

# CROSS SECTION

Stetson University Physics Department Annual Newsletter

Spring 2013

## Hello from DeLand and Stetson Physics!

The year has been a good year for us. We welcomed Allan Thomas, Visiting Assistant Professor of Physics, in August, and he has settled in comfortably as the instructor for College Physics as well as teaching E&M in the fall and Quantum II this spring. George Glander continues to anchor our entering majors with University Physics, while Danielle Morel solidifies their foundation in their second year coursework. And Kevin Riggs continues to polish their skills with the upper-division courses, while also welcoming new first year students to the rigors of Stetson with his first year seminar about Energy and the Environment and teaching his Science of Music class in the spring.

Stetson once again welcomed a record size entering class last fall, and we are seeing that in Physics. University Physics had a record enrollment of 29 students in the fall, and there are currently 23 in the second semester, probably 10-15 of which have intentions of continuing with the major! We will feel some growing pains as we stretch to accommodate a cohort of this size going through the major, but we are excited about the group and its potential.

We have expanded the physics major to have two tracks: the first is the standard track you are all familiar with, which is geared towards preparing our students for graduate study in physics, engineering, or some other area; and the second is our new applied physics track, which has less emphasis on the theory courses and instead focuses more on expanding the laboratory experience while also including some coursework in computer science and encouraging coursework in chemistry. The applied physics track is designed to better prepare our students for direct entry into the work force in technical/lab positions. This new track is available to our majors beginning this year, and next year more upper-division lab courses like Advanced Laboratory Techniques will be taught, to accommodate those who are rounding out their major with this track. If you want to learn more about the Applied Physics track or any of our curriculum, visit the web page.

We have also been shaping our Physics Colloquium course to be a real enrichment opportunity. All the 200-, 300-, and 400-level physics course have Colloquium as a co-requisite, but anyone interested in attending is welcome. Colloquium meets once a week. Sometimes, social and fun events are planned so that our majors can get to know each other and their faculty on an informal basis: generally there is a pizza lunch for the first meeting of the semester, and the making of liquid nitrogen ice cream late in the spring. Faculty also use it as a venue for students to make oral presentations on work they're doing in their upper division coursework. But Danielle, who is the Colloquium coordinator, has also worked very hard to bring in guest speakers, who are often departmental alumni and career oriented talks such as grad school prep or resume building, etc. Her goal is similar to our Featured Alum goal: to expose our students to the wide array of opportunities for them after they graduate from Stetson. If you are local (or will be visiting the DeLand area) and would like to share your experiences with our current students, please contact Danielle!

Over the summer, Laura overhauled our departmental web pages, and they are clean and fresh and current. Please wander over and take a look and see what we're up to! Even though there are pages that are targeted specifically at prospective students and current students, you may want to browse through them, as they may have information interesting to you. If you have any feedback on how we can improve the site, please let us know.

We always enjoy hearing from you, so drop us an email, find us on Facebook, or drop by if you're in town!

**[physics@stetson.edu](mailto:physics@stetson.edu) | [www.stetson.edu/physics](http://www.stetson.edu/physics) | [www.facebook.com/Stetson.Physics](https://www.facebook.com/Stetson.Physics)**

## From the Dean:

It has been a busy first semester, my first as Dean of the College of Arts and Sciences. I've been very busy learning the ropes, getting to know faculty, students, and staff at Stetson. I'm consistently struck by the community's collective commitment to creating a learning environment that provides outstanding educational opportunities to our students.

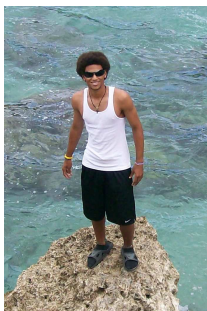
It seems to me that the Department of Physics embodies the core elements of a Stetson education. First, there's no doubt that the curriculum of the Department has **rigor**; Physics courses challenge our students to push themselves to learn, to think critically, to question the world (and the universe!). Second, the Department promotes **relationship** among its students and faculty. In classes, labs, office hours, special lectures, and social events, students interact with faculty and forge relationships that deepen and enhance their experience. Finally, the Department fosters **responsibility**, as students take ownership of their education and their future.

I am proud and excited to be part of Stetson and I look forward to shaping and supporting new initiatives in Physics and the other Natural Sciences. Thank you for your warm welcome!

—Karen Ryan  
Dean, College of Arts and Sciences

## Current Physics Students:

### Sophomores and Juniors



J.J. Bostic



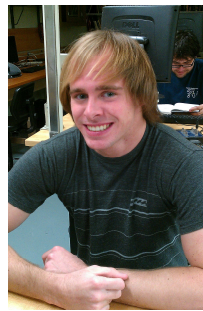
Maya Carter



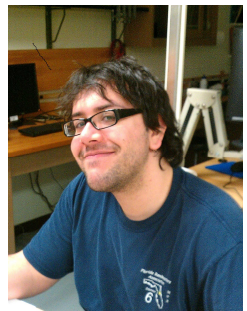
Christian Casadio



Valeria  
Guadalupe

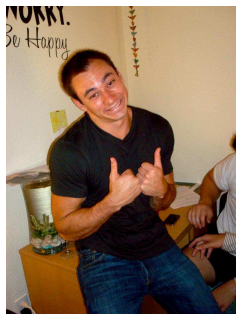


Matt Mohney

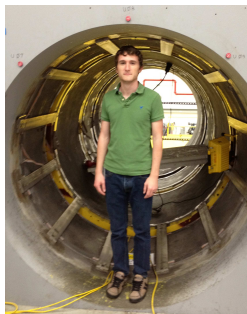


Ray Rivera

And—*Congratulations to our graduating seniors!*



Nick Puerling '13



Jake Ethier '13



Eric Hall '13

## Student News:

### 2012-13 Society of Physics Students

- ◆ President: **Eric Hall**
- ◆ Vice President: **Maya Carter**

### 2012-13 Sigma Pi Sigma

- ◆ Leadership: **Eric Hall, Jacob Ethier, Maya Carter**
- ◆ New inductees: **Maya Carter**, Dr. Danielle Morel

### 2012 Physics Department Awards

- ◆ GEORGE L. JENKINS PRIZE IN PHYSICS  
**Matt Mohney**
- ◆ JACK GIBSON ENDOWED PHYSICS RESEARCH PRIZE  
*not given in 2012*

### 2012 Summer Research Participant

- ◆ **Maya Carter**, Columbia University, NYC
- ◆ **Jacob Either**, Thomas Jefferson National Accelerator Facility, Newport News, VA

## Senior Research Abstracts:

### Nuclear Effects in $^3\text{He}$ Structure Functions and Asymmetries

**Jacob Ethier**, Stetson University, and Wally Melnitchouk, Thomas Jefferson National Accelerator Facility

In polarized electron-nucleon scattering, spin structure functions (SSFs) give information about quark spin contributions to the total nucleon spin. Since free neutron targets are nonexistent, nuclei such as  $^3\text{He}$  (two protons and one neutron) and deuterium (one proton and one neutron) are commonly used as effective neutron targets to gather SF data. The aim of this work was to study theoretical models of  $^3\text{He}$  SSFs and polarization asymmetries (ratios of polarized to unpolarized SFs) that account for bound nucleon effects so that neutron information can be reliably extracted from nuclear data. The  $^3\text{He}$  SSFs and asymmetries can be calculated by smearing the proton and neutron SSFs with the light-cone momentum distributions of the nucleons in the nucleus. The full calculations of the  $^3\text{He}$  SSFs and asymmetries reveal a distinct difference in resonance structure compared to the free nucleon SSFs.

### A Dynamic Computational Study of the Role of Ion Channels in a Neuron

**Eric Hall** and **Danielle Morel**, Stetson University

Neurons are cells in the nervous system that exchange information across connections, called synapses, using electrical signals that are formed by a voltage (a charge imbalance) across the cell membrane. This voltage changes as ion channels (specialized protein pores) selectively allow ions (charged particles) to flow across the membrane. The neuron adds together the individual signals received in a process called synaptic integration. It is expected that as synaptic input is added to a neuron, the effect of each additional signal on the integration process will be less than the previous input. Instead, linear synaptic integration has been observed at times, whereby additional synaptic signals have the same effect as the previous input. Linear integration uses specialized ion channels to modify the strength of these synaptic signals. This research studies the role of three types of ion channels in the context of linear synaptic integration. We constructed a computational model of a neuron, which we used to study the channels individually and in combinations to identify the conditions required for linearization.

### Determining the Critical Temperature of a YBCO Superconductor using AC Susceptibility Measurements

**Nicholas Puerling** and **Kevin Riggs**, Stetson University

The critical temperature for a superconductor can be determined by using AC susceptibility measurements. Using an AC susceptometer in combination with a lock-in amplifier, it is possible to measure the in-phase and out-of-phase components as a function of temperature. By cooling the YBCO superconductor using liquid nitrogen, I was able to plot the transition to superconductivity.

Meet our current **Featured Alum:**

## DAVID B. HILL, Ph.D.

Research Associate  
Cystic Fibrosis Pulmonary  
Treatment/Research Center  
4021 Thurston Bowles, CB 7246  
University of North Carolina  
dbhill@med.unc.edu

### Education:

- Ph.D., Physics; Wake Forest University, July 2003
  - Dissertation: Measuring the Work of Motor Proteins in PC12 Neurites
  - Advisor: George Holzwarth
- BS; Physics; Stetson University, May 1998



### Professional experience:

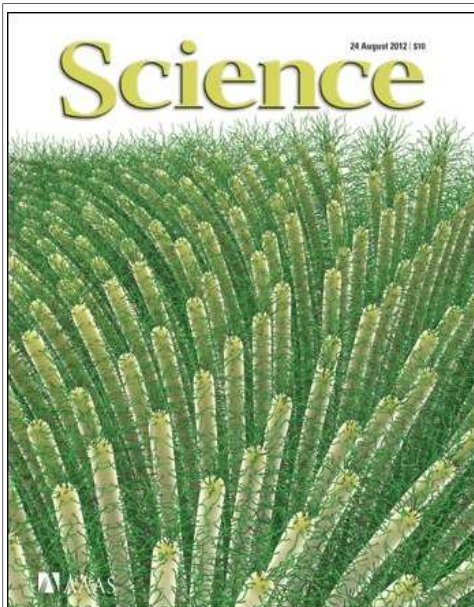
- Graduate Dean's Fellow; Wake Forest University, June 1998 – July 2003
- Post Doctorial Fellow; Department of Physics and Astronomy, UNC Chapel Hill, July 2003 – March 2006
- Research Associate; Cystic Fibrosis Center, UNC Chapel Hill, March 2006 – December 2012
- Research Assistant Professor; Department of Physics and Astronomy and Department of Medicine, UNC Chapel Hill, December 2012 - present

### **OPEN LETTER TO CURRENT MAJORS:**

In the interest of full disclosure, it wasn't the physics department that drew me to Stetson. In high school, I was sure I was going to go to Cornell, but the basketball coaches at Stetson kept calling me and convinced me to head down to DeLand for a visit. Once on campus, I was hooked. That fall, I came to realize just how good a decision I had made. Whether it was Dr. Kletzing dropping the chalk in calculus class...saying "this is good chalk", Dr. Beasley walking us through Biblical literature, or Dr. Dubendorf introducing me to physics at Stetson, the diversity of class and demands place on me by my professors had me actually working hard at my studies for the first time of my life. Surprisingly and thankfully, I quickly found that the work ethic and discipline I had developed as an athlete translated to my studies. The course load my sophomore year increased, but between Dr. Lick's mechanics class and Dr. Jusick's math methods class, I knew that physics was the correct major for me. In my last two years at Stetson, I became more and more interested in biology and biophysics. Fitting in all of my classes along with being on the basketball team proved to be quite challenging, but it also fits well with my personality..... If I ever had a free minute in my day, I really wouldn't know what to do with myself.

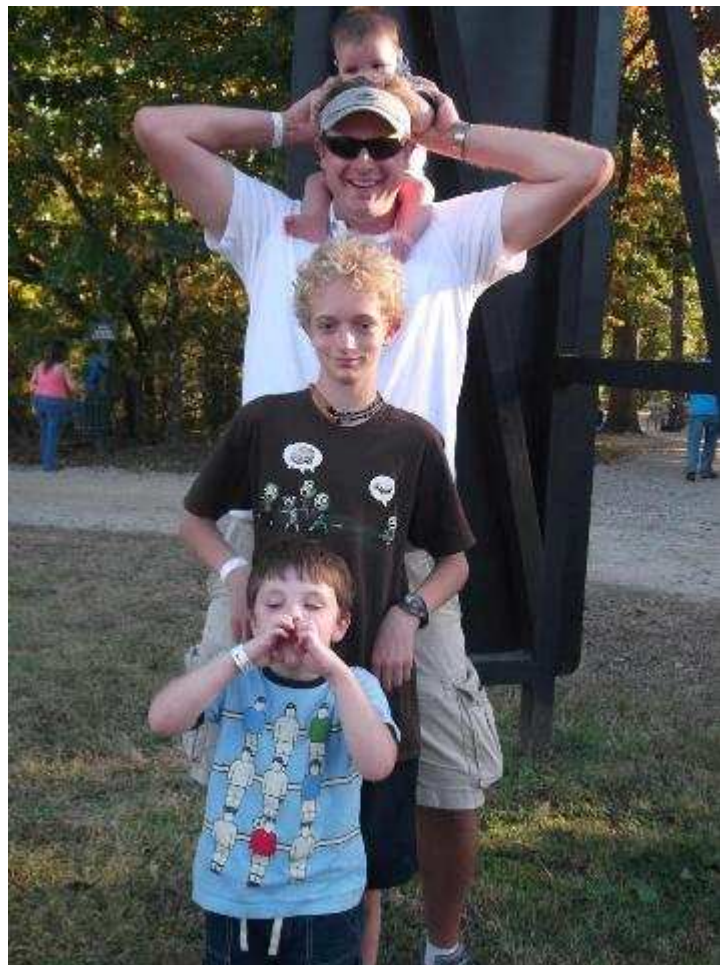
After graduating from Stetson in 1998, I entered graduate school at Wake Forest to pursue my PhD in physics. My first project in graduate school was developing an improvement to differential interference contrast microscopy that allowed me to apply much of what I had learned the previous year in Dr. Riggs' optics class. It also allowed me to hit the ground running. The most amazing part of this project came when we submitted our paper describing our new methodology; it was accepted with only minor grammatical changes! As this was my first paper, I did not realize just how rare a feat this was. My advisor told me that I would probably never happen again, and he was correct. After the microscopy project, I began my thesis project on the work and efficiency of motor proteins involved in processive transport. This type of biophysical research is what I had always envisioned doing, and I found the work both challenging and rewarding. However, looking back on my time in graduate school, it is not my research that stands out, but my family. Getting married and becoming a father were the events that defined me much more than any experiment or paper.





After completing my PhD in 2003, I went to the University of North Carolina as a post doc, and I am still there to this day. Now a professor with a joint appointment in Physics and Medicine, biophysical research is at the core of my work. Primarily, I study connections between the biochemical composition of the protective airway mucus layer and its biophysical properties, such as clearance from the lung and ability to trap inhaled pathogens. One of the exciting aspects of my work is its inter-disciplinary nature. I am as likely to be in a meeting with MD's as part of a clinical trial as I am to meet with a mathematician or chemist. In looking back at my education and previous work, it seems clear that this is the type of work I was gearing myself for at Stetson. My last two years in DeLand found me taking physics, biology, and chemistry classes all in the same semester. Today, it is precisely this mixed bag of skills that allow me to thrive in the collaborative research I take part in at Carolina. As an example, we recently had a paper make the cover of *Science* in which we set forth a new hypothesis on how the mucus layer that lines the respiratory tract interacts osmotically with the periciliary layer (a 7 micron layer between the epithelial cells and the mucus layer through which cilia beat, clearing mucus). This work combines polymer physics modeling, biochemical and biophysical assays, along with complex microscopy and cellular biology to understand a key phenomena in airway diseases such as Cystic Fibrosis and COPD.

What's funny to me now looking back at my time at Stetson are the skills that I had to develop that have come to serve me as much in my work as my scientific training; namely Stetson forced me to learn how to write well. Several years ago I attended a book signing by noted science fiction and fantasy author Orson Scott Card. He made the comment that, "Everyone has 10,000 pages of mindless drivel in them, get it out of you as fast as you can." Stetson forced me to get many of my bad pages out of my writing, helped me develop the clarity of thinking that is the bed rock of good writing, and made me develop an important skill set. In my work these days, as the balance of my time shifts from being at the lab bench to stuck in my office writing papers and proposals, I appreciate the writing skills my professors at Stetson worked so hard to drill into my head. All of this brings me to my advice for current physics majors at Stetson. First and foremost, read and write every day. Getting use to constructing sentences and developing flow in your writing is a skill that will be important in most any career you choose to pursue. The more you write, the better your writing will become. Get those 10,000 pages of drivel out sooner rather than later. Secondly, take a diverse range of courses. One of the benefits of attending a place like Stetson is the small, close knit, diverse environment. Excellence is everywhere at SU, and reaching out to be part of the wider community is an opportunity that should not be missed. Finally, have fun! Going to school 20 minutes from the beach part of what drew me to Stetson. Being able to have great outdoor recreation all around made me want to get my work done so I could go about the business of being a college student. It is what I remember most fondly about my time at Stetson and is a mindset I try to maintain today. I make sure I take time with my family, friends, and co-workers to enjoy life!



—David Hill '98

## Faculty and Staff News:

### George and Laura Glander

Hello everyone! Life continues the same and not the same. We welcomed 29 students into University Physics in the fall, which is the largest class we have had since I started at Stetson in the '90s. Registration in the second semester of University Physics is also large at 23, and many of the student continue to be interested in physics as a major, so we are likely to have large enrollments in Modern Physics next fall. It is a good group of students and they are very supportive of one another, which is an important element in having a vibrant department. Associate dean's work continues to keep George busy. He works with students at both ends of the spectrum of academic performance. He is heavily involve in trying to build academic plans that will work for students who are struggling to be successful at Stetson, and also with helping are very high achieving students do double majors, or fit internships and study aboard into their schedules. The successes definitely outweigh the frustrations. Meanwhile, the upstairs hall is once again adorned with a physics graffiti board and this year's new departmental t-shirt... but probably the biggest make-over happened on our departmental web site (<http://www.stetson.edu/physics>) where things have been reorganized and pictures have been added. Check it out!

At home, we are once again empty-nesters. Beth continued this year dancing with Dayton Ballet, landing great parts and making great friends. Ian graduated from Carleton in June, and right after the new year began an internship in the D.C. area, working for the National Defense University. It's "in field" for him and he's really enjoying being actively engaged in research as well as generally living in D.C., which is a very cool city for a political scientist. Our yard continues to improve with each stump that comes out (stress relief for the associate dean!) and more and more looks like the landscaping is purposeful and with an intentional plan. Quilts for our bed are in the making. And we enjoy the freedom to drop everything and zoom off for a weekend to visit Beth or Ian or the beach or wherever. (The cats, however, are less fond of this aspect of our empty-nest.)

We hope all is well with you and yours. It's great to those of you who have a chance to drop by—and we love getting your emails...so please, keep in touch!

George & Laura  
[gglander@stetson.edu](mailto:gglander@stetson.edu)  
[lglander@stetson.edu](mailto:lglander@stetson.edu)

### Tony Jusick (*emeritus*)

Well, hello again! Another year has rolled by. Everyone in the family is well here and I am still vertical allowing me to make some rather feeble attempts at restoring my golf game to yonder days of glory. Well, that's somewhat of a stretch. The spirit is willing although the flesh seems to be lagging a considerable distance behind. I took up a new hobby briefly. Digital slot car racing. However after a few runs around the track I bequeathed it to one of my sons. We seem to have a few true loves in life. Some of them are people. Some are hobbies which as I'm sure you know by now has always been golf for me. It seems to be very difficult to leave any of our true loves and passions behind us even if we don't fully understand them. So why not simply accept them and embrace them? They are probably good for our hearts.

I am still tutoring upon demand. But the demand these days seems to be lacking for some reason. Last semester we had three tutors available and only one visitation all semester among all three of them. Perhaps the students today are smarter than they were in our generation. The last time I looked college physics hadn't changed much. Have work habits gotten better? I tend to doubt it. So to tell the truth I am somewhat mystified by this lack of interest or whatever you want to call it. Perhaps students today do not want to appear vulnerable enough to show that they really need help. Or perhaps the teachers today are so much better than they were in my generation that the students don't really need help anymore. For their sake I hope that is the case.

Who says we have little to be thankful for? The election is finally over and I don't have to listen to any more of those infomercials anymore. We still live in the best country in the world. We will survive. So don't despair if things didn't turn out the way you wanted them to. Like the academic year the fate of countries is cyclic in nature. They go up and down. If we are in real trouble, and it's really hard to tell sometimes, we will recover even though it may not be painless. So hang in there everyone! Cherish your passions in life and indulge them.

—ATJ  
[tjusick@stetson.edu](mailto:tjusick@stetson.edu)

### Tom Lick (*emeritus*)

As you know, I fully retired in May of this year after 44 years at Stetson, so I am now an Emeritus Professor of Physics, where the word *emeritus* simply means retired. Since then I have been greatly enjoying my retirement. Next week I will take my third 7 day cruise since retirement, having been on cruises to Alaska, New England & Canada, and next week the eastern Caribbean. I am also planning a Mediterranean cruise in the spring and a week in Washington touring the monuments and museums. I am also active playing pickleball, currently playing 5 times a week for two hours each time. And I take bike rides on my Mountain bike for distances from 7 to 20 miles several times a week. Since Miriam died 2 years ago, I have also been dating several women and have been enjoying their company also. So you can see that I am not sitting at home reading Physics books (I gave them all away to students and the other faculty) or watching television. But I still read my kindle for enjoyment, there are so many excellent books that I have not yet read. I hope you next year is as enjoyable as mine has been.

—TAL

[tlick@stetson.edu](mailto:tlick@stetson.edu)

### Danielle Morel

Greetings from DeLand where 'global warming' is making for a wonderfully warm winter for us (apologies to those of you stuck in ice, snow, sleet, and other despicable weather conditions).

2012 was another wonderful year for physics and astronomy! First, of course, is the fact that the world did NOT come to an end, again! Closer to reality, it turns out that our nearest neighbor, star-wise, has an earth-size planet. In October, European astronomers announced the discovery of a planet, which has about the mass of the Earth, in the Alpha Centauri system. This new planet is not in the habitable zone but it nonetheless makes us wonder if there are other planets in this oh-so-near star system. Not to be outdone, exoplanet-hunter Kepler now claims 2740 planet candidates and 105 confirmed planets. Mind-boggling! Closer to home, the Curiosity rover successfully landed on Mars, with live video broadcasting each thrilling moment - don't you love the internet (most of the time)? Curiosity is now hard at work exploring the Martian surface in HD. Elsewhere in the solar system, there is strong evidence of water in the polar craters of Mercury, of all places, and our knowledge of the asteroid belt is changing again with Vesta being upgraded from an asteroid to a protoplanet. Closer still, on Carl Sagan's pale blue dot, sadly the space shuttles are now museum pieces but SpaceX conducted its first official mission to the space station, paving the way for a new era of space exploration. Finally, to round up this totally biased and unforgivably incomplete list of 2012 'wow science stuff', is CERN's claim to have discovered the Higgs boson, an event decades in the making and a discovery celebrated around the world. Now to confirm its existence and characteristics, and start to understand the consequences...

This was a bustling year in the department as well, with the largest ever freshman class leading to near record class sizes in the fall. We welcomed new colleague Dr. Allan Thomas to our merry troupe. To our extreme pleasure, a record of four Stetson physics alumni (Dr. **Josh Colwell** '85, Dr. **David Hill** '98, Dr. **Robert Bedford** '98, and **Angela Steinman** '11) visited with us during the fall semester and each gave a presentation during colloquium. Also part of our colloquium series, our own **Maya Carter** '14 shared her summer research experience at Columbia University. It's been a good year for colloquium and we hope that it will inspire more of you to come back for a visit. Guest speakers, especially alumni, are very inspiring for our current students as well as a great source of pride and joy for the faculty.

Speaking of students, in November, **Maya Carter** '14 and **Jacob Ethier** '13 attended the Southeast Section of the APS (SESAPS) annual meeting, held in Tallahassee, FL and sponsored by FSU & FAMU. Maya gave an oral presentation on her summer work at Columbia related to neutrino oscillation experiment Double Chooz (title: *Creating a Public Data Access Website for Double Chooz*) and Jake contributed a poster explaining his work on the quark spin contribution to the total nucleon spin (title: *Nuclear Effects in Polarized  $^3\text{He}$  Structure Functions and Asymmetries*), work done over the summer at the Thomas Jefferson National Accelerator Facility (JLab, <http://www.jlab.org>) in Newport News, VA. Abstracts are available in the conference bulletin ([http://hadron.physics.fsu.edu/SESAPS12/SESAPS-2012\\_Bulletin.pdf](http://hadron.physics.fsu.edu/SESAPS12/SESAPS-2012_Bulletin.pdf)).

On a more personal note, with the beginning of my fourth year at Stetson, I am slowly getting more settled in the department and learning to balance my time between teaching, scholarship, and service. I'm still trying new techniques in my classes, my advising load has increased significantly, and my service now extends beyond departmental tasks and college curriculum committee to faculty development (advisory committee) and peer-review of conference submissions (computational neuroscience). During the fall semester I helped mentor Eric Hall ('13) with his senior research project, which involves the use of a computer model to study the role of ion channels in information

processing in a neuron. I am also the research advisor of record for **Jacob Ethier** '13 as his work at JLab is in the same field as my own Ph.D. work. Needing to move my own research forward, I spent most of my summer at the University of Virginia, feverishly working on a project with my collaborator Dr. Levy. We made great progress and are currently in the process of preparing an article for publication. As a bonus, I hope to present some of the results at a computational neuroscience conference in Paris in July. But that's for next year's newsletter.

I must mention that I finished the year on a high note with a week on wonderful Sanibel Island with my sister, who flew in just before a major snow storm hit Montréal. It is always wonderful to hear her expound on the amazing amount of sunshine here, as locals tend to take it for granted, coming from the cold short winter days of La Belle Province. As we rented a small beachfront cottage, we mostly hung around the beach, letting go of some stress, basking in the abundant sunshine, and taking photographs of the awesome wildlife. Between the two of us, we missed more great shots than we successfully snapped (birds are just so fast!) but it was a wonderfully relaxing time nonetheless. Except for the no-see-ums, it was nearly perfect in every way!

On that note, let me wish everyone a great year filled with rewarding personal and professional experiences. Keep smiling and keep in touch!

—Danielle  
[dmorel@stetson.edu](mailto:dmorel@stetson.edu)

### Kevin Riggs

Another year flies by and it is time for yet another edition of Cross Section. I came to the startling realization last spring that due to the well-deserved retirement of Tom Lick, I am now the senior member of the department. I am also in my twenty-fifth year of service to the University (I got a very nice clock for my office). What really makes teaching at Stetson so rewarding is seeing our graduates find fulfillment in a remarkably diverse number of exciting career tracks. As an example of this, last fall we had a record four alumni come back to visit and give presentations about their work and careers in the Stetson Physics Colloquium. **Josh Colwell** '85, Professor of Physics at the University of Central Florida, gave a wonderful talk on his work on the Cassini project currently conducting a survey of Saturn and its moons, and his many experiments on the NASA zero-g plane (the "vomit comet"). **Robert Bedford** '98 came and gave a talk on the work he is doing in optics and vertical cavity lasers at the Air Force Research Labs. You may recall from last year's newsletter that Robert was our featured alum for the 2011-2012 academic year. Our 2012-2103 featured alum, **David Hill** '98 presented a talk on work he is doing as a research scientist with UNC – Chapel Hill on cystic fibrosis (<http://www.unc.edu/~dbhill/research.htm>). You can read David's open letter to our current students elsewhere in this edition of the newsletter. Finally, **Angela Steinmann** '11 returned to campus to give a recruiting talk for the Applied Physics program and school of engineering at the University of Michigan. Angela is currently in her second year of study for a Ph.D. in Applied Physics and has recently become interested in the field of Medical Physics. Our colloquium series is ongoing so if you are in the area and would like to give stop in to visit and give a talk, please let us know as our schedule is pretty flexible so we can often work in talks on short notice (of course we welcome you to visit even if you don't have a talk to present).

In the spring of 2012 I taught my usual *Science of Music* course and also taught *E&MII* and the senior research sequence courses (*Senior Proposal* and *Senior Seminar*). Speaking of senior research, in the last newsletter I mentioned that dual degree student **Brett Abraham** (currently completing his EE degree at UF) did his senior project in 2012 on measuring the reverberation time of the Rinker Environmental Learning Center (RELC). Brett made recommendations to the director of the RELC as to how many fabric covered acoustic panels were need on the walls in order to bring the reverberation time down to an acceptable level for improved speech intelligibility. I am happy to report that his recommendations were acted on and the RELC now has a number of acoustic panels mounted just above the windows. I checked out the acoustic improvements just today and my ear tells me that the situation is vastly improved. Chris Finkle, a DeLand High student who will be interning in the department this spring plans to re-measure the reverberation time as a function of frequency so we can see how close we came to our predicted outcome.

Last summer I attended the National Conference on Undergraduate Research sponsored by the Council on Undergraduate Research at the College of New Jersey, along with Provost Beth Paul and colleagues from several academic departments. At the conference I presented a poster on Time Average and TV holography imaging of musical instruments, work that many students have contributed to over the years including **Frank McDonald** '98, **Robert Bedford** '98, **Amanda York** '00, **Todd DuBosq** '01, and **Wes Langston** '05. For ten years as a physics/astronomy



councilor for CUR I would mention my holography research when introducing myself to new colleagues, so I guess it was finally time to present to them the results of our work.

This past fall I taught the fourth edition of my freshman seminar course, *Energy and the Environment*. Junior physics major **Maya Carter** '14 did an excellent job as the course teaching assistant. She received a very warm and well deserved round of applause from the first year students at the end of the course. I also taught my usual *Quantum Mechanics I* course and also taught *Optics*.

Our faculty jazz quintet, *Thin Film Magnetism*, continues to be active performing in the DeLand area. Last spring we performed at a benefit function sponsored by the local Rotary club which was held at the beautifully restored Stetson mansion (<http://www.stetsonmansion.com/>). Last fall we performed at the second annual DeLand "Thin Man Watts" Jazz festival. Nobel "Thin Man" Watts was a great jazz saxman from DeLand who passed away in 2004. He received an honorary doctor of arts degree from Stetson in 2000 and performed at commencement that year. You can read a blurb about our quintet and see a photo of our group at [www.wattsjazzfest.com/acts.html](http://www.wattsjazzfest.com/acts.html), along with the other groups that also appeared including the Stetson University Jazz Ensemble.

—Kevin

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## Allan Thomas

Hello Hatters! My first semester at Stetson is coming to a close and yet it feels like I've only been here for a few weeks. I thought time passed quickly in grad school but now it has reached a whole new level of craziness! I think everything is going very well thus far though, and I am enjoying my time on the other side of the student/professor coin. As any teacher will likely agree, there are good days and bad – right now my main task is to enhance the number of good days and minimize the number of bad ones. One thing is for sure, I am my own worst critic now that my actual job duties are focused on teaching rather than research. In grad school I had reached a point of satisfaction with my overall approach to teaching introductory physics courses. But now it has all changed! I am keenly aware there are many, many ways I can continue to improve as an effective teacher, and each day I learn more about how to succeed in doing so. The students here at Stetson certainly help in that process though, and are always willing to discuss what is and isn't working for them in the classroom. And my fellow colleagues here in the department have already provided lots of insight into the ins and outs of good teaching.

On the research side, I am still plugging away at finishing loose ends associated with my previous work at the University of Arkansas at Little Rock (UALR). We actually published a paper just a couple of weeks ago based on the very last work I was doing at UALR (the paper was literally submitted one of the last days before I left AR back in August). I also attended the 59<sup>th</sup> American Vacuum Society meeting in Tampa at the end of October to present some of this same research. That conference really got my research juices flowing again! Hopefully over the Christmas break I can finalize another paper I've been trying to finish for over a year now. Once that is finally done, I will start working on a thorough review article in my field of ZnO and low temperature doping techniques. I have never pursued a review article before, and I am already dreading the hundreds and hundreds of references to keep track of! I also hope to do some actual research again over the Christmas break in my advisor's lab at UALR. I am really looking forward to that actually because I cannot believe how quickly I missed getting my hands dirty in the lab. I figured it would take a year or two before I really missed doing research, but I already miss the pressure, frustration, and eventual excitement so much!

Outside of Stetson, all is going very well. My wife Niki is enjoying her job in Tampa, despite the at least one hour commute to and from Tampa every day. My commute is in fact about the same, as we managed to find a house in Celebration and "split the difference" between DeLand and Tampa. The commutes can become tiresome, but we are definitely enjoying our new home and living in Celebration. Some may think it is a bit too cheesy and "Utopian," but it makes us feel more like home in AR. Right now, during the holidays, Celebration is a very busy place due to all the festivities and the nightly fake snowfalls. We hope to have a small housewarming party for everyone in the department (students included!) sometime early next semester once we can finally get settled in our new home. I hope all is well for all the Physics Hatters out there.

—Allan

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