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Check out our newsletter on line at: <http://www.denison.edu/academics/departments/physics/>

A Message from the Chair - C. Wesley Walter

Greetings from Granville, and welcome to the latest Department of Physics & Astronomy newsletter! We hope you'll enjoy learning about what's been going on in our department over the past year. Among the big changes to report this fall, we've (finally!) added a course in Math Methods to our major's curriculum (see the story later in this newsletter). Our students have been very active with classes, research projects, presentations at professional meetings, outreach programs, and picnics and parties. You'll also be able to catch up on faculty and staff news and families.

Last spring, we had a fine group of senior physics students, with a total of 11 senior majors and one minor. They've gone on to a wide variety of activities that you can read about in the "Senior" section of the newsletter. We wish them all the best now and in the future!

Two physics alumni returned to Denison to speak at different events this past year. Brian Slaven ('00), a manager with Accenture, gave career advice to our current physics majors as part of our "Life After Denison" meeting. Our alumni speaker for Physics Honors Day last spring was David Lister ('79), a computer consultant, who discussed his experiences of using physics throughout his career.

Some big news to share -- this past spring, Prof. Steve Doty was named a "John and Christine Warner Professor"! Well done!! This endowed professorship is awarded to two Denison faculty members for a period of three years to recognize major research accomplishments and to encourage continued excellence. Prof. Doty was cited for his series of studies of star formation. He is the second "Warner Professor" from the department, as Prof. Dan Gibson was one of the first holders of the professorship (2004 - 07).

There are several changes in the department's faculty this year to tell you about. Visiting Professor Dean Richardson continues teaching with us over the next two years, replacing Prof. Kim Coplin who is still serving as Associate Provost (we'll get her back yet!). Visiting Professor Josh Kennedy has begun a tenure-track position at Carroll College after a good year with us last year. And, Prof. Ron Winters is once again teaching his ever-popular Astronomy 100 course this fall.

Finally, I'd like to end this greeting with a big "thank you" to our secretary Christie Kasson. Christie does a great job of keeping our department running smoothly, staying in touch with alumni, and making this newsletter possible. Thanks!



Professor Dan Homan and Brian Welch ('07) view constellations in the planetarium.



Professor Dan Gibson, Richard Field III ('09), and Ali Snedden ('08) analyzing data in the Negative Ion Lab.

Life after Denison: Seniors 2007



Senior Members of Sigma Pi Sigma: Aaron Jackson, Fran Kelley, and Will Fortin. Not pictured: Corey Janczak and David Nassar.



Will Fortin on a graduate school field trip in western Wyoming.



Brian Welch presents his research poster at the Ohio Section of American Physical Society spring 2007 meeting in Michigan.



Corey Janczak works on his laser cooling senior research project.

Here are updates from last year's seniors from whom we have heard:

Na Choudury—Na is currently working as a chemist at the Ford Transmissions plant in Batavia, OH. He is employed by a company, Coolant Control Inc., which supplies workers to help maintain their products at the plant. Na works in coolant and oil testing, doing titrations and spectroscopic testing for contamination.

Will Fortin—Will is attending grad school in geophysics at The University of Wyoming where he is currently taking three classes. He will be traveling to Costa Rica in January to get more involved in his research. Will has already been on a five-day field trip to western Wyoming and eastern Idaho (see picture on this page).

Aaron Jackson—Aaron is attending grad school in physics at SUNY at Stony Brook. He is teaching two classes. In addition to taking QM and E+M, he is keeping the astronomy track open by taking Interstellar Medium. Aaron is also enrolled in a seminar course in which he will be giving a talk soon about Modeling Supernovae Core Collapse. Aaron married Shona Dasgupta ('07) this summer.

Corey Janczak—Corey has settled in Boston and is attending grad school in physics at Northeastern University. He is teaching four undergraduate physics 1 and 2 lab sections. He is taking graduate courses in Classical Mechanics/Applied Math, Quantum, and E + M. In addition, Corey is already anticipating the qualifying exam that he will take next Fall. Corey plans to go into experimental biophysics research.

Fran Kelley—Fran is attending Marquette University where is working toward a two-year secondary teaching certificate in Broad Field science. On the extracurricular side, Fran has joined both the Swim and Frisbee teams at Marquette, and has entered in, and begun training for, the 2008 Wisconsin Ironman Triathlon.

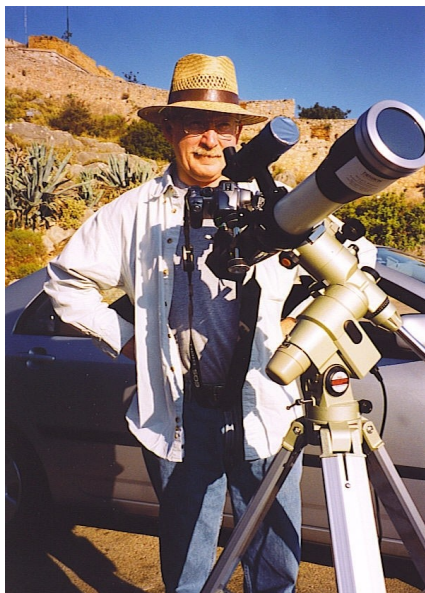
Tun Nyein—Tun is currently working and living in New York City.

Troy Testerman—Troy is currently working in Medina, Ohio and is planning to enroll in engineering graduate school in the spring.

Brian Welch—Brian is working as a Planetarian at the Buehler Planetarium and Observatory on the Broward Community College Central Campus in the Ft. Lauderdale, FL area. Brian's responsibilities include presenting planetarium shows, hosting observatory parties, and researching information for new shows and articles for their newsletter.

Ryan Clark - Ryan is attending grad school in math at Western Michigan University where he is taking classes and working for the math department as a tutor. He has joined the Solar Car Team, "Sunseeker." The team will build a solar powered car each year. At the end of each year the car will compete in the North American Solar Challenge, an intercollegiate cross-country race. Ryan just competed in the Columbus Marathon and is hoping to qualify for the Boston Marathon.

Emeriti Corner by Professor Michael Mickelson



Mike Mickelson observing the transit of Venus.

"It is often assumed that activity slows when you retire. May of 2001, my official retirement from the Physics Department, seems in the distant past. Most of that first year was spent finishing plans for our new home and working with the builder to make it a reality. Then came the big move after having lived in the same house since our arrival in Granville in 1969. The following year I enthusiastically accepted a part-time/full-time association with the Honors Program working with students intending to apply for postgraduate fellowships. This four year endeavor was com-

pleted this past May. A second retirement! Dixie and I are now very much enjoying our first Fall together as a retired couple! Although I certainly miss teaching and the daily interaction with my students, the wonderful thing about retirement is the ability to be unconstrained by schedule.

I continue to organize panels for the NASA Planetary Atmospheres Program and remain an active member of the Division of Planetary Science and regularly attend DPS meetings and occasionally present papers. I recently presented two papers in Rhodes Greece at the annual meeting of the Société Européenne Pour l'Astronomie dans la Culture (SEAC) on Archaeoastronomical Observations at the Newark Earthworks and The Solar Alignments of Greek Temples. My interests in Archaeoastronomy and the History of Astronomy go back to my early years teaching Astronomy when Professor Sam Wheeler, then chair of the department, assigned Astronomy 100 and Physics 306 (Electricity and Magnetism) as my first teaching load. The E&M was a piece of cake having had numerous courses in the subject, but Astronomy was a brand new challenge that kept me just a few steps ahead of my students that first semester. As fate would have it, or more likely it was that "fork in the road" that Yogi Berra men-

tions, I decided to focus on the spectroscopy of molecules one might expect to find in the atmospheres of the planets, rather than traditional more esoteric spectroscopy. An interest in the sky is part of the fabric of most ancient peoples. My curiosity about how we figured out the phenomena we observe daily led me to a deeper interest in the history of astronomy and eventually archaeoastronomy. Dixie and I traveled to Greece in 2004 to observe and photograph the most recent Transit of Venus, and then to the Mees Observatory on Haleakala Mountain on Maui in 2006 to record the Mercury Transit.

I am also involved in land conservation, serving as a board member on the Licking Land Trust and as a member of the local McKean Township Zoning Commission.

We both appreciate the new energy that comes with retirement and need every bit of it to keep up with our four year old granddaughter Dylan and two-and-a-half year old grandson Elias, children of our daughter and son-in-law; and are awaiting the birth of a new granddaughter to our son and daughter-in-law in Memphis.

Have we slowed down in retirement... the verdict is still out!"

Alumni Corner

by Jen Jacobs ('03)

"After graduating from Denison, I had no idea where I wanted to go with my life. I never once thought I'd join the military, but I found a great teaching opportunity with the Navy. I was commissioned shortly after graduation and spent the next four years teaching physics and nuclear reactor principles at the Navy's Nuclear Power School in Charleston, SC. My students went on to operate nuclear propulsion plants on submarines and aircraft carriers. It was a challenging job but very rewarding, especially when my students would have that "light bulb" moment of understanding. I found I really enjoyed the structure and order of the Navy. I also love the variety; every few years I get to change jobs and move to a new city, so I never have to worry about getting bored!

I recently transferred to the Meteorology and Oceanography community. We are a scientific community studying the air and ocean and helping the Navy use those things to our advantage; everything from weather to hydrography to underwater acoustics. I am currently stationed in Norfolk, VA. My command does forecasts for all ships in the Atlantic and the Mediterranean, helping ships prepare for, and route around, bad weather. We also work with the National Hurricane Center to track tropical storms in the Atlantic.

There are many opportunities to have a science-oriented career in the military, which I didn't realize in college. The chance to do what I love while serving our country makes me feel very good about what I do. I am looking forward to going on deployment in the next few

years and then getting my Masters paid for by the Navy. But first things first: right now I'm just looking forward to getting married next fall!"



Jen Jacobs with fiancé, Norm Landry.

Faculty & Staff Updates

Ken Bixler [bixler@denison.edu]

I've put together a new demo to break beakers using sound. No more washing beakers after the Archimedes's lab! At 119dB it's pretty intense and hearing protection is needed for everyone in the room. The occasional email from former students keeps me inspired. You all do such interesting things compared to our corn fields and tractor pulls at the county fair. I spent two weeks in Alaska this summer and it is one of the most scenic and diverse states I've visited. Hawaii is the only competition on those two issues. My wife, daughter and mother-in-law provided guidance and wisdom such that I only had to drive carefully for two weeks. Although I failed miserably on that task I was greatly entertained by the running commentary.

Kim Coplin [coplin@denison.edu]

I'm enjoying my second year working as an Associate Provost, and I am grateful for this opportunity to see Denison from a different perspective. My responsibilities in the Provost's Office include anything with an academic or curricular nature. It's interesting work and allows me to interact with people throughout the Denison community including Associate Provost Keith Boone and our new Provost Brad Bateman. I do miss the interaction with students that goes along with teaching and was glad to have the opportunity to teach an honors course "Physics and the Sound of Music" last spring. In addition to a couple of field trips this class enjoyed a visit from Professor Dan Boye of Davidson College. Dr. Boye is a physics professor and a professional opera singer and he gave an entertaining and educational seminar titled "Harmony within the Human Voice." Rick and I continue to be busy trying to keep up with three children. I reported last year that Daniel was as tall as I was. I now have to "look up to him," and he is running cross country, playing soccer, and keeping up with 7th grade. Jake is in 4th grade and loves to play soccer and build forts in the woods. Lia is now 4 and is enjoying preschool and gymnastics.

Steven Doty [doty@denison.edu]

"God put me on Earth to accomplish a certain number of things. Right now, I am so far behind, I will never die!" – from a Calvin & Hobbes sign in my office. Yes, another year is upon us, and I am feeling it. Perhaps the best way to describe the year is to describe today. I spent the morning in my two classes – FYS 102 (Uncertain Science / Uncertain World), in which we are studying the science of global warming and putting it on trial; and PHYS 245 (Applied Mathematics for Physical Systems), which I'll write about later. They are both new, and a hoot! I am continuing to podcast for the classes, and continue to enjoy it. On the research end, I just got off a telecon with a collaborator in Switzerland, who sent a student to visit us last summer in preparation for the launch of the Herschel Space Satellite on which I am an affiliated scientist. **Rebecca Tidman ('09)**, and **Matt Bishop ('09)** joined **Matt Perkett ('08)** in our group. All three will be presenting at the January AAS meeting in Texas. And this evening, I have to make it home before dark so that I can finalize construction on an LEM (lunar lander) for Matthew, who is now 4, and a space / flight nut. (You should have seen him during the talk about returning to the moon by our NASA visitor last year). All-in-all, I wouldn't trade it for anything. Still, have patience if you e-mail me, and just keep on trying!

N. Daniel Gibson

[gibson@denison.edu]

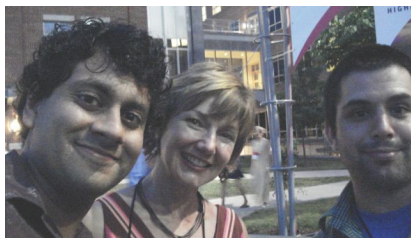
This academic year marks the start of my 12th year at Denison. It does not seem that long ago when Robin and I drove into Granville late one summer evening, had dinner at Brews and moved into Stone Hall. Now that our children are getting older, Granville and Denison in particular continue to become more integral to our lives. Not only are Robin and I involved in many ways on the campus, our children Daniel (8), Benji (5) and Dylan (3) are becoming part of the campus community as well. Daniel is in the Suzuki program playing the cello and enjoys the many Vail series concerts and Benji has taken swimming lessons and

come to many sporting events and activities. Dylan follows his brothers all over campus saying "My do it myself"; he can't wait to be more involved, particularly in the swimming! My teaching experiences at Denison continue to be both varied and enjoyable. I have continued on in the Experimental Physics program, developing new, modern experiments such as gas discharge physics and fuel cell experiments. In the Spring I will teach Quantum Mechanics again and look forward to working with seniors in our capstone course. I continue to enjoy directing the Oak Ridge Science Semester Program (ORSS). The ORSS program makes it possible for GLCA and ACM students to spend a combined academic and research semester at the Oak Ridge National Lab in Tennessee each Fall semester. This year marks the third year running that Denison students are at ORNL so we are pleased to provide an important opportunity to science students from all disciplines. This summer I worked on campus with four students **Corey Janczak ('07)**, **Ali Snedden ('08)**, **Richard Fields ('09)** and **Jacob Shapiro ('10)**. The negative ion lab that Dr. Walter and I share has had some exciting results. This summer we completed a series of experiments on Ce-. Dr. Walter and I were also able to do an x-ray negative ion experiment this year at the Advanced Light Source (ALS) in Berkeley, CA. We hope to be able to take another group of Denison students with us to the ALS next year. Life at Denison is good and I hope this note finds you and yours well. Let us know how you are doing!

Dan Homan [homand@denison.edu]

This fall marks the start of my fifth year at Denison, and I am a little surprised to realize that since I began an entire class has started and finished their studies here in Olin Hall. I spent my summer primarily working on my research, but I also helped to plan and organize our annual Fall Faculty conference this August. In June, I was pleased to learn that I'd been awarded a three-year grant from the National Science Foundation to continue my studies of Extragalactic Radio Jets associated with distant ac-

tive galaxies. The award will support myself and up to two students per summer to study the dynamics, structure, and composition of these relativistic jets. This past summer, I had the pleasure of supervising the summer research of **Charlie Baldwin ('09)** and **Nick Geitner ('09)**. Charlie worked on radiative transfer simulations of extragalactic jets to constrain their physical properties, and Nick studied limits on Jet acceleration. As much fun as research is, my first love is teaching, and I always look forward to getting back into the classroom. This fall I am enjoying teaching both Classical Mechanics (PHYS 305) with our Juniors and Principles of Physics II (PHYS 127) with our Sophomores. On a personal note, my son Nate started kindergarten this fall, and I was not at all ready for it. My somewhat obsessive fears of a school bus mix-up on the first day were realized, but Nate managed to sort out the problem on his own and get to the right classroom.



Christie Kasson pictured with Akash Abraham ('03) and Matt Palotti ('02), Reunion Weekend, June 2007.

Christie Kasson

[kasson@denison.edu]

Time continues to fly by at the "fair college on the hill." This past summer, during Reunion Weekend, I had the pleasure of meeting a couple of physics alums from the class of 1971, **Doug Hamilton** and **Glenn Masline**. I enjoyed catching up with **Akash Abraham ('03)**, currently working as an applications developer for Avery Denison in Cleveland, and **Matt Palotti ('02)**, finishing his Ph.D. program in physics at the Univ. of WI—Madison. **Amy Schubert Farris ('93)** was on campus as well, not for only her Denison Class reunion, but for a family reunion as well! In addition, I got to visit

with Professor Emeritus and alum, **Rod Grant ('57)**, who was on campus to celebrate his 50th Class Reunion! During Reunion festivities, Rod taught an Alumni course titled "The Physics of Cooking." He had a full house!! Please continue to keep in touch. If you attend Reunion Weekend, look me up! I often assist the alumni office by working various events!!

Prabasaj Paul [paulp@denison.edu]

The 2006-2007 school year, my fifth at Denison, got off to an early start for me with Denison Outdoor Orientation--four days of backpacking in the West Virginian wilderness with a group of incoming first-year students the week before classes began. Teaching introductory mechanics to non-majors (mainly biologists) for the first time, in fall, was an enjoyable learning experience, although I had started off with considerable trepidation. In conforming to a departmental desire to make the course more biology-friendly, I both learned a lot of, and acquired renewed respect for, the biological sciences. Electronics in spring was, as usual, a fun class to teach. A number of students were musicians, and several projects involved the analysis or synthesis of musical sounds. In addition to my main current research interest--analytical study of refraction at photonic crystal surfaces--I was involved in three smaller projects this summer: the biomechanics of baseball pitches (with current senior **James Clear**, and Prof. Pan Fanaritis), modeling intra-annual growth rates in bivalve molluscs (with current senior **Christine Wissink**, and Prof. David Goodwin) and learning about fiber bundle models (at Saha Institute of Nuclear Physics, Kolkata, India). On the home front, exploring the world through the eyes of a four-year-old has been an exciting and challenging project.

Dean Richardson

[richardsond@denison.edu]

I am beginning my third year at Denison University. This semester I am teaching Current Topics in Astronomy. This is a general course in astronomy aimed at non-science majors. This is always a fun course to teach because many of the interesting topics that motivated me to be an astronomer are introduced to the students

for the first time. I am also involved in the Introductory Physics course for non-physics majors. My research is in the area of supernovae (exploding stars). Lately, I have been interested in the supernovae that are associated with gamma-ray bursts. I determine just how bright these events are compared with other supernovae. The light that is observed from the gamma-ray burst includes contributions from multiple sources. I try to extract only the light from the supernova and then determine its intrinsic brightness. In the process I am able to learn much more about each of the supernovae; such as, the amount of mass that is ejected and the amount of energy involved in each explosion.

Wes Walter [walter@denison.edu]

It has been a good year for me in both teaching and research. I've settled into a rhythm the last couple of years of teaching "Quarks to Cosmos" in the fall, followed by "Modern Physics" in the spring. "Quarks to Cosmos" is always fun to teach, and it's been very interesting to spiral back to similar topics at progressively deeper levels in the later course. Students do projects in both courses, and it's been great to see the many creative studies they've done on topics ranging from a chaotic pendulum to the accelerating universe. Dr. Gibson and I continue to do research on negative ions, together with an energetic group of students. This past summer, physics majors **Corey Janczak ('07)**, **Ali Snedden ('08)**, **Richard Field III ('09)**, and **Jacob Shapiro ('10)** worked in our lab finishing up analysis of measurements on the negative ion of cerium and doing the most detailed spectroscopic measurements to date on the negative ion of arsenic. This fall Prof. Dag Hanstorp from Gothenburg University in Sweden, is visiting our lab to work on collaborative projects. My family's doing fine: my wife Beth is a physical therapist working with toddlers, Marissa is now in eighth grade, and Ben's in fifth grade. Both kids still play a lot of sports (Marissa tennis and Ben soccer this fall), and like to cheer at Big Red games!

Updates from Alumni

Kim Murley ('06) Kim is in her second year of graduate school in bioengineering at the University of Maryland. Kim works in the Cell Biophysics Lab. Her current project focuses on how the mechanical properties of the extracellular matrix affect the motility and morphology of cells. This past August, Kim married Tom Stroka, her high school sweetheart. Kim and Tom traveled to Hawaii for their honeymoon.

Chris Dangler ('03) Chris is attending graduate school at SUNY in New Albany where he recently passed the PhD qualifying exam for the nanotechnology program. Chris plans to get a Masters Degree in the spring. He then plans to move to San Francisco next summer and marry a woman he met while biking across the country!

Danny Clark ('03) Danny is currently living outside San Francisco and is a research associate in the department of radiology at UCSF. Danny's primary responsibility is using Diffusion Tensor Imaging (a type of MRI) to track motor pathway in the brain. He is also in the midst of secondary medical school applications. Danny took the MCAT in July and is currently working on application essays.

Meredith Moore ('04) Meredith is teaching high school physics in the Bronx. Last year her classes included a 9th grade physics class and an engineering and biology class. This year Meredith is teaching three sections of physics to juniors and seniors, and one section of freshman math. Meredith traveled to Honduras in August. Outside of teaching she enjoys playing basketball in a recreational league and taking Pilates classes.

John Pyles ('03) John works for Engineering and Scientific Innovations (ESI) as a Research Engineer. John is currently working on projects examining limiting oxygen concentration for aircraft fuel tanks, next generation fire suppressant for aircraft engine nacelles, laser beam propagation through turbulent flow fields, and fuel testing. John got married on August 11th, 2007. He and his wife reside in Chester, Ohio.

Chris Byrnes ('04) Chris stopped by the department this fall. After working internationally, he is currently finishing a theology program at Harvard. He then plans to apply to law schools.

Mel Cluss ('04) Mel completed her first year of teaching high school physics at Trinity Prep school in Florida. Mel did a lot of traveling this summer including a trip to Europe.

Keith Starr ('06) Keith continues to teach physics and chemistry for Teach for America at Warren County High School in North Carolina. In addition to his teaching responsibilities, this year Keith was named the Science Department Chair. He and his fiancé Emily Miller ('06) are planning an August wedding to be held at Swasey Chapel.

Cuyler Smith ('01) Cuyler continues to work for the BLM (Bureau of Land Management) as a civil engineer in Salmon, Idaho, where he has been focusing most of his energy on two projects over the past few months: (1) as a project inspector for the construction of a BLM wild land fire-station in Dubois, ID, and, (2) as the lead engineer on a Wild Horse Corral construction project in Challis.

Sheila Everett ('06) Sheila is attending grad school in physics at Brandeis University. This summer she worked in Azadeh Samadani's biophysics lab, where they studied DNA breaking and repair in yeast cells using microfluidic devices. This semester, along with taking two classes, she is beginning research with the astrophysics group and will be studying polarized jets in active galactic nuclei.

Dave Clark ('99) Last we heard from Dave he had been accepted into the Naval Postgraduate School's Graduate School of Operational and Information Sciences. Dave plans to get a Master's Degree in Operations Analysis. Prior to this assignment, Dave had been serving as a Navy Recruiter Department Head. Dave and his wife Tina live in Monterey, CA.

Cynthia Gedelian ('03) Cynthia is finishing her Ph.D. at RPI. She passed her candidacy exam in January of 2007

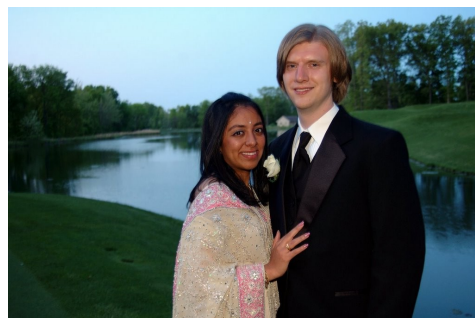
and plans to graduate by January 2008. This October she will be celebrating her one-year wedding anniversary to Damian Huisling. She and Damian are both job hunting and hope to move a little further west in the near future.

Cameron Bieganek ('07) Cameron is working in the Control Room at Fermilab as an Accelerator Operator, where he helps with the day-to-day operations of the particle accelerators at the lab.

Wedding Bells are Ringing for Physics Alumni!



Cynthia Gedelian ('03) dances with her husband, Damian Huisling.



Aaron Jackson ('07) with Shona Dasgupta ('07) on their wedding day.



Newlyweds, Kim Murley Stroka ('06) and Tom Stroka

Faculty Publications & Grants, and Student Presentations

Faculty Publications:

“Double Auger decay, Feshbach and shape resonances in negative ions,” N. Berrah, R.C. Bilodeau, J.D. Bozek, C.W. Walter, N.D. Gibson, and G.D. Ackerman, *Radiation Physics and Chemistry* 75, 1447-1450, (2006).

“Infrared Photodetachment of Ce^- : Threshold Spectroscopy and Resonance Structure,” C.W. Walter, N.D. Gibson, **C. M. Janczak**, **K.A. Starr**, **A.P. Snedden**, **R.L. Field III**, P. Andersson *Physical Review A*, forthcoming (2007).

“Shape resonances in the absolute K-shell photodetachment of B^- ,” N. Berrah, R.C. Bilodeau, I. Dumitriu, J.D. Bozek, N.D. Gibson, C.W. Walter, G.D. Ackerman, O. Zatsarinny, and T.W. Gorczyca, *Physical Review A* 76, 032713 (2007).

“Above threshold dissociation of vibrationally cold HD^+ molecules,” P.A. Orr, I.D. Williams, J.B. Greenwood, I.C.E. Turcu, W.A. Bryan, J. Pedregosa-Gutierrez, C.W. Walter, *Physical Review Letters* 98, 163001 (2007).

“Tracing High Energy Radiation with Molecular Lines in Star Forming Regions,” P. Stauber, A. O. Benz, J.K. Jorgensen, E.F. van Dishoeck, & S. D. Doty, *Astronomy & Astrophysics*, 466, 977, (2007).

“Hot Organic Molecules, probing the nuclei of deeply obscured (u)lirgs,” F. Lahuis, H. Spoon, S. D. Doty, L. Arums, J. Houck, A. Tielens, E. van Dishoeck, & P. Stauber, *The Astrophysical Journal*, 659, 296, (2007).

“Ballistocardiography in the physics classroom,” Prabasaj Paul and **Laurel B. Symes**,

accepted for publication in *The Physics Teacher* (2008).

“The Inner Jet of the Radio Galaxy M87,” by Y.Y. Kovalev, M.L. Lister, D.C. Homan, & K.I. Kellermann, *The Astrophysical Journal Letters* vol. 668, p. L27 (2007).

“Relativistic Beaming and the Intrinsic Properties of Extragalactic Radio Jets,” by M. H. Coehn, M.L. Lister, D.C. Homan, M. Kadler, K. I. Kellermann, Y.Y. Kovalev, & R.C. Vermeulen *The Astrophysical Journal*, vol. 658, p. 232 (2006).

The Rayleigh hypothesis in scattering off photonic crystal interfaces,” Prabasaj Paul, *Optics Communications*, 278 204-206 (2007).

Grants:

“Mixed Boundary-Value Problems in Photonic Crystal Optics”--a collaborative project between Prabasaj Paul and Daniel Nkemzi (University of Buea, Cameroon) supported by American Physical Society's International Travel Grant Program with a grant of \$2000.

“RUI: Probing the Physics of Extragalactic Jets on Parsec Scales”, D.C. Homan, 2007-10, \$97,806.

Student Presentations:

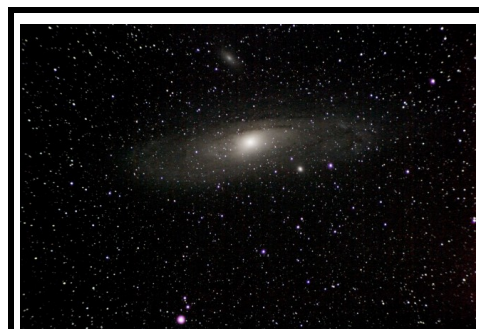
“Simulations of Polarization from Radio-jet Cores of Active Galactic Nuclei,” **Brian Welch**, Daniel Homan, 2007 Ohio Section of the APS Spring meeting, Eastern Michigan University, May 4,5.

“Photodetachment Spectroscopy of Ce^- ,” **Corey Janczak**, 38th Annual Meeting of the Division of Atomic, Molecular, and Optical Physics, Calgary, Alberta, Canada, June 2007.

Student Presentations at the Ohio Section of the American Physical Society Fall Meeting (2007) Oxford: “Photodetachment of As^- ”, **R.L. Field III**, **A.P. Snedden**, **J.Z. Shapiro**, **C.M. Janczak**, C.W. Walter, N.D. Gibson.

“Photodetachment of Ce^- ,” **A.P. Snedden**, **R.L. Field III**, **C.M. Janczak**, **K.A. Starr**, N.D. Gibson, C.W. Walter, P. Andersson.

“The Dynamics of Extragalactic Jets,” **Nicholas Geitner**, Daniel Homan.



This photograph of the Andromeda Galaxy was taken by physics major **Michael McCormick ('10)** in the winter of 2005 with the assistance of **Mike Bait ('87)**, physics teacher at Granville High School. Michael's picture was published in the 2007 American Association of Physics Teachers (AAPT) Physics Photo Contest Calendar! Congratulations Michael!

Good things come to those who wait (past the homogeneous transient solution, of course)

After many long conversations with majors (and our external review), we decided to offer a Mathematical Physics course this Fall for both Sophomores and Juniors. While the course is an alternate to Calc III, it is intended to give a physically-based overview of the essentials of mathematics beyond Calculus II viewed through a physicist's lens. The course is based on linear and physical systems, and covers: linearity, complex variables, series, multi-dimensional integration and differentiation, ordinary differential equations, geometry (div/grad/curl), and linear algebra. It also incorporates Mathematica as a new standard symbolic and numerical computing package in the department. The goal of the course is to provide background for and ease the transition to upper-level classes, as well as provide an opportunity to see the broad universality in physical problems by using mathematics as a language. We are missing one thing, however – a theme song. When I was at RPI, we had the RPI cheer: “ $e^x dy/dx$, $e^x dx$. Tangent, secant, cosine, sine, 3.14159. Interpolate the log of pi, dis-integrate them RPI!” The best one I have for us is: “div grad curl, dirac delta's a source. Fourier, line integral, SHO of course. $e^{i\pi} = -1$, converge on them Denison!” My challenge to you is: do you have anything better? If so, let me know at doty@denison.edu. Maybe there'll be a prize for the winner!

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Honors Day -

April 10, 2007

Quite a crowd turned out for Honors Day 2007 in the Department of Physics & Astronomy. The festivities were kicked off with the Sigma Pi Sigma Induction Ceremony. This year four students were inducted: **Matt Bishop ('10)**, **Richard Field ('10)**, **Aaron Jackson ('07)** and **David Nassar ('07)**. Following the induction ceremony, our guest alumni speaker, **David Lister ('79)**, owner and founder of Digital Daemons Inc., gave a talk titled "Physics Phor-ever." [Note: If you were a physics major at Denison during the Dr. Rod Grant years, you may remember his mantra "Physics is Phun!"] After the alumni lecture all adjourned to Huffman for dinner and an awards banquet. The department was fortunate to have several alumni return for the event: **Mike Bait ('87)**, **Carrie Barnes-Mullett ('99)**, and **Adam Amornyard**



(**'06**). At the awards banquet the following students were recognized for their excellence in Introductory Physics: **Derrick Carman, Kristin French, Michael McCormick, Dana Meyer, Jacob Shapiro, and Zhenhuan Sui. Matt Perkett, Mimi Pierson, and Ali Snedden** were recognized as Senior Fellows, and **Charlie Baldwin, Matt Bishop, Robbie Christian, Richard Field, Nick Geitner, Rebecca Tidman, and Geng Zeng** were recognized as Junior Fellows. **Ali Snedden ('08)** was awarded the Benjamin Leslie Experimentalist Award; this award, named in memory of **Ben Leslie ('99)** is awarded to students who demonstrate superb ability and potential as experimentalists. **Corey Janczak** and **Mimi Pierson** were both recognized as holders of

Members of Denison's Sigma Pi Sigma chapter: David Lister ('79), Matt Perkett ('08), Prof. Dan Gibson, Aaron Jackson ('07), Richard Field III ('09), David Nassar ('07), Carrie Barnes ('99), Matt Bishop ('09) and Professors Mike Mickelson, Mike Westmoreland, Trig Gamble, Wes Walter, and Ron Winters. Students not pictured: Will Fortin, Corey Janczak, Fran Kelley, Mimi Pierson, Ali Snedden, Kanako Takae.

the prestigious Anderson Scholarship, and **Brian Welch** was recognized at an earlier ceremony by the Department of Student Life with a Distinguished Leadership Award. The last award of the evening went to **Aaron Jackson** who was recognized for his outstanding leadership of Denison's Society of Physics Students' Chapter.