

PHYSICS & ASTRONOMY ALUMNI NEWSLETTER

COLGATE UNIVERSITY
LATHROP HALL



Issue 3
Summer 2002

Department Highlights:

- 2002 Graduating class: 11 -- 55% female. Girls rule!
- Department highlighted by AIP as one of twenty-nine schools nationwide averaging more than ten majors per year, for the second year in a row.
- Ninth faculty position approved: biophysics.
- Our graduates (you!) getting PhD's, at the rate of two per year.
- New building is not "if" but "when"...

Inside this issue:

What's new...	2
Graduate statistics...	2
Science Building...	3
Lathrop 154	3
Faculty happenings...	4
Armed with tools....	6
A world with Diane...	6
Research symposium..	7
Alumni updates...	8

A few words from the Chair...

Greetings alumni! I am happy to preside over the second newsletter of my term as department chair, which I must say it is happily ending. Lots of things have been going on at your alma matter. I will devote special sections to the big issues: a new faculty position (our ninth!) and our slowly but surely march toward a new building. Our department is healthy and vibrant. Our enrollments continue to be high (see our stats), and this year we broke the perennial stereotype: we had more female than male graduates! Astronomy enrollments are higher than ever and astrogeophysics has a steady flow thanks to the interest in planetary science. We are now offering a wide range of upper-level electives. We continue with the traditional ones but we insert new ones whenever we get a chance. Thanks to Steve Slivan and Prbasaj Paul, temporary faculty replacements, we were able to offer hot-topic upper-level electives: *Planetary Science* and *Introduction to Quantum Computation*. Reinforced by the compliments that many of you have given (past graduation) to the value of Vic Mansfield's *Computational Mechanics* course, we got Colgate to invest seriously on it. We had Lathrop 154 transformed into a new computer classroom (see insert). It is a gem of a classroom. On the research arena, our programs are quite healthy: since our last newsletter we have received five external grants to fund on-campus projects, plus two more for external collaborations and outreach. Summer internships at Colgate are now on a solid foundation thanks to all of these

grants, plus the endowment of five internships by Julius Schlichting '43 and a yearly NASA grant for astronomy. Our Physics and Astronomy Seminar series is the most active and ambitious on campus, featuring about 20 yearly external speakers.

All of these successes should not overshadow our bread-and-butter, where dedication of the faculty, innovation and hard work keep the standards very high. Our introductory sequence is still headed by a now very polished Phys120 followed by a more mature but still evolving Phys121, a-ka *Physics from Spaceship Earth*. We offer consistently three upper-level courses per semester. We have also seen some outstanding Phys310 and Phys410 projects, and our students continue to shine at Keck and Rochester symposia. Our super sec-er- administrative assistant Diane Janney keeps most of this machinery going and Roger Williams, as always doing magic with his hands.

Already in the near future we will see important changes. Charlie Holbrow will retire after next year. Stay tuned, as we may take it as an excuse to have a small reunion. Joe will represent us well within Colgate as he takes the helm of the Division of Natural Sciences and Mathematics. As I said before, I will stop rising to my highest level of incompetence, being replaced by Vic. I admit that it was fun keeping very talented faculty productive, scheduling very few faculty meetings, and controlling the budget ☺ We hope you enjoy our newsletter.

Kiko Galvez

Biophysics at Colgate....

Biophysics is one of the fields of science that holds great prospects for jobs and careers. With this vision in mind we have succeeded in convincing the University to allocate a new faculty position in our department for a biophysicist. After a very thorough search, with a search committee that included a biologist a chemist and a neuroscientist, we hired Jeff Buboltz, a membrane biophysicist with degrees from

Cornell and Wisconsin, to start teaching in this Fall Semester. He will also be involved in teaching some biology courses, which we hope will catalyze collaborations and foster greater student interest in biophysics. In the horizon is perhaps a biophysics concentration.



What's new...



John Metz '93 received his Ph.D. in Electrical Engineering from the University of Colorado at Boulder.

Matt Cashen '96 received his Ph.D. in Physics from SUNY Stony Brook in 2002. His thesis received the University President's Award.

Basudev Chaudhuri '95 received his Ph.D. in Physics from Cornell University.

Jeff Haeni '97 has been selected as the 2002-2003 MRS/OSA Congressional Science Fellow (Materials Research Society/Optical Society of America) and will spend two years in Washington. This is a very competitive award. For more information, see <http://www.mrs.org/pa/fellowship/>.

Dan Jubinski '92 joined the Colgate Faculty in Fall 2001 as Assistant Professor of Economics. After graduating with a double major in Physics and Economics, Dan received his Ph.D. in Economics from the University of Virginia in May 2001.

Joe Amato appointed Director of the Division of Natural Sciences and Mathematics beginning July 1, 2002.

Vic Mansfield appointed Chair of the Department of Physics and Astronomy for the period 2002-2005.

Charlie Holbrow elected president of the American Association of Physics Teachers.

Scott Lacey '96 is joining Colgate as a Visiting Assistant Professor of Physics and Astronomy for the '02-03 year.



Jen Heldmann '98 working on her PhD in Planetary Science, joins the crew team at Mars Desert Research Station in the Utah desert. For more information, see <http://www.msnbc.com/news/703355.asp>.

Pictured above: Troy Wegman, Jennifer Heldmann & Heather Chluda wear suits designed to simulate the experience of exploring Mars. Photo courtesy of MSNBC.



Whitnall Field Massacre - July 24, 2002. The physics summer research troops faced arch-rival chemistry in the yearly softball match. Outnumbered but not out-classed, the physics team trashed chemistry 23-5. We can not recall of any other illustrious class that performed such a feat. Was there???



Unidentified artifact with engraved hieroglyphics found in a secret location in Lathrop - local experts disagree on

Physics & Astronomy Alumni Statistics in the Last Five Years...

Graduation numbers:

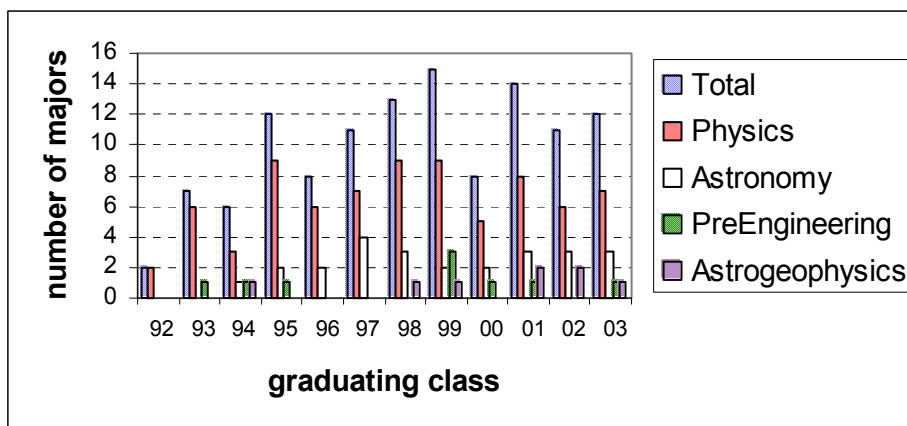
- In the last five years ('98-'02) we have had 61 majors (physics, astronomy-physics, pre-engineering, and astrogeophysics) or an average of 12.2 majors per year. The national average: 4.
- There have been: 37 physics majors (60.7%), 13 astronomy-physics majors (21.3%), 5 Pre-engineering (8.2%) and 6 Astrogeophysics (9.8%).

Jobs:

- In the last five years 12 majors (19.7%) obtained technical jobs and 12 (19.7%) obtained non-technical jobs (business, law).

Graduate School:

- Overall, in the past five years, 28 of the 61 students are attending graduate school (47%).
- 14 physics majors pursued graduate study, of which 5 are in physics graduate programs.
- Similarly, 8 astronomy-physics majors are attending graduate school, with 5 of which are in an astronomy/physics graduate program.
- 3 astrogeophysics majors pursued graduate school as did 3 in pre-engineering.



New Science Building at Colgate a Reality??

For the last few years we have been unrelenting in trying to convince the University that we need new spaces. Lathrop Hall, which was last renovated in 1970, is not prepared for modern science. Today new faculty come with the need to install real research laboratories, and the infrastructure of the building and the space that we have available are not prepared for these demands. Geology faces the same dilemma. The prospects for real change are however very positive. Last year Colgate hired a campus planner and we just finished specifying a new building.

It will be strategically located in the corner of the quad between Winn (chemistry) and Olin (biology and psychology). Geology and Environmental Studies will also join us, as this building is envisioned to foster interdisciplinary programs and collaborations. It has been very stimulating designing spaces that will be the best they can be. For example, physics teaching labs will have separate areas for experimentation, and data analysis and discussion, as today's labs are more "research-like"; larger spaces will allow faculty to offer more undergraduate research

projects; undesignated lab spaces will allow students to pursue independent research overtures; and the observatory will be expanded to include a second dome, a larger control room, an observing terrace and a Planetarium. Our next challenge is in fundraising. The Case Library expansion will exhaust the University's borrowing capacity for a few years, so this new campus wonder will need to be donor driven. If you think you can support us in any way let us know. Just picture

"The -Your-Name- Interdisciplinary Science Building" ©

The New Lathrop 154 - A computer classroom...



Our continual perseverance and some receptive ears higher up combined to make one of our dreams possible: to have a large room with computers dedicated to classroom instruction. Its main customer is our Computational Mechanics course. Lathrop 154 became the target of this renovation, and in a few months during the Summer of 2000 it was the object of a real transformation: paint, carpet, blinds, new lighting, new furniture, a long whiteboard on the side wall (and soon front) and thirteen computers connected to a local network. It is a beauty of a classroom, and competition to teach in it is now very tough!



Physics & Astronomy Seminar Series 2001-2002 featured speakers...

- ❖ David Berger (CU'97), Center for High Angular Resolution Astronomy, Georgia State University
- ❖ Peter Backus, SETI Institute
- ❖ Karen Fleming, Department of Biophysics, Johns Hopkins University
- ❖ Jonathan Friedman, Physics Department, Amherst College
- ❖ Wes Walter, Physics Department, Denison University
- ❖ Todd Krauss, Chemistry Department, University of Rochester
- ❖ John Beggs, National Institute of Mental Health, Washington D.C.
- ❖ Jeffrey Buboltz, Biophysics Department, Cornell University
- ❖ M. Shane Hutson, Department of Physics (Biophysics), Duke University
- ❖ George Bowker, Department of Biology (Biophysics), Duke University
- ❖ Jon Habif, (CU'98), Department of Electrical & Computer Engineering, University of Rochester
- ❖ George Gibson, Department of Physics, University of Connecticut
- ❖ William Wootters, Department of Physics and Astronomy, Williams College
- ❖ Robert Silsbee, Department of Physics, Cornell University
- ❖ Chad Orzel, Department of Physics, Union College
- ❖ Michael Brown, Department of Physics & Astronomy, Swarthmore College
- ❖ Paul Kwiat, Univ. of Illinois, Urbana-Champaign (Science Colloquium)

Faculty happenings...



Joe Amato

I'm technically on sabbatical this year, although I'm spending most of my time here at Colgate. Last year I received a grant from Research Corporation to launch a new study of superconductivity (described below), an interest of mine since graduate school. I was also awarded a Senior Faculty Leave, which allowed me to take a full year leave to conduct research, while forcing me to accept that I am now (already) a SENIOR faculty member. Gulp! So, since September, I've been dividing my time between research and writing a textbook on introductory mechanics. First the research: When exposed to a magnetic field, a superconducting thin film (e.g. niobium at temperatures below 9 Kelvin) is penetrated by tiny quantized bundles of flux, called vortices. If an electric current flows in the superconductor, the vortices move and create a voltage. Voltage x Current = Power (c'mon, you remember...don't you?), which heats the superconductor and can cause it to return to its normal (resistive) state. Vortex motion is the principal reason that you don't see widespread use of superconductors in technology today. I am pinning the vortices in place with a periodic array of defects created with the atomic force microscope in my lab. So we sputter the thin films in high vacuum, fashion them into long thin strips (for resistance measurements) using photolithography, pattern them with the AFM, and then measure their resistance in a magnetic field at cryogenic temperatures. Much of the recent activity has been directed at speeding up and improving the reliability of the AFM patterning. (Lots of students have helped!) I can now cover my thin film sample with thousands of pinning centers in about 20 minutes (down from 6 hours!). It's hard work but a lot of fun. No *good* low temperature data yet, but I'm confident that it's not too far off. Now for the textbook: You may remember (i.e., have suffered through) our "unique" Phys 121 course in mechanics, in which we use an astronomy/space science theme to motivate mechanics. I've finally begun to translate my notes into book form. This is harder than I thought it would be (Kiko is collaborating, or I'd never get anything done), but it's coming out OK. I'm SURE I can get you a discounted first edition copy when it's published, so keep in touch! I'd love to hear from you.



Tony Aveni

I spent the Spring term of '02-03 as the Visiting Mellon Professor of the Humanities at Tulane University. I have recently republished SKYWATCHERS, my 1980 text on archaeoastronomy, with massive updates. Next book, due out in the Fall of 2002, will be THE BOOK OF THE YEAR: HOW AND WHY WE CELEBRATE THE



BETWEEN THE LINES:
THE MYSTERY OF THE
GIANT GROUND DRAW-
INGS OF ANCIENT NASCA.
PERU was published in
2000.

SEASONAL HOLIDAYS, published Oxford University Press. I continue to work on ancient Maya manuscripts and have organized a conference here at Tulane on deciphering one of them. When I return to Colgate next fall, I will develop a new course on "Origin of Writing Systems." All of this takes me far away from my original training as a stargazer, but that's liberal arts for you...

Due to new happenings in archaeoastronomy in the last twenty years, Tony Aveni was compelled to do a major update of SKYWATCHERS



Tom Balonek

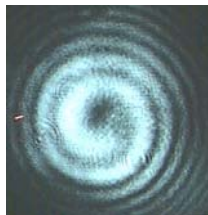
I spent my 2000-2001 sabbatical year at Colgate, devoting most of my time and energy on the ongoing research program to study the optical variability of active galaxies and quasars. The observations are made with the Foggy Bottom Observatory's 16-inch Ferson telescope and CCD electronic cameras. We have reached the 40,000 archived image milestone in the 14 years of CCD observations at FBO. Despite its age, approaching 40 years, the Ferson telescope continues to be a reliable workhorse for both teaching and research activities. Not so with our first CCD camera -- the Photometrics PM3000 system (known locally as "the Heurikon," which was the name of the Unix computer system which controlled the camera). This camera system was damaged during a thunderstorm in summer 2000. Since that time, students and I have been using the Photometrics Star 1 camera system, purchased in the early 1990s with funds from the Keck Northeast Astronomy Consortium, and a new Roper Scientific "VersArray" CCD camera. This latter system, although more sensitive and with a larger format than the other systems we have used, has spent more time off the telescope than on due to a series of failures. Despite these equipment problems, the variability study has been utilizing the telescope and CCD cameras on about 120 nights each year. Many of the studies the students and I have been conducting have been collaborative studies with astronomers who observe at x-ray and radio wavelengths. Colgate astronomy is still active in the Keck Northeast Astronomy Consortium. As part of the consortium, each summer several Colgate students have worked with astronomers at the other consortium colleges on research projects on variable stars, observational cosmology, and galaxies. (A large number of Colgate students have also been able to obtain summer research positions at national observatories: including the Space Telescope Science Institute, National Radio Astronomy Observatory, and Arecibo Observatory.) One or two visiting students each summer from the KNAC and other consortium programs have worked alongside Colgate summer researchers. The W.M. Keck Foundation has discontinued funding our consortium after eleven years of active sponsorship. The eight consortium colleges are working to find other sources

of funding to continue the student programs (summer student exchange, student research symposium, student travel support). Colgate continues to be involved in the NASA New York Space Grant Consortium. The consortium funds have been used to support Colgate student research projects and several outreach activities conducted by students and me. On the teaching front, Tony Aveni and I continue to teach the introductory survey astronomy courses. I have also taught my popular Core / Scientific Perspectives course "Life in the Universe: A Cosmic Perspective," the observing intensive "Astronomical Techniques" course (the students still observe RZ Cassiopeiae), the upper level "Galactic and Extragalactic Astronomy" course, and the junior/senior research course. I enjoy the variety of teaching at different levels and to different populations of students. Rewarding to me personally during the past few years is following the success of many of the astronomy-physics, astrogeophysics and physics graduates. Although I am often bad at responding to all emails I receive, I do appreciate receiving updates on your professional progress and personal events in your lives. To keep up with what is happening in Colgate astronomy, check out the astronomy link off the department's web page, or go directly to <http://astronomy.colgate.edu/>. If you have any suggestions or additions that I can incorporate on these pages, please let me know. And, finally, in fall 2000 I had an exciting week-long trip to Arecibo Observatory to witness SETI astronomers conduct a search for radio signals from advanced civilizations (none were detected). It had been more than twenty five years since I had been in the magical Puerto Rico.



Kiko Galvez

My time as chair is finally ending! As you will read in this newsletter, I had my hands full. However, I have many projects to pursue, and a Fall sabbatical only makes my mouth water. I have been having lots of fun with three new projects. In one we create optical beams that have a phase vortex in their profile. These beams carry "orbital angular momentum" and can transfer it to atoms and objects. A whole new set of neat projects have sprung from this: measuring Berry's phase in these beams, rotating micro-objects in optical tweezers, and exciting Rydberg atoms with this type of photons. For the first time my lab was home to new living organisms (other than humans!), as we have been trapping and manipulating biological specimens with the optical tweezers. It has been lots of fun working on another project that involves doing experiments with single photons. Three of these projects have received external funding and they are all producing results and publications. Clearing room 7 for the biophysicist will compress room 5 even further, with now three optical tables and a jungle of hardware. I will sadly have to let go the Molelectron nitrogen lasers that were the workhorses of a decade ago in the lab. I have also been enthusiastic about my



WEB PHOTO'S RISE TO
FAME
See more information at
<http://focus.aps.org/v9/st29.html>

classes, teaching the new Phys121, Optics, E&I, plus adding a Core course on *The Eye*. I have had lots of fun learning the biology of retinal detection and processing, and the psychology of vision. It made me feel like a biophysicist! Beyond work, I have taken coaching the high school's modified soccer team, refereeing (where thick skin *is* needed), and driving all over New York state with two hockey players in the family. I think that the future will hold yet more surprises and adventures for me. If you stop by your alma mater—email me first! I am always around, but not so easily located...



Charlie Holbrow

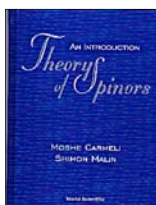
For the past couple of years I have been learning the rudiments of photon quantum mechanics, enough to help Kiko Galvez and Beth Parks prepare a successful proposal to the National Science Foundation to develop at Colgate a series of five experiments that will introduce Colgate undergraduates quite directly to some of the weirdnesses of quantum mechanics. In support of this effort, I spent from August 2001 to mid-January 2002 in Vienna, Austria visiting Anton Zeilinger's group at the University of Vienna. This group has a lot of experience doing the kinds of experiments we are preparing at Colgate. In January, Kiko and Matt Pysher '04 spent several days visiting Mary and me in Vienna and seeing how the experiments are done there. They went home ready to push our efforts ahead. We have already published an article in the March 2002 issue of the American Journal of Physics describing changes which we think these experiments will require in what is taught in undergraduate quantum mechanics, and we expect more interesting developments to follow --including a presentation at a Gordon Conference at Mt. Holyoke this past June. While in Vienna I also taught a version of my course on the history of the atomic bomb. It was a straight lecture course and not nearly so much fun as teaching the seminar version to Colgate students. One consequence is that I am getting to know an awful lot about the history of the atomic bomb. We left Vienna in mid-January and spent a week in Philadelphia at the winter meeting of the American Association of Physics Teachers. I was elected last year to the so-called presidential chain. That means that I will be president of the AAPT next year; it also means that already about 30% of my time is spent on AAPT affairs. At the beginning of February Mary and I went to Caltech. After two months of grey winter in Vienna and a couple of weeks in the Northeast, Southern California is wonderful. There I am continued a study I began several years ago on the history of how Caltech got involved in nuclear astrophysics, particularly the work on nucleosynthesis that resulted in Willy Fowler's 1983 Nobel Prize. This has been interesting and a lot of fun. It promises to keep me occupied in productive scholarship well into retirement which will begin at the end of June 2003. Last year, Tom Tucker from the Math Department and I jointly taught a course on LaGrange's mechanics. LaGrange's approach of quite pure mathematics brought Newtonian mechanics to a supreme height of refinement. Tom and I mixed mathematics and

physics and also spent about a third of the course on readings and discussions about the Age of Enlightenment which provided the context in which Lagrange worked. We're scheduled to do this one more time in the spring of 2003. It will be a nice finale to my career.



Shimon Malin

Greetings from 153 Lathrop. I continue to research the foundations of quantum mechanics and to teach Modern Physics, General Relativity and Quantum Mechanics for our majors, Physics and Philosophy to all interested parties, Scientific Perspectives courses and a First-year seminar, My new book was released by Oxford University Press in May 2001. Its title is "Nature Loves to Hide"; the subtitle is "Quantum Nexhantics and the Nature of Reality, A Western Perspective." The book, which is aimed at a general readership, was very well received. The Christian Science Monitor has chosen it as

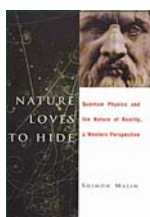


Published in 2000, Shimon Malin's book expounds the relationship between spinors and representations of groups.

"Noteworthy Non-fiction" for their 2001 Annual Book Guide;

Parabola magazine called it "remarkably lucid";

Publishers Weekly stated, "Malin writes lucidly and explains complex ideas simply and thoroughly."

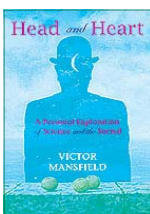


Shimon Malin presents thoughtful discussions & insight to fundamental paradigms of quantum mechanics & relativity in his most recent published Nature Loves to Hide.



Vic Mansfield

My new book, Head and Heart: A Personal Exploration of Science and the Sacred (Quest Books, 2002) will be published this July. (See www.lightlink.com/vic for details.) After publication I will be involved in an extensive author's tour, which begins with some academic conferences in England and Sweden, moves on to New York City, Chicago, and several cities in California. I will also assume the duties of chairman of the department this fall when we begin our search for Holbrow's replacement.



Part analysis, part memoir, this unusual book by Vic Mansfield, an astrophysicist, explores the relationship between science and spirit from psychological, philosophical, and spiritual points of view.

Armed with....Tools!

Our machine shop has seen changes in the last few years. Loaded with larger and better machines it is a better place to build quality parts for new labs and research. We have acquired a new lathe, a milling machine and a band-saw, filling this center of activity to capacity. We are also enjoying the convenience of the digital era, now

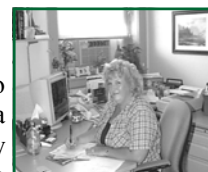


Beth Parks

This is now my fifth year in the Colgate Physics Department—time flies! I'm pleased to be handing over the title of "junior faculty member" to our new biophysicist, Jeff Buboltz. I have enough gray hairs now (due to Physics 410 projects!) that the title is starting to seem less appropriate. I had a wonderful sabbatical during the 2000-2001 year, which I spent almost entirely in my basement laboratory. The main result was a paper published in *Physical Review*, coauthored by Joe Loomis '01, on a lovely material called Mn_{12} acetate. It contains clusters of $Mn_{12}O_{12}$ with spin = 10! Our result helps to explain the mechanism of the quantum mechanical tunneling of the magnetic moment that has been observed in this material. A follow-up paper was published in the *Journal of Applied Physics*, and more papers are in the works. I've also started a new project measuring the high frequency response of carbon nanotubes, which is important to understand if they are to be used someday in constructing circuits using molecular electronics. This is a joint project with Paul McEuen at Cornell and is funded by the NSF. I'm still teaching the intro physics sequence (120-121-122), electricity and magnetism, and a Core class on energy use. Last fall I got to fill in for Joe Amato in solid state physics while he was on sabbatical, which was a lot of fun for me. The rest of my family is doing well. My husband Tom now teaches computer science at Colgate, so our lives are outrageously busy. Rachel is ten and Ben will be seven in June; they keep us on our toes. Please stop by if you're in the neighborhood!

A new world with Diane....

Despite her objections we felt we had to introduce you to Diane. She has made a world of difference in our department. Now in her fourth year as our Administrative Assistant, Diane has spoiled us all with her organization and thoroughness. She is fearless when it comes to trying new electronic software, but most of all, her upbeat mood and sense of humor is what makes her a departmental VIP!



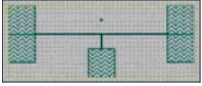
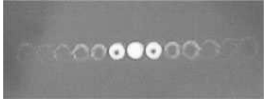

attached to the more modern machines. Roger Williams, our Machinist General finds the revamped shop a better place to face challenges. In the last decade Roger has built a number of new laboratories and parts for research that have seen a successful active duty and received the recognition of publications. The shop is also a better school to train students in the old martial arts of "building-it-yourself."

310/410 Project Symposium

2001 - 2002



Thirteen students enrolled in the junior/senior research courses presented the results of their work in a professional-style symposium.

- ❖ **Katie Bedwell**, "A Two-Dimensional Mathematical Analysis of the Knee"
- ❖ **Michelle Caler**, "Time in a Uniformly Rotating System"
- ❖ **Naomi Courtemanche**, "Experiments with Downconverted Photons: The Quantum Nature of Light"
- ❖ **Michael Fine**, "Microfabricated Striplines for Measuring the High Frequency Response of Carbon Nanotubes" 
- ❖ **Portia Flowers**, "Autocorrelation"
- ❖ **Emily Fryer**, "Deciphering the Mystery of Variable Stars"
- ❖ **Kyle Helland**, "Excitation of Rydberg Atoms Using Laser Beams with Orbital Angular Momentum" 
- ❖ **Jeyhan Kartaltepe**, "The Thirteen-Year History of Blazar 3C 279 and an Analysis of the 2001 Outburst"
- ❖ **James Martin**, "Analysis of Acoustic Guitar Strings"
- ❖ **Sean Ryan**, "Cerenkov Radiation from Quasars"
- ❖ **Meredith Tanguay**, "Optical Variability of the Blazar BL Lacertae" 
- ❖ **Lea Vacca**, "Getting to Know Manganese Acetate"
- ❖ **Adam Weiss**, "Controlled Rotation & Translation of Microorganisms in an Optical Trap"

310/410 Project Symposium

2000-2001



Twelve students enrolled in the junior/senior research courses presented the results of their work in a professional-style symposium.

- ❖ **Colleen Campbell**, "Nanometer Lithography Using AFM-Exposed Photo Resist" 
- ❖ **Jessica Frank**, "Interferometric Photolithography: The Power of Light"
- ❖ **Preston J Haglin**, "Resonance in Na Rydberg Atoms Under the Influence of a Static Field and Microwaves"
- ❖ **Nathan Hall**, "Tip Movements and Current Fluctuations During the Anodization of Niobium Thin Films"
- ❖ **Lauren Heilig**, "Single-Photon Interference" 
- ❖ **Marko Krco**, "Pole Solutions for Koronis Family Asteroids Using Sidereal Photometric Astrometry"
- ❖ **Joe Loomis**, "Terahertz Spectroscopy of Mn12 Acetate"
- ❖ **Mariah Lyndaker**, "Observations and Analysis of the Asteroid 321 Florentina"
- ❖ **John McVeigh**, "Probability Current Backflow of the Klein-Gordon Particle"
- ❖ **Benjamin Oaks-Lee**, "Probability Backflow for Weyl Equation"
- ❖ **Henry Sztul**, "Observing the Transfer of Orbital Angular Momentum from Light to Matter" 
- ❖ **Jesse Young**, "Vortex Motion in Niobium Thin"

Alumni updates...

*Thank you to all who sent us your updates, both professional and personal.
We included pictures if they were available.*

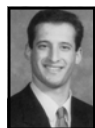
Robert Bamford ('87) email: Marpaul2@aol.com. I live in N.E. PA with my wife Stacey Lipman Bamford ('87) and two children, Jason (age 7) and Elizabeth (age 5). Currently, I am Vice President of a construction company names Mar-Paul Company, Inc. We specialize in commercial construction. Some of the projects completed in the past years are: a new academic and recreational building at Bloomsburg University; a new Student Services center at Bloomsburg University; a new prison in Dallas, PA; several additions to a prison in Waymart, PA; a new high school in Jim Thorp, PA; and a new couple of high end custom homes. Also, I assist the Colgate admissions office by attending college fairs in N.E. PA.



Albert A. Bartlett ('44) Professor Emeritus of Physics, Univ. of Colorado, Boulder, 80309-0390; Office:(303) 492 7016 Dept: (303) 492 6952; Fax: (303) 492 3352, Home: 2935 19th Street, Boulder, CO, 80304-2719, Home: (303) 443 0595, email: Albert.Bartlett@colorado.edu. Since last time, September 19, 2001 is the 32nd anniversary of my first delivery of the talk, "Arithmetic, Population, and Energy," which has now been given 1418 times in 49 states, Canada, and a couple of times overseas. I have given it 29 times already in 2001. One of those was in February when I gave the talk as a Physics & Astronomy Seminar at Colgate. It was a real pleasure to come back to Hamilton and to see friends and to see the many changes in the Department. While I was there I also spoke to one of Charlie Holbrow's courses on my experiences at the secret laboratory at Los Alamos where I took a job right after graduating from Colgate in June of 1944. In May 2001 I was invited to give testimony on energy by the Subcommittee on Energy and the Environment of the House Science Committee in the Rayburn Office Building in Washington, D.C. I can e-mail copies of my testimony to interested people on request. In the afternoon after the hearing, the Chair of the Committee asked me to give my talk on energy for the staff of the Committee. In 1996 a physics colleague and I published a 400 page history of the Dept. of Physics of the University of Colorado at Boulder. We are now busy preparing a new edition, correcting errors in the first edition, and adding another five years of history. We hope to have the new edition ready by the spring of 2002 when we will observe the 30th anniversary of our Department's move into the new Duane Physical Laboratories which is named for William Duane, of the Duane-Hunt x-ray law. Duane was the Professor of Physics at the University from 1898 to 1907. His x-ray work was done later at Harvard. We will also observe the 100th anniversary of the first graduate degree in Physics which was awarded by our department. That first degree was an M.S. degree to Charles A. Lory in 1902. By 1909 Lory was President of what is now Colorado State University in Fort Collins, where he served as President for over 30 years. My wife and I just observed our 55th anniversary with a trip to Los Alamos and Santa Fe. She grew up in Hamilton as Eleanor Roberts.

Jay Bennett ('72) 188 Lake Avenue, Fair Haven, NJ 07704; (732)530-3692; email: jbennett@telcordia.com. I am working for Telcordia Technologies as a consultant on telecommunications network reliability. Having received a PhD in statistics from Temple University, I have maintained a high level of participation in the American Statistical Association. I am a Past Chair of the ASA's Section on Statistics in Sports and was its annual honoree at the Joint Statistical Meetings this past summer. I post an annual analysis of the World Series on the ASA website at www.amstat.org/sections/sis/. This past summer "Curve Ball: Baseball, Statistics, and the Role of Chance in the Game" which I co-authored was published by Copernicus Books.

Dave Berger ('97) Center for High Angular Resolution Astronomy Georgia State University, University Plaza, Atlanta, GA 30303, email: berger@chara.gsu.edu, web page: <http://www.chara.gsu.edu/~berger>. I was married to Amber Evans on December 30, 2001. She is a nursing student at Emory University Nursing School and will receive her BSN/RN next year. Balonek was present at the wedding. *Photo copyrighted by Edward Zeltser Photography, 2002.*



Susan Hersperger Bernegger ('82) 3 Gibbons Knoll, Fairport, NY 14450; (716)388-0427; email: potpi-es5@hotmail.com. I enjoyed seeing update from old classmates in the last newsletter. I'm living in Rochester NY with my husband Peter, who was at Colgate before me, and children Justin 10, Andrew 7, and Anna 2. I've been fortunate to have been able to work at Kodak part time as an engineer/project manager since Justin was born. Most of my work has been with laser/electroptical digital devices. I still play sports and play in a jazz band, and am kept busy with coaching kids teams, volunteering in school and church, and trying to keep my humor while managing the myriad of kid activities from drawing lessons to trumpet. It would be wonderful to hear from some old physics buddies!



David E. Breen ('82) Assistant Director, Computer Graphics Laboratory, 348 Beckman Institute, MS 348-74, California Institute of Technology, Pasadena, CA 91125, Office: (626) 395-2866, Voice-Mail: (626) 395-2820, FAX: (626) 793-9544, Email: david@gg.caltech.edu; <http://www.gg.caltech.edu/~david>. The quick update for me is that the funding for my research position at Caltech runs out this year. So I am now applying for computer science faculty positions at several universities throughout the Northeast. My interviews start in a week! I'll keep you posted on where I end up.



Laurel Brown ('99) email: Lbrown@mail.colgatealumni.org.



I just finished two years of Peace Corps in Tanzania. I was teaching secondary school physics and chemistry there, and I just got home. For the moment, I am looking for a job to tide me over until I can start to apply to grad schools next fall.

David Burgoyne ('80) 1722 Cambridge Road, Ann Arbor, Michigan 48104-3647 Home (734)996-0689 Work (734)996-1485 email: vade@voyager.net. No real news except David Edward Burgoyne, Jr. (DJ) was born 12 Jan 2000. (He'll be two by the time this is published.) Married to Cynthia Brassert-Bowman since July 1997. I also have three daughters...Madeline Burgoyne (9th Grade), Brittany Bowman (9th Grade), Adrienne Burgoyne (7th Grade). I am finally really using my Physics training as I learned to Scuba Dive early in 2000 and now have (almost) the whole family doing it. DJ is still a little young.



Nancy "Therm" Burnham ('80) Associate Professor, WPI Physics, 100 Institute Road, Worcester MA 01609-2280, Office (508)831-5365, Lab x5765. Of all things, my Colgate physics experience has ended up by my becoming a physics professor! After many years in research, I was looking for a new challenge, and a challenge it is. I now appreciate the efforts of the faculty of the Colgate Physics Department in a way that I never did before. In general, since I've come to Worcester Polytechnic Institute, I've relived my own college experience much more intensely than in the intervening twenty (!) years. In particular, I just gave (and corrected) the first exam to the sophomores. It's amazing how much they don't know. This makes me search my memory banks to ask myself if I was in a similar state, or am I just being a cranky old woman, thinking that students are worse these days. I remember the frustrations and satisfactions and discoveries much better than I remember the state of my knowledge at a certain time. Although there are many altruistic aspects to teaching, there are selfish ones too. I'm very pleased that I'm starting to really nail down the subject by virtue of having to teach it. I'm a better scientist by being a professor. My husband and I look forward to Russell King's wedding on September 29th. Best wishes to all of you from Therm. P.S. No, I don't use that nickname so much anymore.



Michael J. Ciolli ('95), 78 West 82nd Street, Apt 3A, New York, NY 10024, (212)877-0781 email: michael-ciolli@hotmail.com. Still living with 2 Colgate friends, Eric Von Stroh and Christopher Hayden. Working for The Chesapeake Group, a NYC-based investment banking boutique focused on Software and IT Services industries.



Jennifer (Christensen) Claver ('90), 505 N. Roanoke Ave, Tucson, AZ 85704, email: jclaver@noao.edu. I am currently working at NOAO in Tucson, Arizona. I work with Dr. Abi Saha on RR Lyrae stars and cepheid variables, and for Dr. Buell Jannuzi on the NOAO



Deep Wide-Field Survey reducing optical data. I occasionally observe on the Kitt Peak 3.5 meter WIYN telescope, and teach astronomers how to observe with various instruments on the WIYN and 2.1 meter telescopes. I recently married Dr. Charles Claver in April of this year.

Mark Dalberth ('90), 1331 Lambert Circle, Lafayette, CO 80026, email: Mdalberth@cieloinc.com. Hi folks of the Physics and Astronomy Dept! After getting my PhD in the fall of 1999, I worked for a few months on a molecular electronics project at the University of Colorado. We were working towards synthesizing molecular AND gates. My part of the collaboration involved fabricating electrodes with extremely small spacings that would be used to connect the molecules to the macroscopic world. They were interesting problems, but I was lured away by the comparatively big money of a start-up company called Cielo Communications. Here, we are attempting to mass produce 1300 nm vertical cavity surface emitting lasers (VCSELs, pronounced "vixels"). Fiber optic lines have an absorption minimum at 1300 nm so this wavelength is ideal for long distance (~5km) optical transmission. VCSELs are more easily mass produced than present laser technology and can be modulated faster-- we are shooting for 10 GHz. This would increase communication speeds by about a factor of 100. I'm working on the growth and characterization of the material used in the lasing medium- indium gallium arsenide nitride (InGaAsN). Since my PhD research involved pulsed laser deposition of high temperature superconductors and cryogenic microwave measurements, it's been a big switch to the molecular beam epitaxial growth of III-V semiconductors. I'm learning new things constantly. I guess that's the allure of a career in physics. I got married in August 2000 to Andrea, she is an elementary school music teacher. We have an eight year old son, Max. We bought a house in Lafayette, CO last April, and we are happily giving Home Depot the money left over from our mortgage payments. I can't wait to get the next Newsletter. I really enjoyed the last one, and I appreciate all the work that must be done to produce it.

Stacey M. Davis ('97), 48 Wake Robin Terrace, West Henrietta, NY 14586, email: Sdavis@mail.colgatealumni.org. I will graduate from RIT with a Masters in Deaf Education in May 2002. After that I will continue working in the Research Department at NTID (National Technical Institute for the Deaf, a college of RIT) on a web-based problem solving project to help deaf students improve their problem solving skills. I am currently working on this project as part of my RA position. In addition to that, I have an adjunct position in the Department of Physics, where I teach one or two lab courses a quarter. I will continue doing that next year as well. In my spare time I have been dabbling in some physics education research as well as working on some astronomy projects both of which have resulted in some publications/presentations. I have finally found my niche in the Rochester Swing dance community, but I am still remaining true to my country roots.



Bob Ferina ('87) email: BandKF@aol.com. Other than happily getting settled in the Portland, Oregon metro area, I don't have much new to report on. My job is going well as Quality Manager at a manufacturer of antennas for the telecom and automotive industries. I've worked at 4 different locations of the same French company for over 11 years now and think that one of the reasons I got the first position in France was because of the Colgate study group I attended in Geneva. Physics, of course, has helped as I've shifted from fiber optic R&D to RF coaxial and microwave products to antennas. One of my missions for this year is establishing an on-site test laboratory to support our research and development activity. Last week I found myself referring to a book from Prof. Lloyd's January, 1985 course in experimentation to help a colleague statistically interpret some antenna test data. Unfortunately, measurement uncertainty and other statistics concepts tend to be quite under-utilized in manufacturing. My career interests seem to be leaning toward manufacturing applications of systems methodologies; the field of operations research appeals to me. My family is doing well: Karen Heltman '87, Jenny (5), and Rachel (2). We enjoy the many outdoors and cultural activities here for a family, but there sure are few "sun breaks" in the winter here. Over the recent holidays we got to spend a nice day with my physics buddies Carlos Montoya '87 and Doug Albagli '87 and their budding families. Instead of reciting the Schroedinger wave equation in spherical coordinates over beers like old times, we found ourselves intermittently discussing (while 7 kids dramatically increased the entropy level in Carlos' family room) the advantages of minivans and sub-contracting home maintenance.

Louis B. Freeman ('55) 388 Cavan Dr. Pittsburgh, PA 15236 PH: 412-653-1705. I retired from the Bettis Atomic Power Laboratory this past spring, and continue living in Pittsburgh.

Brandon W. Gallagher ('99) 7777 Greenbriar #2024, Houston, TX 77030 Office: CDM, 1800 West Loop South, Suite 1550, Houston, TX 77027, Phone (713) 850-1921, email: GallagherBW@cdm.com. I spoke with Professor Amato last night and it was good catching up with him. During the conversation he mentioned the department news letter and it occurred to me that I should update my contact information. My graduating class and the classmates I called friends were all class of '99, but I was a three-two and therefore got my diploma '00.

Keith Garsson ('82) 3364 NW 53rd Circle, Boca Raton, FL 33496, Home Phone: (561)999-8799 Cell Phone: (561)271-8421, e-mail: kg@bluemorning.com web address: www.bluemorning.com. Moved from NY City to South Florida in May of 2000. Currently working free-lance, writing small to medium-size business software applications, including financial inventory and web-based packages.

Robert (Rob) Giering, ('85) 25 Smokewood Drive, Lake Monticello, Virginia, 22963; (434)589-3506, email: RWGiering@aol.com. Thank you for the request for information. I always like to hear what other Colgate physics alumni are doing. As mentioned in the last newsletter, I went to medical school in 1995 after several years as a bioengineer in the medical school at Dartmouth. I attended Albany med. from 1995-99. The first year out of med. school was the infamous intern year, which I stayed in Albany to complete (in internal medicine). Since that time, we moved to Charlottesville Virginia, for continuation of my residency. I am specializing in a small specialty called Physical Medicine and Rehabilitation, which focuses on functional improvement in disabled patient populations. We have a diverse specialty, and do things like write wheelchair prescriptions, as well as treat chronic pain syndromes in spinal cord injured patients. We also conduct electrodiagnostic studies and assess human gait biomechanics. As you might note, this field is a favorite selection of those who have studied physics or engineering prior to attending medical school. This field allows me to bridge the fields of medicine and engineering easily. In 1996 I was married to Theresa Catherine Craven (UC Davis, UC Berkeley). We have a four year old son named John William, who currently rules our house without hesitation. This past fall we had our second child, Jacob Joseph, who is a spunky four month old, full of smiles and raspberries. We find sleep to be our selected option, when possible. Virginia is a beautiful state, and we are not complaining about 60 degree days this January! I always enjoy hearing from long lost Colgate physics pals. If you are in our area, please call!

Timothy D. Glotch ('99) 1418 E. Broadmor Dr., Tempe, AZ 85282; (480) 446-7669 Email: tglotch@asu.edu Web: <http://www.public.asu.edu/~tglotch> (still under construction, but not for long). I'm now in my third year of grad school in the Department of Geological Sciences at ASU working towards my PhD in geology. The focus of my research is the study of aqueous mineralization and particularly iron oxides on the Martian surface through thermal infrared spectroscopy. To this end, I have been working extensively with data from the Thermal Emission Spectromemter (TES) instrument currently orbiting Mars on the Mars Global Surveyor spacecraft, and I will also be processing and analyzing images from the Thermal Emission Imaging System (THEMIS) instrument set to go into orbit in October. In addition, I am helping with the thermal vacuum testing of one of two Mini-TES instruments that will be on the two 2003 Mars landers. On a personal note, I am very happy to announce that I recently got engaged to Deanne Rogers (College of Charleston, '98) and that we are shooting for a Spring 2003 wedding. We met on our first day of grad school and have been pretty much inseparable ever since. I hope that as I write this, all is going well in Hamilton. Good luck making it through another winter up there! (UPDATE: Tim is getting married in November 2002.)

Jeffrey Goldman ('89) I'm still at MJ Research building optical gizmos for DNA analysis. I've been working in the biotech industry for a number of years now and it remains a fun place to play. My latest project is a line of quantitative thermal cyclers that are used for everything from salmonella and anthrax detection to gene expression mapping. I'm still living in the Boston area, although I moved out into the western woods with my wife, Amy.



Stephen Gottesman ('60) 2135 SW 94th Terrace, Gainesville, FL 32607; (352)332-7849 email: gott@astro.ufl.edu. I am a Professor of Astronomy at the University of Florida, and a past Chairman of my department. Major research interest in structure of galaxies including dark matter properties. Major research tool is VLA radio telescope in New Mexico.

William H. Green ('85) 2 Mary Hill Court, Owings Mills, MD 21117; (410)902-9334 email: agreen@bcpl.net. Have been working for the past 13 years as a Materials Engineer at US Army Research Laboratory, Weapons and Materials Research Directorate, Aberdeen Proving Ground, MD 21005. Married to Amy S. Green, whose previous occupation was a software engineer at Digital Equipment Corporation in MA, and now her current career is homemaker with her hands very full with three young ones at home—Rebekah Paige, 6 1/2 years old and in first grade, Matthew Benjamin, 4 years old, and Alyssa Rose, 2 years old and a cutie! Amy's possible future profession is a teacher of math and science. God Bless America and our young (and other) men and women in the fight!



David A. Grimley ('88) Quaternary Geologist, Illinois State Geological Survey, 615 E. Peabody Dr., Champaign, IL 61820; (217)244-7324, email: grimley@isgs.uiuc.edu. I am continuing my work as a Quaternary Geologist at the Illinois State Geological Survey in Champaign, Illinois. I have been with the ISGS for about 6 years. My current projects involve mapping the 3-dimensional distribution of glacial sediments in the St. Louis area. I also have been studying wetland soil delineation through use of magnetic susceptibility and other magnetic properties - so I am still dabbling a bit in physics. I still thoroughly enjoy stargazing which often make me think of cold but entertaining nights at the Colgate Observatory!

Jonathan Habib ('98) University of Rochester, Dept. of Electrical and Computer Engineering, Laboratory for Superconducting Digital Electronics, Rochester, NY 14627 email: habif@ece.rochester.edu website: <http://www.ece.rochester.edu/~habif/>. Fall 2001 marked the beginning of my fourth year of graduate school in electrical engineering at the University of Rochester. I have finished with classes and am focusing on trying to write my dissertation. My work is in a field which is a cool mix of engineering and physics: solid state quantum computing. We're trying to use ultra-fast electronics to observe quantum superposition states in macroscopic devices. It's a lot of fun.



In fact, I was invited to give one of the Tuesday (free donut) talks during this spring semester, so I can't wait to see Colgate again. Life is good here in Rochester, but I'm ready to graduate soon. I would love to hear from any '98ers out there.

Patrick J. Heaney ('00) Home: (307)734-8867, Cell: (920) 915-4900, Email: trackingfast@hotmail.com. Hello Diane and the rest of the physics department. I am currently living in Jackson Wyoming. I am working for an engineering firm working mostly with concept development and mechanical engineering. I also do some consulting for an electrical company that deals with stray voltage on farms. We have been working with both re-wiring farms and redesigning the electrical equipment. For fun I still avidly skydive. This last summer I have been competing which has allowed me to pick up a few small sponsorships. For future plans I am slowly gathering information regarding physics graduate schools. Take care and good luck with the school year.



Jennifer Heldmann ('98) 2647 Pine St, Boulder, CO 80302 Email: Jennifer.Heldmann@Colorado.edu. I am currently at the University of Colorado in Boulder working on my PhD in planetary science. For my thesis I'm developing computer models of the stability of liquid water on Mars. These models are being tested in the Mars analog environment of the High Canadian Arctic where I'll be conducting field work next month. Plus I'm analyzing data from the Mars Global Surveyor spacecraft to examine recent water flows on Mars. I'm also enjoying working through the Center for Astrobiology and TA'ing our "Extraterrestrial Life" class in the Astrophysical & Planetary Science department here at CU. In my spare time now that my crew rotation at the Mars Desert Research Station is complete (the MSNBC pics) I'm helping out with the project by working at Mission Control as Science Officer for present and future crew rotations.



Brandon Himoff ('95) Director, CIBC World Markets Corp., 4643 S. Ulster Street, Suite 900, Denver, CO 80237; (720)554-1111, Email: brandon.himoff@us.cibc.com. Life has been good in Denver, Colorado, having moved a year ago with the rest of the Photonics team at CIBC World Markets.



While optical components is not quite the red hot area it was until the beginning of 2001, it is still a tremendously interesting industry. My colleagues and I have been helping companies like JDS Uniphase that are commercializing optical technologies with their mergers, acquisitions and financing. It is gratifying work with a very widely respected team that has a deep understanding of technology. Outside of work, I have been taking advantage of the local environs, making great strides with my skiing skills and doing some hiking in the mountains as well. I have discovered that, for outdoor recreation, Colorado does hold some advantages over New York City.

Monica (Berrien) Houson ('90) 23 Byrds Hill Rd, Pawling, NY 12564; (845)855-3081, email: MoJoBeHo@aol.com. I am now teaching math at a high school in CT, trying to start a technology team, as well as a Japanese curriculum. I bought my first home in NY in June with my (then) fiancé, Tom Housen (SUNY Binghamton '91), and we got married in our backyard in July '01. Feel free to drop a line to say hello.

Ward N. Jones ('69) 8725 SW Pacer Ct, Beaverton, OR 97008-6970; (503)643-8416 office: (971)327.0670 x302 fax: (971)327.0680 cell: (503)789.8793 email: wnjones@lstetech.com. I am currently the COO of a tiny, new, struggling, .com business regarding smart cards in Portland, OR. Our web site is www.lstetech.com. We also have a demonstrations site at <http://demo.lstetech.net>. My original major was AstroGeoPhysics back when, I think, only one other college offered that major (in Colorado?). In fact, I recently purchased Prof. Aveni's [Between the Lines: The Mystery of the Giant Ground Drawings of Ancient](#). But, of course, have not had time to do more than glance at it. I ended up with a teaching degree, teaching experience and then later, a MBA with a major in MIS on route to my current role. I live with my wife Patricia, my son Evan (18) and my daughter Meredith (15) [and 3 cats!]. And, believe it or not, like my job, my family and my life! I actually did not graduate from Colgate but it is the only college I still donate to each year. I still appreciate the school and what it meant to me. Even just a couple of years at Colgate has been important to me and to my life.

Kevin Kaczmarek ('00) email: kevinkaczmarek@yahoo.com. This fall, I started the physics PhD program at University of Pennsylvania. Over the summer, I worked in a "spintronics" lab here. We were setting up experiments that look at how electrons transfer spin states to each other in solids, much like they transfer electrical signals in electronics. This fall, instead of being a teaching assistant, I'm researching the thermal properties of carbon nanotubes - seeing how well these enormous molecules (roughly several nanometers in diameter and up to several microns long) conduct heat at different temperatures. I'll have about 2 years of courses before I begin researching full time so I have plenty of time to decide where I'd like to do my thesis, which is good because there seems to be no end to the opportunities here. If any undergraduates are interested in Penn or grad school in general, I'd love to write about it.

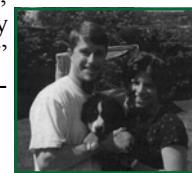
Peter Matisoo ('88) PSC 477 Box 556, FPO AP 96306. I am from the class of 88 (way back when ...), and I've been a pilot in the US Navy since 1989. My duty stations have been, in chronological order: Pensacola FL, Kingsville TX, Patuxent River MD, Jacksonville FL, Edwards AFB CA, China Lake CA, and now Atsugi, Japan. I am married to the former Michele Murphy of Jacksonville FL, and we have 3 children - Andrew (11), Connor (6), and Christian (5). I attended USAF Test Pilot School, class 96A. I received my Masters degree

from the University of Tennessee shortly after completing Test Pilot School. I interviewed for a NASA Astronaut, shuttle pilot position in January 2000, but was not selected. In view of the current problems in NASA, it's probably a good thing I was given the opportunity to continue in my present job as an FA-18 Hornet pilot with VFA-27, based aboard the USS Kitty Hawk. My next assignment will take me back to China Lake CA, as the head of FA-18 software and weapons integration.

Julie (Williams) Meder ('82) 2235 Shady Avenue, Pittsburgh, PA 15217; (412)421-5212 email: mederjw@aol.com. I am a partner with an intellectual property law firm in Pittsburgh. I specialize in obtaining chemical patents and plant patents for my clients. Married to Al (Penn State '85) and have children, Ryan (9), Carolyn (7), and Stephanie (5).

Cheryl Meltz ('98) 2505 John Eppes Rd, Apt 300, Herndon, VA 20171; (703)713-0718 email: CE-MELTZ@aol.com. I am currently living in Herndon, VA working for Lockheed Martin as a systems engineer/analyst. I have switched jobs internally, and am now working in their Mission Analysis group where I am a project lead for a large analysis study involving modeling a large-scale system using a complex simulator. Among others, I manage a bunch of Physics PhDs! I am also pursuing my masters degree in systems engineering and a graduate certificate in engineering management, both from The George Washington University. I will graduate with my M.S. in July 2002. I continue to be the head diving coach for Oakton High School in Vienna, VA, where we had the best season in school history last year. Since graduation, I have also returned each year to help out coaching Colgate's diving team on their annual winter training trip to Puerto Rico.

John Metz ('93) 10078 W 99th Ave, Westminster CO 80021 email: jmetz@colgatealumni.org. The last two years have been especially busy for us! John graduates in May 2000 with his Ph.D. in Electrical Engineering from the University of Colorado at Boulder focusing on optical electronics. If you haven't heard the 5-hour spiel please send him an email! Suffice it to say, he was (and still is!) quite glad to be finished with those six years of work. Torri started medical school in Denver at the University of Colorado Health Sciences Center and has of course been swamped with studying ever since! She plans on graduating in May 2004. In April 2001, we bought a house in Westminster. It has been dubbed by friends as "Casa Metzburger". The house is only a block from the Standley Lake Open Space, essential for our new addition to the house: Baxter, our healthy 80-pound Bernese Mountain Dog, born on April 26, 2001. He should stop growing when he gets to 100 pounds or so! Last, but certainly not least, we are happy to announce our engagement, which occurred on August 26. We are busy planning our wedding in our "spare time" and we will be getting married on September 14, 2002.



Bill Morrison ('59) 405 West Gardner Court, Marion, IN 46952 email: dukeibis@worldnet.att.net. Nothing really to report this time. My wife and I split the year between Marion, IN and West Palm Beach, FL. The weather down here is great in January.



Ilka Nahmmacher ('85) Dirnaich 17, 84140 Gangkofen Phone: +49(0)8722-557 email: amitterer@online.de. I am currently working as a technical writer for a company located in Munich that produces eddy current testing equipment for the non-destructive testing of tube, bar and wire. This allows me to take advantage of my knowledge of German and English. I also work as a freelance translator of technical documentation.



Rajiv Parmar ('82) Dallas, TX Ph: (972)371-4587 email: parmar@dalsemi.com. I've been living in Dallas now for about 2.5 years. I work at a company called Dallas Semiconductor that was acquired by Maxim Integrated Products of the Bay Area, CA about 1 year ago. Its been real hectic despite the downturn in the economy, which I suppose is good because many places have had serious cutbacks and layoffs. I left Motorola in Phoenix, AZ after 15 years there in design and technology development for low power. Here in Dallas, I am what our company calls a business manager but basically I do strategic marketing.



Lawrence Paul ('59) 1955 State Rte 51, Ilion, NY 13357 email: lrpaul@dreamscape.com. I graduated Colgate 1959 and went to RPI in Troy, NY for a degree in electrical engineering. I went to work for General Electric at a rocket test facility in Malta, NY for a couple of years then went to Orlando, FL and worked at Martin Marietta on the Spring missile. Went back to GE-Malta for another two years and rapped up my engineering career. I then went in the home heating fuel business. In 1997, I sold my business to my two sons. I now am retired and am enjoying the good life.

Paul Pedersen ('95) 15 Grove Street, Belmont, MA 02478; (617)489-5189 email: Pedersen13@yahoo.com. This is my first update since graduation so I'll give some brief history. After Colgate I worked in New York City for Andersen Consulting doing business process re-engineering work. In the Fall of 1999, I joined a small eCommerce consultancy in NY as a project manager building websites for high fashion clients like Bloomingdales.com. With the death of the dot-coms came the need for an employment change. So, I am currently working at a consultancy in Boston managing BI projects. It's a small company but very effective within our market. On the personal front, I love living in Boston and spend a lot of time hiking, skiing, and climbing. This past summer I spent 16 days in Jos, Nigeria on a mission trip. It was a great experience and I'm hoping to go on another mission trip soon.



Matthew Pickard ('98) 3276 Valley Drive, Alexandria, VA 22302 email: matthew.pickard@emergent-IT.com. Currently I am living outside of Washington, DC. I recently moved from working for NASA at the Goddard Space Flight Center to a small government contracting company that does consulting for the Air Force. My department works on simulation of combat aircraft scenarios.



Jake Rasweiler ('92) 417 East Beech Street, Long Beach, NY 11561 Office phone: (516)229-3939 email: jake.rasweiler@nextel.com. My wife, Claudia and I live in Long Beach, NY with our daughter Julia who is 18 months old. Despite extensive practice, I remain only an amateur surfer which provides a good source of entertainment for my wife and daughter. I recently was promoted to Director of RF Engineering - New York for Nextel Communications, Inc. My wife is a financial analyst for Skadden Arps in New York City. No one can overstate the impact of the tragedy that destroyed the World Trade Center. Professionally at Nextel in New York, much of the 4th Quarter 2001 was devoted supporting the emergency services organizations that use Nextel's Service and to the activities surrounding both the short-term and long-term telecommunication restoral efforts in and around lower Manhattan.



Scott Ritter ('86) 14 Russet Lane, Sudbury, MA 01776 email: sritter@bbn.com. Well, since my last note, I left my job as ASIC verification manager with Number Nine (now defunct) to work as an application engineer and tool-smith for a startup called Improv Systems. Their product is a multiprocessor chip targeted at videophones, digital TV, and networking. One result of this job is that I have developed a deep appreciation for "perceptual coding" (or what makes MP3s so tiny). After a year and a half of playing startup politics, I realized that a second result of this job was that I was ready to become a full-time independent consultant. However, in the course of beating the bushes for a decent contract, I was persuaded to accept a full time position with my old group back at BBN, with an option to leave after six months. I've been there for the past eighteen, building fast digital control systems, tormenting the junior staff, and liking it. (BBN is in Cambridge, MA - if anyone wants to get together for beer/coffee & geek talk...) The value of having experienced various work environments to appreciating a really good one cannot be overstated. Two winters ago, I was invited to be the speaker for the Tau Beta Pi honor society induction dinner at Tufts, where I attended graduate school. I was instructed, by my old advisor, to share the perspective and experience of my "professional career" with the junior and senior undergraduates. "Heck," I thought to myself, "I've only been a professional engineer for about... Let's see... 10 years?!" Funny, I still don't feel like a grown-up. I did manage to act the part, however, and subsequently hired one the most promising graduates. (See tormenting, above.) Janice (Wasylenki '86)



and I celebrated our ten-year wedding anniversary last July. We continue to live in Sudbury with our two German Shepherds, various tropical fishes, orchids, and chunks of adopted computer hardware. The dogs' favorite game involves my acting in the role of "chew-toy" and is best played while donning protective clothing. Our lives are good, but times are rough. Here's to us all pulling through!

James Robyn ('72) 157 Hillside Drive, Chester, NJ 07930 email: jrobyn@rinrobyn.com. I still own Rin Robyn Pools and build swimming pools in New Jersey. My oldest daughter is a senior at the University of Pennsylvania, with a double major in International Relations and History. My youngest daughter is a sophomore at Columbia University - still undecided in a major (but it won't be either physics or astronomy). My wife ran in the Philadelphia Marathon last month, completing it and placing 16th in her age group.

Carol (Finn) Sanzone ('99) After graduation, I worked for PAR Government in Rome, NY as a software engineer. I left them for InCert Software in Cambridge MA, where I am still writing software. I recently got married (in Rome, NY) and we bought a house in Southern New Hampshire.



Benno A. Scheibner ('70) 6407 Cool Water Drive, Sugar Land TX 77479 Home: (281)565-2466; Work (713) 245-7540 email: barbs4@ix.netcom.com. After receiving my Ph.D. from the University of Colorado, I have spent the last 22 years as a geophysicist for Shell. I have had a variety of assignments in data acquisition, research and managing seismic data processing groups. My work for the past two years has been something a little different. I am the Marketing Consult for Shell Geoscience Services. SGS provides software solutions, technical services and specialized staff to Royal Dutch Shell operating units worldwide. I am responsible for marketing these products, negotiating contracts and ensuring a happy customer base. The job involves quite a bit of traveling and has given me the chance to get to know people from all over the world. We currently have customers in 32 countries on 6 continents (I am still working on finding a customer in Antarctica). In this particular job, the communications skills (written and verbal) learned at Colgate have been invaluable. A liberal arts education is worth something! On the personal side, I am still happily married to Barbara after 32 years. Barbara has recently retired to devote fulltime to taking care of me and our granddaughter.



Ralph Schlieff ('87) 1652 Park Avenue, San Jose, CA 95126 (408)998-5292 email: reschlieff@netscape.net. Since September 2000, I have been living in San Jose, CA (Silicon Valley) and working for a semiconductor equipment supplier in Santa Clara by the name of ASML. ASML has its headquarters in the Netherlands and builds the high precision cameras (scanners) used in the optical exposure step of computer chip manufacture. Our division is named ASML MaskTools and is concerned



with the patterns written on photomasks, which are transferred to the photoresist on silicon wafers. We are also pursuing research in novel mask technologies. Often enough I am fortunate to be able to apply the principles of physical optics, thin film interference, and mathematics in my work. In my limited spare time, I enjoy cycling (road) in the mountains around the Bay area.

Timothy Schneeberger ('72) 46 Arrowhead Dr, Sandia Park, NM 87047; (505)286-3254 email: TimSchnee@aol.com or Timothy.Schneeberger@West.Boeing.com. In one of those fascinating "small world" experiences, I made a Colgate-Astronomy and New Mexico connection at a Paris restaurant in early September. My wife Cynthia and I randomly selected a restaurant one evening. We were seated right next to a couple from our same small town in New Mexico, Sandia Park. I recognized the woman from some activities we shared supporting a local high school board. However, that's not all - we were sitting next to Lois Vermilya and her husband Lenny Waslinsky (sp?), both Colgate grads. However, that is not all - we had all experienced a "Jan plan" trip to Mexico with Tony Aveni. While we did not go the same year, it still rates as one of the most incredible "small world" experiences of my life!

Robert Snell ('95) 860 Sunny Chapel Road, Odenton, MD 21113, (410)695-2584 email: rob@robandjackie.com <http://robandjackie.com>. I am currently working for a small consulting firm specializing in Web-enabling business processes in the vertical markets of Medicine and Finance. Most of my time is spent on an evolving application written in Visual Basic which acts as a front end for the processing of 15 million pages of medical records per month at over 6,000 medical facilities by over 2,000 users in all 50 states.



George Stiles ('83) IBM, 4 Allegheny Center, Pittsburgh, PA 15212, (412)237-2857 email: gstiles@us.ibm.com. I currently reside in Pittsburgh and have been in Marketing and Sales with IBM for 16 years. Received my MBA from Cornell. My passion for football has been supplanted by a zest for the outdoors: bowhunting(traditional/primitive), skiing, golf. My next project is fly fishing. I enjoy and support the arts and am currently on the Board of the Pittsburgh Public Theater. I also have been involved numerous volunteer activities. I have retained my interest in the sciences and subscribe to the weekly Science News. Have not gotten around to getting married yet.



Jay Stewart ('00) 6 Humboldt Place, Apt 1, South Boston, MA 02127, (617)269-9309, email: jstewart@mail.colgate.alumni.org. I just wanted to say hello and send you a quick update for the physics department alumni records (if you're still tracking us fossils! After a tremendous year of work out here in Silicon Valley, I've decided to quit my job and head back east to be closer to friends and family. I'm also searching for employment in a new industry - such as optical networking or wire-



less technologies, the MEMS world just wasn't for me. On my time off I'm also hoping to get some applications in the mail for graduate school in EE next Fall. Unlike the majority of companies that have folded out here in the last year, ours is still doing great, and if you can believe it, we're still looking for some junior level engineers! So if any seniors are in search of employment opportunities out west next year, have them check out www.reflectivity.com for some info about our company and to find an email address for sending resumes. I hope all is well back at school and that everyone's friends and family escaped the World Trade Center tragedy. I'm looking forward to being back in the northeast again so I can stop by Colgate and say hello to everyone more frequently. California is just too far away!!

Russell D. Struck ('67) 47 Fairview Drive South, Basking Ridge, NJ 07920, Home: (908)766 2822 Office: (908)730-3609 email: RussStruck@aol.com. I received my M.M.S. (Masters of Management Science)



from Stevens Institute of Technology in 1972; married to Arlene Harrington in 1970, and in 1974, daughter Denise was born. I have worked for ExxonMobil for the past 25 years, currently as Business Planning Advisor in ExxonMobil Research Engineering Company's Information & Computing Department. Also, I am active in Bernards Township (NJ) affairs, currently in my seventh year on the Zoning Board of Adjustment. I have also served on Planning Board and Parks & Recreation. I assist Colgate occasionally at local college fairs. My favorite diversion is driving my old, beat-up porsche at Lime Rock, Watkins Glen and the Pocono.

Robert J. Sullivan ('62) 294 Highview Drive, Chapel Hill, NC 27514; (919)660-6808 email: sulli006@mc.duke.edu. I am a member of the Medical Faculty at the Duke Medical Center and Director of the Center for Living. I lead a program dedicated to helping people recover from illness and maintain excellent health and fitness. Our staff emphasize balancing nutrition, fitness and stress reduction with excellent medical care. My background in physics provides a superb basis for understanding exercise physiology and new technology. I am looking forward to seeing some of my classmates at Reunion this summer.



Christy Tremonti ('94) Dept. of Physics & Astronomy, Johns Hopkins University, 3400 N. Charles St, Baltimore, MD 21218, (410)516-5169 Email: cat@pha.jhu.edu. I'm currently a graduate student in the Physics & Astronomy department at Johns Hopkins in Baltimore, Maryland. I say "currently" so as to avoid mention of what year I am, but as most of you know when I graduated (and are pretty good at math) I might as well admit that I'm a 7th year (sigh!). In grad school I've dabbled in a number of areas but primarily I've been working on studies of nearby starburst galaxies in the ultraviolet. It's cool stuff, because these galaxies are the best local analogues of the highest redshift objects. This past spring I started dabbling in



something else interesting - the Sloan Digital Sky Survey, and that work is turning into my thesis. It's a different kind of astronomy because my sample is some 13,000 galaxies! I'm hoping to finish my thesis by September since I've just been offered a great postdoc at The University of Arizona in Tucson. I'm excited about the prospect of living out west. I'm planning to take my horse with me so that I can be a real cowgirl!

Paul Van Nostrand ('49) 3725 Lifford Circle, Tallahassee, FL 32309-2637, (850)893-4309 email: vannostr@tfn.net. I am looking forward to the next newsletter but don't have much news to report. My wife, Jean, and I just celebrated our 50th wedding Anniversary in September. I still do some photography and operate my ham radio station but I am spending more time on the computer. Still enjoying retired life. We got to Long Island for a couple of months this summer but never got upstate.

Jim Washburne ('78) GLOBE Soil Moisture Scientist, Department of Hydrology and Water Resources Harshbarger Bldg, #11, Rm 238, PO Box 210011, University of Arizona, Tucson, AZ 85721-0011 Office: (520)626-4107 email: jwash@hwr.arizona.edu. I enjoy hearing how the department has grown and functions. No changes to report from last time.



Adrian G. Weaver ('42) One Adrian Lane, Wellsboro, PA 16901-8600; (570)724-4277 email: a1g2w3@epix.net. Thank you for the announcement of the update of the Physics and Astronomy Newsletter. Not much has changed with me. I am now 81 and more appreciative than ever of my comprehensive education at Colgate and the Physics department, especially the guidance and friendship over the many years of Clem Henshaw and Paul Gleason. As I have previously reported, I am grateful to have had two of my three sons (Tom and Bob) also complete the physics course at Colgate. Both have been senior members of the staff at Los Alamos National Laboratories for many years. Tom most recently has been relocated to the DOE in Washington, DC and Bob a couple of years ago was designated a Fellow of the laboratory. I am still active in community affairs in Wellsboro, serving as Chair of the Civil Service Commission and currently conducting interviews to select a new chief of police. I am also a member of the Wellsboro Rotary. When my wife, Gladys, died in 1995, I established a nursing scholarship in her memory at Mansfield University. Most recently I have established the Weaver Science Award for a senior at Wellsboro High School in honor of my three sons.



David Weeks ('83) 2370 Donamere Circle, Centerville, OH 45459; (937)439-0362, Email: zap@erinet.com. At AFIT (Air Force Institute of Technology) as an Associate Professor since 1997; tenured in 1999. Current funded research is "Molecular Reaction Dynamics." Still swimming the breast stroke- scheduled to swim the YMCA Master's National Swim Meet in April 2002.

Jonathan Whitcomb ('85) 10 Cypress Road, Milford, NH 03055, (603)672-3292 email: jwhitcomb3@mac.com. I'm living in Milford with my wife, Sarah, and my children, Samuel (3 years) and Maggie (9 months). I'm still employed as a software engineer for Cisco Systems in Boxborough, MA. I am still playing music and my band, *Emery's Misery*, is just releasing our CD "Backing Into the American Dream". Couldn't solve a differential equation to save my life.

John Wight ('81) Corning, Inc, SP-DV-01-09, Corning, NY 14831, (607)974-3207 email: wightjf@corning.com. Spending a lot of time giving shape to "empty" space: making artistic arrays of channels down which molecules and photons wander.

Vance Wilber ('89) 19 Hoyt Court, Darien CT 06820; (203) 323-4228, Email: vancew@optonline.net (home) or vance.wilber@gcm.com (work). I'm living in Darien, Connecticut with my wife Karen (Kelly) Wilber (also CU'89). I work at Greenwich Capital Management, a mid-size investment bank in Greenwich, CT. I do IT-related work for them, some project management, business analysis, and programming.



David R. Williams ('63), Senior Counsel-Litigation, TRW, Inc. 1900 Richmond Road, Cleveland, OH 44124, (216)291-7702, Email: daver.williams@trw.com. I'm still a Senior Counsel-Senior Counsel-Litigation in the Law Department at TRW Inc. headquartered in Cleveland, Ohio. Among other things, I have worldwide responsibility for managing TRW's automotive product liability litigation. Most of the litigation relates to the defense of TRW's air bag, air bag sensor, seat belt and ABS brake system litigation. I find the physics training at Colgate to be extremely valuable almost every day as the technical issues in the cases are becoming more and more complex in a technical sense. Also, TRW's new restraint, steering and braking products are becoming extremely complex with the development of "smart" occupant restraint systems, electric steering, vehicle stability control, and a variety of other new products.

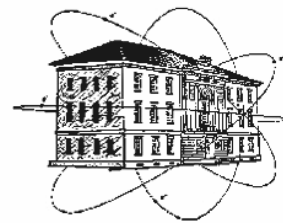


A note from the faculty and staff.....

Many thanks to our outgoing chair for his four years of distinguished service to the department. His selfless hard work and sincere determination to improve the quality of departmental research, education and facilities are evident in many of the articles in this newsletter. Thank you, Kiko...



COLGATE UNIVERSITY
LATHROP HALL



Colgate University
Physics & Astronomy Department
13 Oak Drive
Hamilton, NY 13346

Phone: 315-228-7723
Fax: 315-228-7187

WE'RE ON THE WEB!

HTTP://
DEPARTMENTS.COLGATE.EDU/
PHYSICS/



COLGATE UNIVERSITY
Department of Physics & Astronomy
13 Oak Drive
Hamilton, NY 13346-1398

Non-Profit
Organization
Permit No. 34
U.S. Postage Paid
Hamilton, NY 13346