



University of Alaska Fairbanks Physics Department

Volume 4, Fall 2007

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Letter from the Department Chair

And now to the fourth annual newsletter from the UAF Physics Department, in which we provide information on successes within the past year and plans for the future. I am certain I just finished the third one!



In that previous newsletter I told you that we had completed designs for the revised curriculum in the undergraduate degree programs. All approvals have now been obtained and one more of the new courses has been introduced. We had previously added PHYS 220, Introduction to Computational Physics. In the spring of 2007 we introduced PHYS 301, Introduction to Mathematical Physics. More are following in fall 2007. At the graduate level, we have gained approval for a new course in the spring 2008 semester, Non-Linear Dynamics, which will be taught by Assistant Professor Renate Wackerbauer.

Assistant Professor Martin Truffer applied for promotion and tenure in fall 2006, with both

granted in spring 2007. He also applied for a sabbatical, which was granted, so this year we are without his services. In addition, we nicely solved the problem of an open faculty position by the return of Assistant Professor Mark Conde from LaTrobe University in Australia. What good fortune!

I have been stimulated by Will Blackburn's letter (see News and Comment from Everyone) to attempt a brief history of department heads or chairs. The position was once department head, but with the continuing encroachment of upper-level management within universities, the departmental leadership has been altered to that of chair. Some claim there is no difference, but some of us with history in other institutions and long exposure through the decades know better. Here is what I have captured from a brief bit of research in the library and conversations with people who should know. Additions by readers with good memories will be gratefully received, and with permission I will publish and/or acknowledge your contributions, as you chose. I will also have it added to our website, so everyone can see it evolve. Bold font indicates certainty. All else is in flux.

Victor Hessler*	? -- 1958
John G. Tryon*	1958 -- 1962
Francis Parker**	1962 -- 1963
Leif Owren	1963 – 1964
Manfred Rees	1965 -- 1966
Roger Sheridan	1967 – 1968
J. D. Roberts	1969
Roger Sheridan***	1970 – 1981
John Murray	1981 – 1983
Abas Sivjee	1983 – 1985
Syun Akasofu	1985 – 1986
Roger Sheridan	1986 – 1987
John Morack	1987 – 1997
Brenton Watkins	1997 – 2003

John Craven 2003 – present

- * Physics and Electrical Engineering
- ** Physics, acting (from Mathematics Dept.)
- *** May not have been continuous

As always, I look forward to constructive suggestions for improvements and encourage notes telling us what you are doing. We will be delighted to share them in next year's newsletter. I have also noticed that we do not yet have our mailing list fully under control, so if you are missing a past year's edition, all are on line at the department's website. If you prefer, we can send you a hardcopy.

Lastly, this newsletter is largely the product of Mary Parsons, the department's administrative assistant, and all the folks she enticed (or bribed with M&Ms) to make contributions. To her and all of you, and to all alumni and friends who contributed, thanks.

Student Graduations

We are delighted to acknowledge those students who have completed their undergraduate and graduate degrees in the past year. We hope that our graduates take away good memories of their time with us and UAF, and will remain in contact.

Undergraduate Degrees

(student, degree, major)

2006-2007

Jerry Farnam, BS, General Science

Jason Hoisington, BS, General Science*

Eric Johnson, BS, Interdisciplinary Program,
Physical Biochemistry**

Brandon Marken, BS, Physics

**magna cum laude*

***cum laude*

Graduate Degrees

(student, thesis/dissertation title, degree, advisor)

PhD, 2006-2007

Nobushiro Suzuki, Observations of Metal

Concentrations in E-Region Sporadic Thin Layers Using Incoherent-Scatter Radar (Interdisciplinary Program, Engineering Physics, Dr. Brenton. Watkins)

Student Awards

Outstanding Undergraduates

This year we are pleased to announce outstanding undergraduates in Physics and in General Science. We do not know why it took us so long to realize that we had not been acknowledging outstanding students in General Science.

Physics - Chris Granade



Chris Granade is on schedule to graduate in May 2008 with BS degrees from three programs: Physics, Mathematics, and Computer Science. He plans to pursue graduate studies in information/quantum computing. Towards that end, he obtained funding (both internal and external) to attend the February 2007 Southwest Quantum Information and Technology ("SQuInT") workshop held in Pasadena CA. He has already begun work on his Honors program thesis in this area. He has worked with the Geophysical Institute Infrasound Group for the last year and has competed in the Putnam exam twice. Chris served as the Society of Physics Students (SPS) secretary for two years, during which time he started the group's Wiki site. In April 2007, he was elected SPS president. In the spring he was named the Physics Outstanding Undergraduate Student for 2006-2007.

General Science - Jason Hoisington



Jason graduated in the spring of this year with a B.S. degree in General Science. This degree involves completing two majors and a minor - or one major and two minors, so it is not for the faint of heart. He is currently working in a lab in the Anchorage area. Says Jason:

"The most valuable thing that I've taken away from my coursework at UAF, at least for what relates to my job, is the ability to keep an organized data notebook. While I don't need to go into depth about the methods used as I did in class, I use a separate notebook for each test I perform, so being able to keep track of the data in all of them is a very necessary skill. Basic troubleshooting of laboratory equipment is another which I've had to use at times to determine the source of an instrumental error. The basic safety practices for lab work and general chemistry knowledge that I learned throughout college has also been helpful."

Outstanding Teaching Assistant

Mr. Sam Lazerson was selected as this year's recipient of the award for outstanding teaching assistant as a graduate student. And, we should note that this is his second such award. The American Institute of Physics donates a one year subscription of *Physics Today* to the winner each year. Sam recently passed his written PhD comprehensive examinations and is working with Dr. Heinz Wiechen on research topics in dusty plasmas.

Physics Department Scholarships

The Physics Department at UAF solicits donations from faculty, staff, alumni, and friends to support this endowed scholarship fund. The intent is to benefit academically excellent and promising undergraduate physics students and to encourage high school students with strong interests in science to consider physics as a career. Awardees must be declared physics or applied physics majors at award receipt. A committee of contributors to the fund makes unsolicited awards.

Mindy Krzykowski and Christopher Granade are this year's awadees.

Mindy Krzykowski



I blame becoming a physics undergraduate on Dr. Curt Szuberla. In my senior year at North Pole High School he taught my calculus class and shared a wealth of information not only about mathematics but also about life. The class was a year long and consisted of about ten students, so we all got pretty close and comfortable with each other. I found myself among peers that were not of my usual group. In a place where popularity reigns and high school drama is everywhere I had a 'secret' getaway where I made friends with the most interesting people. It is true that I played softball, sang, did art and partied with the best of them, but this class was the first time that I really had a chance to connect to the geek within and be okay with it. The next step toward becoming a physics undergraduate was when I received the UA Scholar Scholarship to go to an Alaskan university and found out that no Alaska universities had an undergraduate program for astronomy, which is the direction I wanted to go

out of high school. Dr. Szuberla then counseled me on my options, among them going into physics and specializing later in astronomy. That was it, the pieces were in place and by my second semester at UAF I had declared my physics major.

As far as the future is concerned I am less sure of where I want to go with my degree than when I set off. I love physics and the more I learn the more it fascinates me. Nuclear physics, atmospheric physics, astrophysics, geophysics, particle physics; to just name a few of the topics I find interesting. All I want is to be happy and using that as my goal and guide I find that life is good and I am becoming a physicist of some sort.

Chris Granade

This is Chris' second year as an awardee, so one can refer to last years' newsletter and/or see the article on Chris several pages back in this newsletter.

Undergraduate Summer Research



On 28 September five of our undergraduate students gave talks on their summer research experiences to the faculty and students at the Friday meeting of the department's Journal Club. Their abstracts follow:

Jason Turnquist:

Observing HAARP Stimulated Plasma Lines.

I used the Geophysical Institute's multiband receiver in conjunction with the diagnostic radar (MUIR) to observe and compare the power and number of artificially enhanced up-shifted and down-shifted plasma lines produced using varying power of the HF heater located at

HAARP. Summer mentor: Dr. Brenton Watkins

Mindy Kryzkowski:

HAARP-Generated VLF Signals as Probe Waves. Field measurements were made to test the feasibility of using HAARP stimulated ionospheric emissions of Very Low Frequency (VLF) electromagnetic signals, as probe waves for geophysical studies. Summer mentor: Dr. Dan Solie

Jason McDonald:

Modeling Cusp Particle Acceleration.

Particle acceleration in the cusp region of the magnetosphere is a significant process for many features of the aurora. I programmed some tools to look at particle acceleration; our results suggest that the phase space (space and velocity) regions responsible for this acceleration are much larger than expected. Summer mentor: Dr. Antonius Otto

Keegan Keplinger:

Infrasound Power Spectral Density Studies

Working with the Geophysical Institute's Infrasound Group, I was able to find a peak in the power spectral density of lightning strikes around 0.1 Hz. The analysis was performed in response to a propagating assertion in the lightning literature (starting in 1920) that the readjustment of the thundercloud as it is discharged would contribute a "by no means negligible contribution to thunder."

Analysis was performed on a thunderstorm in Fairbanks on June 7th. The array in Fairbanks consists of eight microphones: an outer pentagram enclosing a smaller triangle in the center. The sample rate of the setup is 20 Hz. Because the pressure waves from lightning are incoherent, much of the standard acoustic analysis, specifically trajectories, wasn't able to be performed.

The analysis was carried out on a series of individual strikes to avoid the periodicity of the strikes themselves, using MATLAB's pwelch function. This analysis was also repeated for data with a higher sample rate, from Oak Hollow in Kissimmee, Florida and

the results were scaled for comparison, showing the earlier mentioned peak at 0.1 Hz and a higher-frequency pitch at about 30 Hz. Summer mentor: Dr. John Olson

Tran Smythe: See article below.

Ryan Rankin is currently working on a research project through the Geology Department. Ryan's work involves building a furnace that can precisely control the oxygen fugacity in order to determine the phase diagrams of various silicate melts.

Tran Smythe spends summer at Cornell University



My research this summer at Cornell University was on the source of iridescence in peacock feathers. This is a fascinating scientific conundrum because of the range of colors and their

brightness in a filament and the fact that pigmentation usually does not give rise to such iridescence. We explored the cross-sections of the feather and used optical simulation to uncover the underlying natural phenomena.

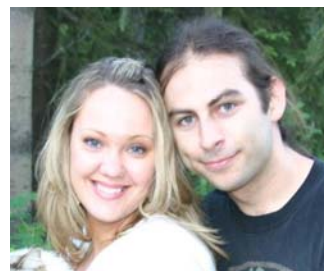
From the shaft of each peacock feather protrude many barbs, and from each barb extend hundreds of tiny barbules. Axial and cross-section cuts were employed to look at features using a scanning electron microscope. Observable in the perimeter region are the ends of thousands of melanin rods separated by cylindrical air gaps. We found that these rods and gaps form a “2½-D” photonic crystal. Photonic crystals block light propagation depending on orientation and/or wavelength. Thus certain light frequencies are reflected back. We mimicked our SEM observations in optical simulations, using a rectangular lattice of cylindrical void tubes with the observed diameters. Our calculations showed the correspondence between lattice parameters, tube diameter, and the color of the blue, green, and brown barbules. We found that smaller cylinder

dimensions in lattice equate to lower wavelength color. The air tube diameters are between 50 and 100 nm. While it was originally predicted that a 2-dimensional crystal lattice would serve as an approximately accurate model, in the end we decided that it would be necessary to do 3-dimensional simulations.

Much of my research this summer was performed at the Cornell “Nano Fab Lab” or Nanofabrication facility. It was really wonderful to work with their wildly expensive equipment and incredibly intelligent people. I certainly would encourage my fellow physics students that have any research career plans to apply to REU programs in the future. If one plans to attend a prestigious grad school in experimental physics it is absolutely imperative to do research as an undergraduate. That, more than grades or anything else, is what will be paid attention to on an application.

All in all, I had the time of my life at Cornell this summer, and learned a great deal about things which I previously did not even know existed.

New Graduate Students



Dan Stahlke: I was born and raised in Fairbanks, AK. I graduated from West Valley High School in 1997 and got a

B.S. in Math from UAF in 2000 (with a semester in Budapest, Hungary). After graduation I took a job in computer programming at Third Sector Technologies and currently work at the Geographical Information Network of Alaska (UAF). Last year I began taking graduate classes in physics and this year I am officially enrolled. I am currently in the M.S. program but I plan to eventually get a Ph.D. This summer I married Sarah Shaw at Creamer's

Field and then honeymooned in Leipzig, Germany. Sarah is also a student, studying accounting. My hobbies are electronics, summer, and cats.



Chris Watson: Three important things in my life are -having fun, learning, and paying bills. Over the past few years I've worked to pay bills by providing technical support at the Center for Earthquake Research and Information at the University of Memphis. While working at CERI and finishing my B.S. degree in physics I discovered that science was fun.

Settling into my new home here is going well. It is a pleasure to find that people are welcoming. The view of the Alaska Range is great. I saw the aurora for the first time on 9/22...wow! I'm still looking for good BBQ and a game of GO.

I look forward to becoming a community member here and learning about the science that everyone is doing.



Vanessa Spencer: Howdy! My name is Ness Spencer and I came to Fairbanks at the suggestion of a recent graduate of UAF. I studied physics and Spanish at Texas A&M,

where I learned to love wearing sandals while sweating my way through several 110 degree, 100% humidity days. My guess is that I will feel the same way about wearing 10 shirts and 2 coats after a year here. I already feel very Alaskan though because 1) I only was a little covered in antifreeze after installing the block heater in my car and 2) taking a hint from Robert, I tried to continue running in the morning in spite of the dark, and found myself face to face with a moose and her 2 calves. Lastly, I must take this opportunity to boast that I am the first TA to receive a department award-the Red Lantern Prize for the contributors of this newsletter. Peace!



Daisy Huang: I grew up in San Francisco, and did my B.S. in mechanical engineering at Berkeley. Then I went to work in the Silicon Valley. Over the years between then and now, I've worked as a mechanical designer for a variety of industries, and earned an M.S. in mechanical engineering from Santa Clara University's part time program. I am here to pursue my first love and high school sweetheart--physics! I am thrilled to be here, and my high school physics teacher is as proud of me as my engineering colleagues are appalled.

I also enjoy hiking, running, reading, and eating.

News & Comments from Everyone

**Richard S. Guse - Oregon
BS/PHYS 1996**



Photo: Richard and his son, Nicholas

In 1996, following my graduation, my wife and I moved to Washington state looking for work. I had many interviews with IBM, Bose, etc., but it took a few weeks before I received a job offer from Bose Corporation in Framingham, MA. I felt it was a great opportunity to work for a good company, so I didn't waste much time - we drove across country and started to work there five days later. I worked in their Automotive Systems division, mainly programming in Perl and C to add automation to their CAD tool "Unigraphics." I also did lots of work with user support, internal website creation (from scratch) and automation of many processes including FTP via the website.

I left Bose on 4 December 2006 for a new job in Portland, OR at ADP (Automatic Data Processing) /Dealer Services Division. I'm programming mostly in Perl but also creating MSI software packages, researching/fixing software defects and future development.

We love the West Coast much more than the East Coast - we weren't very happy there but we made lots of friends and got a bit used to it after a while. We both grew up in coastal Alaska (me in Cordova, and Samantha in Juneau) and we still like the constant rain. We're currently living in the Salmon Creek area of Vancouver, WA.

Samantha and I were married in May of 1999 and we now have our first son who was born on 31 January 2007, much to our delight!

Will (aka Bill) Blackburn - California BS/PHYS 1962



Photo: L to R: Ann and Bill Blackburn, John Morack

I attended UAF from 1958 through 1962 and received two degrees: a B.S. in Physics, and a B.S. in Mathematics. I took nearly enough coursework to qualify for a degree in Electrical Engineering, too, but that wasn't quite enough to work out. Lowell Thomas Sr. was our commencement speaker, and he captivated the audience of graduates, faculty, and family members as well. We had a wonderfully experienced and apt faculty in physics, whose backgrounds were astonishingly impressive.

Unfortunately, at that time, and for reasons not clear to students, there was a "political

upheaval" in the department. We students were aware that something was going on, but we didn't know what nor understand why. Yet, the Head of the Physics Dept, who was also Head of the Electrical Engineering Dept, stepped down from physics and they appointed an acting chair. He was not a physicist, and advised me to go outside for a master's degree and then come back to get my Ph.D., since the UAF policy at that time was that one could not receive all their training from UAF. That was the worst advice I ever got, but in view of the lack of a qualified physics chair, I thought it best to leave then.

I went to Oregon State University, where John Morack and I were office mates and very good friends and hunting buddies. I studied there for 3 years and took an M.S. in physics. I then taught at what is now Western Oregon University for 6 years before accepting a position as research scientist at the Naval Weapons Center, China Lake, California. During my teaching career in Oregon, I attended the University of Arizona in Aerospace Engineering and the University of Wyoming in Quantum Mechanics and Modern Physics on NSF grants.

I worked at the Naval Weapons Center until I retired in 1997; but in addition, I began teaching Engineering Physics in 1980 at Cerro Coso Community College at the behest of the Navy to help train technicians and upcoming engineers. I continued doing this part-time at night for the next 25 years, "retiring" again in 2005. We continue at present to make our home in California's Mojave Desert, Ridgecrest/China Lake.

In 1962, UAF had two graduates in physics, Earl Benitz and me. Earl taught Science in high school and junior high school in Cordova and Petersburg, where he is originally from. He now resides in Wrangell, AK and we still remain good friends. My wife and I visited Earl and his wife Mary before coming to Fairbanks this summer.

Prof. Masahisa Sugiura, Ph.D. in Space Physics, 1955. UAF's first PhD graduate, passed away on August 13, 2007 in Tokyo at the age of 81. His graduate supervisor was Prof. Sydney Chapman.

Dr. Paul Perreault, Ph.D. in Space Physics, 1975. Passed away on May 12, 2007 in Boulder, Colorado. His graduate supervisor was Dr. Syun Akasofu.

Staff News

Robert Parsons, brings robotics and physics toys to the state fair



My wife, Mary, and I attended the Palmer fair this year and we wanted to share our experience with you. Part of my community outreach is in the area of Lego Robotics which encourages students of all ages to develop problem solving skills in the areas of physics, mathematics, computer science and engineering.

We set up in the Events Building on the fair grounds because we needed power for our computers and room for the 8' diameter Sumo table the robots fought on. We set up right next to the Anchorage *Imaginarium*. We had computers to display the Alaska Summer Research Academy (ASRA) promotional DVD, Flash movies of ASRA 2007 robot competitions and the NXT robots programming software, along with RoboLab. We also had promotional pamphlets for the College of Natural Science and Mathematics and ASRA. Lego sent me 50 current robotics catalogs to hand out. Mary also brought along a selection of Physics toys.

The doors opened at 10 AM and the crowds came right in. The *Imaginarium* workers had told us to move over, as they would have big crowds around their hands-on displays. But we stole their crowd. The kids and even parents were drawn like magnets to the robots fighting it out on the sumo table. The purpose of sumo is to push the opponent outside the ring, and when

that happened, the robot would fall to the ground. There was a 6" black ring around the edge of the table and the robots could see it and would fight and maneuver desperately when they were pushed near it. Some people were in awe that robots could do such things. I would take them over to the computer, sit them down and talk them thru a simple icon-based computer program derived from LabVIEW. People would just pack around the computer to see how it was done. When we were looking at Robolab, I would tell them "this is the same program NASA used to program the robot Sojourner on Mars." Typically their first question was "Where can I buy one of these for my kids?"

All the time I discussed ASRA's 3 Robotics modules at UAF, UAF's entry in DARPA's Grand Challenge, UAF's ROV flying robot, UAF's winning the Northwest 2007 Micro Mouse Maze Robotics Contest, UAF's yearly MATE underwater Robotics team, UAF's award winning Bridge building team, Dr. Stephens EE robotics course, UAF's student rocket team, Alaska's State FLL Champion Robotics team (sponsored and coached by UAF) chosen to as one of the six teams to represent the United States at the 2007 International World Championship in Norway. People had no idea UAF did such things or that most of this was done by UAF's undergraduate students. I would tell them "UAA is liberal arts, UAF is a research institute, we are science and engineering, PhD's is what we do."

Mary started out at our table with the CNSM literature and the physics toys. She was mobbed at times: everybody wanted to play with them and asked endless questions on how and why they worked. Mary has had plenty of practice discussing these "toys", as they sit on her desk 24/7. She patiently answered all kinds of questions about physics and UAF's opportunities. When Mary needed a break, she would come and help with the robots fighting it out on the table. This went on for 10 hours without a break. We couldn't even eat! Parents had to drag their kids away.

- Robert Parsons (For more information contact me at ffrap2@uaf.edu)

Parsons receives “Make Students Count” award



Mary Parsons (far left) was one of four staff members in the UA system to receive the "Make Students Count" award from President Mark Hamilton (second from right). The award is accompanied by a generous monetary gift.

"I was speechless when I found out that the students had gotten together to write letters of support for me, and that they could be so secretive about it. The students really make my job enjoyable, and I truly care about them - not just for their academic success, but for their personal happiness as well."

Adjunct News Dr. Dan Solie



Dan Solie is known for being an enthusiastic instructor, researcher and mentor. We are happy to have him as an Adjunct Faculty member for fall semester. Part of Dan's research relates to the International Polar Year (IPY). Here is the abstract

from his most recent paper:

Title: Education Outreach in Village Schools during the SnowSTAR 2007 Alaska-Canada Barrenlands Traverse.

Authors: Daniel Solie, Matthew Sturm, Henry Huntington, Chris Derksen, Dave Anderson, Glenn Liston, Arvids Silis, Jon Holmgren

In spring 2007, the IPY expedition, SnowSTAR-2007, traveled 4200 kilometers by snow machine across much of Alaska and Northern Canada. The primary objectives of the trip were education outreach and collaborative US/Canadian field measurements of the snow across the route. Starting in Fairbanks, Alaska and ending in Baker Lake, Nunavut, Canada near Hudson Bay 42 days later, the team visited numerous settlements in route. The primary outreach efforts during the expedition were the expedition website <http://www.barrenlands.org>, and in-school presentations and interactive science demonstrations. The website, aimed at school children as well as the general public, was updated daily from the field, and had strong national and international interest. We gave presentations (classrooms and all-school assemblies), in nine of the villages we visited. In the schools we demonstrated the equipment we use in the field, as well as two proven demonstrations of physical principles (acoustic resonance in a plastic sewer pipe and eddy current forces on a magnet falling through a copper water pipe). This focuses on the in-class science presentations, and the immediate feedback from students and teachers.

Faculty News: John Olson



At the March 2007 National Consortium for MASINT Research (NCOMR) meeting in Kauai, Professor of Physics John Olson was presented with the Defense Intelligence

Agency's "Chief Scientist Award for Excellence" by Dr. Peter Bythrow. The award was given to Prof. Olson in recognition of his outstanding work in establishing UAF's first industrial partnership under the NCOMR program. UAF will be teaming with Northrop Grumman Corporation to exploit infrasound technologies

and acoustic signal processing techniques in support of the consortium's goals.

Prof. Olson is supported in his work at UAF by Assistant Professor Curt Szuberla and Geophysical Institute researcher Dr. Ken Arnoult, as well as Mr. Eric Skowbo at Northrop Grumman. Under the NCMR, UAF's infrasound research team was also awarded an additional contract to field test a novel acoustic source localization application in Alaska.

Faculty Synopsis

The Teaching Faculty, 2006-2007

Ataur Chowdhury (Clark Univ., Massachusetts) Assoc. Prof. of Physics. Condensed matter physics, nano-technology. Upper-division courses

Mark Conde (Univ of Tasmania) Assistant Professor of Space Physics. Auroral processes, thermospheric winds, and space weather.

John Craven (Univ. of Iowa) Chair and Prof. of Physics. Thermospheric composition, magnetospheric and auroral physics, rocket and spacecraft instrumentation.

David Newman (Univ. of Wisconsin) Prof. of Physics. Complex systems, turbulence, nonlinear dynamics, fusion plasma physics.

Hans Nielsen (Royal Technical Univ. of Denmark) Prof. of Geophysics. Rocket investigations, high-speed imaging of the aurora.

John Olson (Univ. of California Los Angeles) Prof. of Physics. Plasma-wave propagation, atmospheric infrasound, digital signal processing, magnetospheric physics.

Antonius Otto (Ruhr-Universitaet Bochum) Prof. of Physics. Space plasma theory and simulations.

Channon Price (Univ. of California Santa Barbara) Assoc. Prof. of Physics. Astrophysics, space plasma physics, and nonlinear dynamics.

Davis Sentman (Univ. of Iowa) Prof. of Physics. Space plasma physics, artificial heating of the ionosphere, atmospheric electricity.

Curt Szuberla (Univ. of Alaska Fairbanks) Assist. Prof. of Physics. Atmospheric infrasound and digital signal processing.

Martin Truffer (Univ. of Alaska Fairbanks) Assoc. Prof. of Physics. Glacier dynamics, application of geophysical and borehole techniques to glaciology and numerical modeling of ice flow.

Renate Wackerbauer (Max-Planck Institute for Extraterrestrial Physics) Assist. Prof. of Physics. Complex systems, nonlinear dynamics and chaos, modeling of biological systems.

Brenton Watkins (Univ. of Alaska Fairbanks) Prof. of Physics. Radar studies of the atmosphere and ionosphere.

Heinz Wiechen (Ruhr-Universitaet Bochum) Assoc. Prof. of Physics. Space plasma theory and simulation, dusty plasmas, astrophysics.

Emeritus Faculty still drawn to the classroom

Charles Deehr (Univ. of Alaska Fairbanks) Emeritus Prof. of Physics. Spectrophotometric studies of atmospheric emissions.

John Morack (Oregon State Univ.) Emeritus Prof. of Physics. Subsea permafrost, ice physics, distance education.

Adjunct Instructors, 2006-2007

John K. Petersen (MS, Univ. of Alaska Fairbanks)

Daniel Solie (PhD., Virginia Polytechnic Institute)

David Withoff (PhD., Univ. of Illinois)

Faculty now doing other things at UAF

Syun-Ichi Akasofu, Director emeritus, International Arctic Research Center
Roger Smith, Director, Geophysics Institute,

Former Faculty Members

Albert Belon, Ester, AK

Alfred Bork

Neal Brown, Director, UAF Space Grant

Neil Davis (emeritus), Fairbanks, AK
 Vladimir Degen, Fairbanks, AK
 Thomas Hallinan (emeritus), Fairbanks, AK
 William Harrison (emeritus), research at the GI
 Joseph Kan (emeritus), research at the GI
 Lou-Chuang Lee, President, National Central
 University, Taiwan
 John Murray
 Takeshi Ohtake
 R. Parthasarathy
 George Reed, Aeronomy Laboratory, NOAA,
 Boulder, CO
 Manfred Rees (emeritus), Gloucester, Australia
 Juan Roederer (emeritus), active at the GI and
 around the world
 Gerry Romick, Eugene, OR
 Glenn Shaw (emeritus), research at the GI
 Roger Sheridan (emeritus), Langley, WA
 Knut Stamnes (emeritus), Stephens Institute of
 Technology, Hoboken, NJ
 Abas Sivjee (emeritus), Embry-Riddle
 Aeronautical University, FL
 Daniel Swift (emeritus), research at the GI
 Gerd Wendler (emeritus), research at the GI
 Charles Wilson (emeritus), research at the GI

We would appreciate knowing of omissions and
 factual errors.

Physics Scholarship Fund

The Physics Department at UAF created this
 scholarship fund for the purpose of
 acknowledging academically excellent and
 promising undergraduate physics students and to
 encourage high school students with strong
 interests in science to consider physics as a
 career. Awardees must be declared physics or
 applied physics majors at award receipt. A
 committee of contributors to the fund makes
 unsolicited awards.

We wish acknowledge contributions since our
 newsletter of fall 2006 to create something new
 and forward looking for the Physics Department,
 and something that will live on after us,
 contributing to the future of UAF, this our
 college, and this our department. We are
 indebted to all of you and to those who have
 supported us in the past. (Founding members are

noted by *)

*Anonymous
 *Warren Akers, Eugen AR
 *Robert & Marilyn Benson, Silver Spring MD
 *John and Anthea Craven, Fairbanks AK
 *William Dambeck, New Creek WV
 *John & Margaret Dawson, Bala Cynwyd PA
 *Will Harrison, Fairbanks, AK
 *Nettie LaBelle-Hamer, Fairbanks AK
 *David Newman and Uma Bhatt, Fairbanks, AK
 Richard Seifert, Fairbanks, AK
 *Lee Snyder, Orrington ME
 *Renate Wackerbauer, Fairbanks, AK
 *Stephen and Veronica Young, Rancho
 Palos Verdes CA

Please let me know if you had intended your
 gift to also be in the name of your spouse or
 partner.



Contribution Form

The UAF Physics Scholarship Fund recognizes excellence in academic achievement for UAF students majoring in physics. Special awards may also be offered to winners of the Alaska State High School Science Symposium. Contributions for other needs are gratefully appreciated.

UAF Physics Scholarship Fund
College of Natural Science and Mathematics
My gift is for \$ _____

Name _____

Address _____

City, State _____

Phone _____

Email _____

Joint recognition for this gift should include: _____ (name)

Pay by Check: _____ Check attached (payable to the UAF Physics Scholarship Fund)

By Credit Card: _____ Please charge my credit card _____ VISA _____ MasterCard

Card # _____ Expiration date _____

Signature _____ Name as it appears on the card _____

In Installments: ____ I pledge \$ _____ to be paid in ____ installments beginning _____

please remind me

Electronic Funds Transfer: _____ (See the next page: no more check writing or credit card issues)

Payroll deduction: _____ If you are UAF staff or faculty member you can fill out and attach a payroll deduction authorization form (at “Other Employee Selected Donations”) available at <http://www.alaska.edu/giving/staffcontribution.pdf>

Mail to: **Advancement Services**

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PO Box 757530
Fairbanks, AK 99775

OR give online at www.uaf.edu/giving



University of Alaska Foundation
ACH Debit Authorization Form

UAF Physics Scholarship Fund

I authorize the University of Alaska Foundation to deduct from my bank account a gift of \$_____ per month (\$25 minimum) on the (check one) ___1st or ___15th of each month for a total gift of \$_____ (optional). I have enclosed a voided check that contains my bank information.

Name _____

Address _____

City, State, Zip _____

****IMPORTANT** _____
Signature Date

Please note that there could be a delay of up to one full month before the first transaction is processed due to pre-notification requirements to your bank.

Please complete and mail with a voided check to:

Advancement Services
University of Alaska Fairbanks
PO Box 757530
Fairbanks, AK 99775

Physics Department
University of Alaska Fairbanks
PO Box 755920
Fairbanks AK 99775-5920

ADDRESS CORRECTION REQUESTED