


# Quark



## Editor's note—

*I want to apologize for the delay in publication. The faculty, students and staff of the Physics Department at Pittsburg State University are very appreciative of our alumni and readers. We are proud to announce that we now have a presence on Facebook and hope you look us up to read about the latest happenings.* 

*We enjoy hearing from you, too! If you are not on Facebook, please mail your news to the PSU Physics Department or email me, [dkuehn@pittstate.edu](mailto:dkuehn@pittstate.edu)*

## Loss of Dr. Alexander Konopelko

Since our last newsletter, the Physics Department suffered the tragic loss of our colleague, Assistant Professor Alexander Konopelko, due to injuries sustained in an automobile accident on August 10, 2012 near the Missouri border just east of Pittsburg. Alex had been driving with his wife, Tatiana, and daughter, Nicole-Marie, who were also seriously injured in the crash but have since recovered.

Prof. Konopelko joined the Physics faculty in 2008 after spending three years as a research associate at Purdue University. Before that, he had a similar position in Germany after earning his Ph.D. in physics from Tomsk State University of Technology in Tomsk, Russia, in 1990. Although just 50 years of age, Alex had accumulated an enviable list of accomplishments in high energy cosmic ray research and was widely respected for his involvement with students, many of whom were sponsored to visit research sites in Heidelberg, Germany.



Alexander Konopelko

In the year before his death, Alex and his research team were awarded a \$140,000 grant from NASA to study black holes. Their goal was to catch one in a flaring state, which he says would ultimately help explain the evolution of the universe. He traced his fascination with outer space to movies and shows about space, including such classics as Star Trek, which led to this latest area of study focused on black holes. His other connections with NASA would certainly have helped with that endeavor, along with his work to recruit students to the program. At the time of his passing, he was actively involved in the Fermi Gamma Ray Telescope, the VERITAS program (Very Energetic Radiation Imaging Telescope Array System) in Arizona, HESS (High Energy Stereoscopic System), and the HEGRA atmospheric Cerenkov telescope in Germany.

Crediting his team of students, faculty and staff with helping to secure the new

*(continued on pg. 2)*

Konopelko (*from pg. 1*)

grant, he was certainly headed in the right direction when it comes to showing potential students what they can achieve at PSU. His untimely accident ended all the promise of this work. Pittsburg State University President Steve Scott issued the following statement upon learning of his death: "Alex had an incredible passion for research and for instructing students. My thoughts and prayers go out to his family and to all those involved in this tragic accident. Our Gorilla family is in mourning today, and we pray for a speedy recovery for his wife, Tatiana, and his daughter, Nicole."

Professor of Physics Tim Bolton at Kansas State University summed up the impact of this event by stating, "This is a terrible loss for the entire Kansas physics community."

Alex was a loving and devoted husband to his wife and took great joy in his two daughters, Valentina Ostric, who lives with her husband, Denis, and son, Adrian, in Germany and Nicole-Marie. He especially enjoyed playing tennis with Nicole and spending time outdoors with their dog. He will be sorely missed by his colleagues, family, friends, and everyone who knew him. The family has suggested memorials to the Dr. Alexander Konopelko Memorial Scholarship to benefit Pittsburg State University students majoring in Physics. These may be sent to the PSU Foundation, P.O. Box 4005, Pittsburg, KS 66762.

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## Faculty Updates

**Dr. Serif Uran** has been teaching in the PSU physics department for nine years. He teaches introductory to master's level physics classes. His new advance topics course, PHYS 743 Solid State Electronics became a yearly course taken both by Physics and Technology majors. In that course students learn about logic gates, integrated circuits and LabView programming.

Along with students, Dr. Uran has attended several different conferences such as Zone 12 meeting of SPS at University of Missouri, Kansas City, in April 2013; the Midwest Solid State Physics conference at University of

Kansas, Lawrence, in September; the IDeA Network of Biomedical Research Excellence (INBRE) conference at University of Arkansas, Fayetteville, in October; and the PSU 2013 Research Colloquium in April.

A number of grant proposals submitted to U.S. Civilian Research & Development Foundation (CRDF) under the 2013 Young Scholars Support Program (YSSP) in Armenia have been reviewed by Dr. Uran. He also served as a thesis committee member for three graduate students. His advisee, Shahid Iqbal, finished his master's degree at the end of spring 2013 and got accepted to the physics Ph.D. program at Western Michigan University.

PSU Society of Physics Students (SPS) has been advised by Dr. Uran since 2004. The SPS is a national and academic student organization which promotes physics and physics education. The PSU chapter of the SPS is in Zone 12, which includes Kansas, Oklahoma and Missouri. Science education via student organizations such as SPS is an important part of university experience. SPS students currently do research on graphene, and holography.

In addition, Dr. Uran served on Tobacco Task Force on campus, and PSU - Kansas National Education Association (KNEA) as parliamentarian. He volunteers for student recruitment events such as Rumble in the Jungle and Junior Jungle Day, Pittsburg library book sales and Sunrise rotary club sponsored events. He also spent three weeks in Turkey last summer before coming back to teach a summer course in July.

**Dr. Chuck Blatchley** has continued to work with gamma spectroscopy, guiding two graduate students in work with the High Purity Germanium (HPGe) and NaI(Tl) detectors. This work had previously been the basis of grant proposals in collaboration with the astrobiology group at KU. A third student is now making tomographic autoradiographic images using low level radioactive sources and single plate Polaroid film.

Dr. Blatchley is also still an Adjunct Professor at the University of Nebraska Medical Center in Omaha in the Department of Orthopaedic Surgery and Rehabilitation, where he has continued his

collaboration with Professors Fereydoon Namavar and Hani Haider at the Scott Technology Center at UNMC, developing and testing new wear resistant materials for biomedical implants, including nanostructures produced by ion beam assisted deposition. In conjunction with this work, he completed a chapter on nanomaterial safety in biomedical devices in the book, "Nanotechnology Safety Education," R. Asmatulu, Ed., which was published by Elsevier last Spring.

As coordinator for the Department's teacher education efforts, Dr. Blatchley serves on the Secondary Education Coordinating Council and the Council for Teacher Education. In conjunction with those committees he volunteers for the Kansas Board of Education Program Review team and the State's Physics Licensure Committee to set standards for teachers in Kansas. He also regularly assists the College of Education in their "Explorations" interviews with teacher candidates and scholarship selections, and helped interview candidates for the military service academies for Congresswoman Jenkins.

**Kyla Scarborough MS (PSU 2005)**  
Ms. Kyla Scarborough earned her master's degree in physics in 2005 and has been teaching in the PSU Physics department since that time. This fall she is teaching Descriptive Astronomy, Physical Science, and supervising the Astronomy labs. She supervises the L. Russell Kelce Planetarium, which presents programs to a few thousand students annually, and has been training a student employee to assist with planetarium programs. Kyla organized the Physics Frolics and Earth & Space Sciences portions of Science Day 2014. Her research interests have included wear testing of biomedical implants and engine parts and also vertical structure modeling of Saturn's upper atmosphere from narrowband near-infrared imaging.

**Dr. Benjamin O. Tayo** is an assistant Professor of physics at Pittsburg State University (PSU) since August, 2013. He received the B.Sc. (Hons.) in physics and computer science from University of Buea, Buea, Cameroon, in 2004, the M.Sc. degree (with distinction) in theoretical condensed matter physics from



the University of Trieste, Trieste, Italy, in 2007, and received the Ph.D. degree in physics from Lehigh University, Bethlehem, Pa., USA, in 2012.

Before joining PSU, he was a visiting research scientist/postdoctoral fellow at the department of computer/electrical engineering at Lehigh University. He was also a lecturer of physics at Lehigh Carbon Community College and an instructor of physics at Lehigh University. His current research interests involve theoretical/computational aspects of the physics of two-dimensional atomic crystals and their heterostructures for applications in nanoscale electronics. He applies quantum mechanics and many-body physics to study the electronic and optical properties of these materials, paying particular attention to material properties that could make them suitable for use in novel electronics, for instance engineering the band gap of graphene and graphene based heterostructures could lead to the possibility of novel low-dimensional graphene-based semiconductors for applications in low power nanoscale electronics. Dr. Tayo taught the following courses in fall 2012: Quantum Mechanics (graduate level), College Physics Laboratory, and Physical Science (general education course). In spring 2014, he taught the following courses: Nanoscale Physics, Solid State Physics and College Physics Laboratory.

**Dr. David Kuehn** received his Ph.D. in astronomy from New Mexico State University in 1990. Since our last newsletter, Dean Kunkel appointed Dr. Kuehn as interim chairperson of the Physics Department in Fall 2013. As chairperson, Dr. Kuehn had to complete and submit the Physics Department bachelor's and master's degree program review documents; arrange and administer an external reviewer to tour and review the department's programs, and present the results of the review to the university program review board. At the time of this writing, the department has not yet received the findings of the committee, but the faculty of the department are confident that both the bachelor's and master's degree programs will be retained by the university.

Since the untimely death of Dr. Konopelko in August 2012, Dr. Kuehn

began teaching the astrophysics courses, including a new preparation PHYS 775 High-Energy Astrophysics. In that course, Dr. Kuehn taught about stellar evolution with an emphasis on stellar end states including supernovae, neutron stars and black holes. In addition, he taught observational and theoretical foundations of active galactic nuclei and gamma ray bursts. Dr. Kuehn completed writing the computer control code for the acousto-optic tunable filter point spectrometer that was being developed jointly by colleagues Dr. Nancy Chanover and Dr. David Voelz at New Mexico State University and Dr. David Glenar at Goddard Space Flight Center. The instrument was transported to GSFC for testing and integration with a time-of-flight mass spectrometer. A paper was recently published (June 2013) about the instrument in Optical Engineering entitled "Infrared acousto-optic tunable filter point spectrometer for detection of organics on mineral surfaces." The instrument was designed to be part of a Mars rover mission proposal and funding for the final construction is pending.

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## Congratulations to PSU Physics Graduates 2012

John Barksdale (BS in Physics)  
Dongqing Huang (BS in Physics)  
Jonathon Mayfield (BS in Physics)  
Elliott Rowland (MS in Physics)  
Nathaniel Smith (MS in Physics  
and Mathematics)  
Qiang Xiong (MS in Physics)

## 2013

David Heins (BS in Physics)  
Tyler Shallenburger (BS in Physics  
Education)  
Tyler Smith (BS in Physics)  
Nish DeSilva (MS in Physics)  
Shahid Iqbal (MS in Physics)  
Brenden Smith (MS in Physics)

## 2014 (Spring)

Luke Callanan (BS in Physics)  
Andrew Ferrel (BS in Physics)  
Aaron Flood (BS in Physics)  
Cody Parden (BS in Physics)  
Josh Cochran (MS in Physics)  
Yusra Zabarmawi (MS in Physics)

## A big THANK YOU! to all of our dedicated and generous donors.

Cheryl L. Adams  
Dr. and Mrs. Bob J. Backes  
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Edward L. Van Hoorebeke

## Society of Physics Students (SPS) Activities

- PSU-SPS elected new officers at the start of the school year, Merab Basiliaia became the president and Chris Ward became the vice president. Michael Giffin was elected to be the secretary and treasurer of the club.

- The chapter received “Notable Chapter Award” from the American Institute of Physics in late November. Chapter recognition was determined by a careful review of chapter reports. Reviewers gauge how well the report conveys the chapter’s participation in interactions and activities that center around the mission statement for SPS. The criteria include the chapter’s involvement in local, zone and national SPS meetings and other professional meetings, participation in SPS programs, outreach efforts to the grades K-12 or the general public, participation in community service, contributions to student recruitment and retention participation in social events, and interactions with the department’s alumni.

- Chapter members presented their research activities to PSU Student Organization Committee and was able to secure about \$400 funding for their research and travel. They also bought and put together their own computer for SPS research and activities.

- SPS students helped physics department in the Rumble in the Jungle Event: In Rumble in the Jungle, high school seniors and their parents were invited to visit Pittsburg State University where learn about different degree programs. This is a

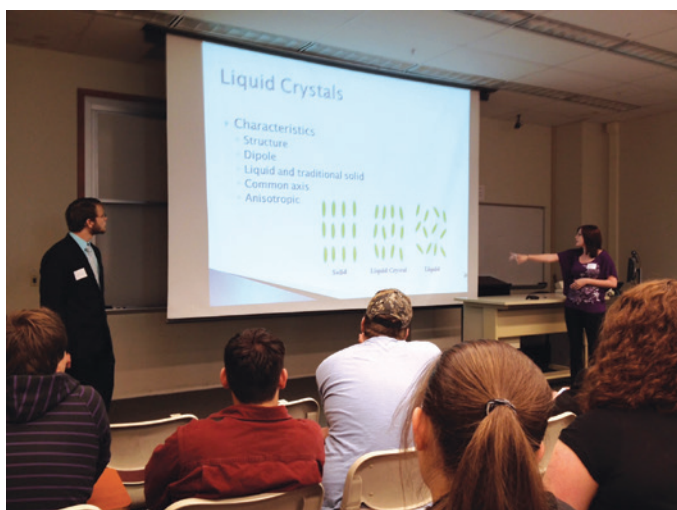
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great opportunity for our SPS chapter to find new students who might be interested in physics.

- PSU-SPS chapter attended the annual SPS Zone 12 meeting at University of Missouri at Kansas City, Mo. SPS members Amy Beggs and Chris Ward presented their research titled “MBBA and 5CB Liquid Crystal Phase Transitions” at the zone meeting and won the first place award, which included a hand-made coin trophy (bottom right). The coins in the trophy were shrunk using high magnetic field.

Dr. Serif Uran,  
Amy Beggs,  
Merab Basiliaia,  
Robert Gilmore  
and Chris Ward  
at the annual SPS  
Zone 12 meeting  
at University of  
Missouri at Kansas  
City, Mo.



Chris and Amy  
presenting  
their research  
at UMKC.

First place  
award, SPS  
Zone 12.

