The courses for a degree in Engineering Physics are challenging, requiring many hours of study outside of the classroom and lab to master the concepts and skills that define a physicist or engineer. In the 2016-2017 academic year, tuition and fees at SWOSU ran about $213 per credit hour–that's $3195 for a 15-hour semester, not including lab fees, textbooks, and other supplies (never mind living expenses). Tuition and fees alone eat up 440 hours of work at minimum wage (assuming no deductions). In a 16-week semester, that's 27 hours of work per week on top of going to school. (More, because, deductions!) It is simply no longer possible to work your way through school without assistance or debt. Of course, summer work can alleviate some of the problem, but summer research programs and internships, considered important in building a resumé, often don't lend themselves to building up a large cash reserve. And students who find themselves working long hours to pay for college are not performing at their best in the classroom. They don't have time to focus on studies.

We hope to help in some small way by providing scholarship assistance. Every $1000 we can provide is about 100 hours fewer that a student must work, or about 3 hours per week over an academic year. That's study time to complete a homework assignment or to review material for an exam. That's time that may make a big difference by the end of the semester.

No donation is too small. We've had donations of several thousand dollars all the way down to $10. It all adds up, and we appreciate each and every one. Whatever you can afford is the right amount.

To those of you who have contributed, once, twice, or year-after-year, we say THANK YOU! You are making a difference. You are investing in the future.

There are in fact two things, science and opinion; the former begets knowledge, the latter ignorance. - Hippocrates

Solar Eclipse!

by Wayne Trail

Some members of the SWOSU Physics and Engineering Club will be missing the first day of classes of the Fall 2017 semester. We'll be heading up to central Nebraska, but not for a football game or a noodling competition. August 21, 2017, is the first total solar eclipse in the 21st century in the U.S. and some of us don't want to miss it.

If you want to see a total solar eclipse in the U.S. in the 21st century you have at most eight opportunities, depending on how long you live. Only six will do more than graze the country. If you want one that cuts across (roughly) the middle of the country there are four. These occur on Aug. 21 2017, April 8, 2024, August 12 2045, and September 14, 2099. (There are a couple in the Southeast corner of the U.S. in 2052 and 2078). Being a more "mature" person, I surmise that I have two more solar eclipses to see, and I plan on catching both!

Total Solar Eclipse 2017 is one of the most accessible of the century: it crosses the entire lower 48 from Oregon to South Carolina, touching 12 states. The eclipse will enter the west coast of Oregon around 10:15 am local time (PDT) and leave the east coast of South Carolina around 2:50 pm local time (EDT). If you are standing in the center of the path of totality you will get about two and a half minutes of totality in the Moon's umbra.

If you live in Oklahoma and want to experience the eclipse you'll want to head to either Missouri or Nebraska. Western Oklahomans are probably best served heading to Nebraska since it has less average cloud-cover, but eastern Oklahomans would have a shorter trip going to Missouri.

For those who live in Oklahoma and don't want to travel, you will still get between about 75% (southern Oklahoma) and 90% (northern Oklahoma) totality. It should be noticeably less bright near the maximum eclipse. During the maximum coverage, go outside and look at the beams of sunlight that hit the ground under a leafy tree. You will see images of the solar eclipse on the ground among the shadows.

For those who live in other states, check the NASA link below for a look at how much of the eclipse you'll get.

The path of totality for the 2024 eclipse passes through southeastern Oklahoma, so watch this space in the not-too-distant future.

Related links:
Total and Partial eclipse path video:
https://svs.gsfc.nasa.gov/4314
Road trip destinations for viewing:
https://www.greatamericaneclipse.com/best-places-to-view/
Where are the clear skies?
http://eclipsophile.com/overview/

Alumni News

This is the part of the newsletter that is written by YOU. We love hearing about your work and activities, and we hope you enjoy hearing about your friends and classmates as well.

Craig Huffman ('83) is working at Micron in Boise, ID. "My days using reactive ions from a plasma as a tool continue but on a smaller scale. Ha! Imagine building something smaller! In the recent past, the focus has been on new materials; now its all about putting more 'stuff' in the same space. So my task is to remove materials atomic layer by atomic layer, without disturbing the the adjacent atom, of the same element."

Bhaskar Basnet ('07). I work as an Operations Engineer for Spinnaker Oilfield Services in El Reno, OK. I handle all of the technical aspects of their Cementing and Acidizing Services.

Perry Regier ('60) dropped by the department for a visit on April 13, 2016. He has written a draft of a book on several topics in science (mostly physical science) on CD. The book is intended as a textbook for high school or as an elective in college. His goal is to eventually provide an inexpensive but rigorous text for science students.

Tom Leck ('74) [chem major, physics/math minor] was recognized at the 2016 Convocation as a SWOSU Distinguished Alumnus. He and his wife Cecilia came by the department and visited with us the day before (May 6, 2016). We took a tour of the physics and chemistry departments and reminisced about how things looked "back in the day" and shared memories of the faculty at that time.

Logan Willis ('89) visited the

department on May 9, 2016. We took a tour of the physics rooms and had a nice lunch and an even nicer visit. It was a chance to talk about our memories of Drs. Hill, Armoudian, Jones, and many other faculty in math and chemistry.

Hoyt Burcham ('78) has retired following a long career with the National Weather Service (NOAA) in Norman, OK.

Randy Cabeen ('83) continues to work for Northrop Grumman. He is now telecommuting for them from here in good ol' Oklahoma.

Dylan Frizzell ('14) is working toward a Ph.D. in high-energy physics at OU. He received a student fellowship at Argonne National Lab and is studying silicon pixel sensors at the Fermilab Tevatron and working in an analysis group setting limits on beyond-standard models. After his stint at Argonne, Dylan will be off to France to spend some time working at CERN.

Dale Burrows ('94) is working for Finisar in Wylie, TX, where he is making VCSEL's and photo-detectors and running the Photolithography department.

Richard Feynman was one of the most prolific and famous physicists of the 20th century, famously involved in the Manhattan Project, the top-secret American effort to build an atomic bomb. But the physicist was also a bit of a practical joker and a mischief-maker. When bored at the Manhattan Project in Los Alamos, N.M., Feynman reportedly spent his free time picking locks and cracking safes to show how easily the systems could be cracked. That wasn't the end of his adventures, however. On the way to developing his Nobel-prize winning theory of quantum electrodynamics, he would hang out with Las Vegas showgirls, become an expert in the Mayan language, learn Tuvan throat singing and explain how rubber o-rings led to the Challenger spacecraft's explosion in 1986. (*Source: Livescience.com*)

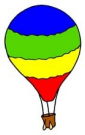
LET'S STAY IN TOUCH

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

Dr. Terry Goforth	(580) 774-3109	*terry.goforth@swosu.edu*
Dr. Tony Stein	(580) 774-3107	*tony.stein@swosu.edu*
Dr. Wayne Trail	(580) 774-3124	*wayne.trail@swosu.edu*
Dr. Brian Campbell	(580) 774-3118	*brian.campbell@swosu.edu*

You can also send your e-mail to *physics@swosu.edu*. We'll see that it gets to the right person.

AND WE'RE ONLINE!



You can find us at www.swosu.edu/academics/physics. Click on the Alumni link for newsletters past and present, announcements, or to update your information.

SCHOLARSHIP FUNDS

If you'd like to donate to one of the physics scholarship funds, just go online to https://standingfirmly.com/givetoswosu and select *Launch! Campaign for SWOSU Physics* in the Designation Box. You can set up a single donation in any amount or pledge a recurring gift. If you want your donation to go to a specific Fund **(JR Pratt, Benny J. Hill, Ray Jones, Dr. Garo Armoudian, McClelland, or Physics Unrestricted**) just type in the name in the Special Instructions box along with any other information you'd like to share. If you prefer to donate the tried-and-true "old-fashioned" way, you can send your check (payable to *SWOSU Foundation*) to us (c/o Terry Goforth, SWOSU, 100 Campus Dr, Weatherford, OK 73096) or directly to the SWOSU Foundation (SWOSU, 100 Campus Dr, Weatherford, OK 73096). If you send a check, be sure to designate which fund you are giving to **(JR Pratt, Benny J. Hill, Ray Jones, Dr. Garo Armoudian, McClelland, or Physics Unrestricted**) to be sure the money is used for physics. All donations are 100% tax deductible. Check with your employer or organization about matching your donation. And **THANK YOU**!

ALUMNI EMAIL ADDRESSES

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

If your address is incorrect or if you prefer to use a different address, please let us know and we'll correct it.

If your address isn't on our list (you haven't received any e-mail from us in the last year) and you'd like for us to add it, let us know! We'll gladly include you.

Alumni attending the 2016 Banquet

Back Row: Loyal Barber, Rick Pearson, Preston Barber, Rosalie Bates.

Front Row: Terry Goforth, Ron Barber, Dylan Frizzell, Jim Bates.

Student Receiving Honors at the 2016 Banquet

Back Row: Jaxon Taylor, Brennon Cupp, Dakota Davis, J.P. Woods.

Front Row: Kaleb Prough, Garet Crispin, Connor Holland, Ian Ray.

"I came into the room which was half-dark and presently spotted Lord Kelvin in the audience, and realised that I was in for trouble at the last part of my speech dealing with the age of the Earth, where my views conflicted with his. To my relief, Kelvin fell fast asleep, but as I came to the important point, I saw the old bird sit up, open an eye and cock a baleful glance at me. Then a sudden inspiration came, and I said Lord Kelvin had limited the age of the Earth, provided no new source [of heat] was discovered. That prophetic utterance referred to what we are now considering tonight, radium! Behold! The old boy beamed upon me." (Ernst Rutherford)

-As quoted in "Rutherford's Timebomb" in The New Zealand, 15 May 2004

PHYSICS ALUMNI BANQUET 2017

Saturday, April 8, 2017 7:00 p.m. Stafford Air & Space Museum $25/person

Name _____ No. Persons Attending _____

Address _____ Phone _____

_____ Email _____

Please return to: Dr.Terry Goforth ✧ 100 Campus Drive ✧ Weatherford, OK 73096

We need to provide a head-count to the caterers by April 5, 2017

SHISH KEBAB 2017

Saturday, April 29, 2017 6:00 p.m. Crowder Lake University Park

Name _____ No. Persons Attending _____

Address _____ Phone _____

_____ Email _____

Please return to: Dr. Terry Goforth ✧ 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 unannounced!

Or... just call (580)-774-3109 or send e-mail to physics@swosu.edu us to confirm for either/both event(s).