undergraduate physics newsletter

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'Phun' Descends on Museum

By Katherine Keller *Rockets + Fireworks + Liquid Nitrogen = PHUN*

Rockets flew across the room and firecrackers exploded at the Florida Museum of Natural History on Tuesday, March 30th. No, the Museum was not under attack - there was a 'Physics is Phun!' show as part of the Museum's Sensational Science program. University of Florida Professor Chris Stanton led the event with aid from Professor Darin Acosta and undergraduate physics majors Layla Booshehri and Katherine Keller. Two shows were given to the seventh graders who came from several Alachua county Middle Schools.

Dr. Stanton, who has done performances at the Museum before, used unusual props that included a beach ball, shaving cream, Peeps, and a bicycle wheel to demonstrate angular momentum, low-temperature physics, sound waves, electromagnetism, and more physical phenomena. These scientific concepts were explained through exciting visual experiments that showed the children how much fun physics is.

"Have you ever seen someone use a hammer made out of a banana to nail a piece of rubber into wood before?"

Opening with rockets made from milk jugs containing methanol, the demonstrators quickly grabbed the students' attention. Fireworks set off between soda cans were then used to show conservation of momentum. Volunteers were asked to come up for several of the experiments which followed. One strong boy soon found himself struggling to pull apart an electromagnet and a young girl spinning in a chair changed her angular momentum with a bicycle wheel and weights.

The students' favorite demonstrations, however, were definitely those involving liquid nitrogen. Have you ever seen someone use a hammer made out of a banana to nail a piece of rubber into wood before? Neither had these children, but after dipping the rubber and banana into the liquid nitrogen it all became possible.

The show closed with allowing the students to come up to the stage and dip flowers into the liquid nitrogen. Some crumbled the frozen flowers in their hands, while others opted to smash them on the table. Seeing these young minds enjoy learning about physics was a great experience for all involved.

The secret to recruiting new physics majors:
1. N_2
2. More N_2

who we are

UP is a monthly undergraduate physics newsletter sponsored by the University of Florida's chapter of the Society of Physics Students, for students, by students. We seek to strengthen the undergraduate physics community at the University of Florida by providing a forum for undergraduates to share their views and experiences with each other and acting as a source of information for opportunities and events in physics.

Results of SPS elections
Meet the new officers
for 2004-2005
see inside for full story

what's UP
in this issue

The Universe in Brief with Dr. James Fry

Joint SPS/Astronomy Club Meeting *By Linda Watson*

In the first ever joint meeting of the Society of Physics Students and the Undergraduate Astrophysics Society, held March 25, 2004, Dr. Fry gave a lecture entitled "Recent Developments in Cosmology." Dr. Fry is a member of the Theoretical Astrophysics group in the physics department. He started by explaining the task laid out for cosmologists: "to study the universe in its entirety." Simple, right?

Dr. Fry began with an introduction to the shape of the universe, which includes places for curvature and expansion, described by k and the cosmological constant (yes, the same one that Einstein called his greatest blunder), respectively. k=0 would mean the universe is flat, k=+1 would mean we have a hyper-spherical universe and k=-1 would mean we have a saddle-shaped universe.

He then went into some of the current tools cosmologists use to test theories about the universe, the most recent being WMAP (Wilkinson Microwave Anisotropy Probe), which is an all-sky map of the cosmic microwave background. This 2.725+/-0.002K black-body signal we see today, 13.7Gyr after the big bang, is reminiscent of the universe in its infancy, when it was mearly 400,000 years old. After removing the hot and cold pole, due to our motion through space (v=600km/s) and Galactic (capital "G" for our galaxy) effects, this map is giving cosmologists a glimpse of the past.

Finally, Dr. Fry touched on how Type Ia supernovae help constrain the cosmological parameters. A Type Ia supernova involves two stars in a binary system, one white dwarf and one star reaching the end of its lifetime. If enough matter from the latter falls on the white dwarf, electron degeneracy can no longer support the star and it goes "kabloee." This event is a supernova that has a very constrained luminosity, which makes these phenomena "standard candles" in the jargon of astronomers. Since we know how bright the events are intrinsically and how bright they appear, the distance is known. Using this useful trick, cosmologists have deduced that the curvature of the universe is negligibly small.

Chris Cook ponders the mysteries of the universe during Dr. Fry's lecture

Using these methods and others, cosmologists are able to get independent measurements for cosmological parameters, so they're starting to pin down the values that will help us understand the universe. And if cosmologists have anything to say about it, which they assuredly will, we'll be working towards understanding it in its entirety.

SPS News and Events

SPS elections for 2004-2005 officers were held Thursday March 4,2004. The new officers are:

President
Layla Booshehri

Vice President
Cathy Yeh

Secretary
Linda Watson

Treasurer
Jacob Tosado

Historian
Chris Cook

Webmaster
Dave Mahfood

Propagandists
Simcha Korenblit
Doug Sparks

Announcement
The SPS picnic has been rescheduled to Sunday April 18, 2004 at Lake Wauburg (South Pavilion).

(Clockwise from top left)
President Layla Booshehri
Vice President Cathy Yeh
Treasurer Jacob Tosado
Secretary Linda Watson

Sweet Summer Sun

Sometimes hard to see from the lab

We grabbed a few unsuspecting undergraduate physics students at random and asked them to share their summer plans with us. From bagpipes school to road trips out west, there is no lack of variety in what UF students are doing this summer. To work, to play, or both - that is the question.

Layla Booshehri
2nd year
Going to Cornell in Ithaca, NY for an REU. Working with Dr. Joel Brock on Charge Density Waves from June 6 to August 14.

Chris Cook
2nd year
Summerschool at UF, then waterskiing and fishing at boathouse in Ft. Pierce

Jim Davis
2nd year
Hiking High Sierra in California for two months.

Mikolai Fajer
2nd year
Road trip with little brother out west, seeing Yosemite.

Joe Gleason
4th year
Graduating this semester. Then, either working at UF, going to Germany to work with LIGO, or working at Kennedy Space Center.

Lindsey Gray
1st year
Working with Dr. Acosta at CERN in Switzerland for 40 days, then bagpipes school in North Carolina

John Harter
2nd year
Home in Tampa at an engineering firm to work on training video for subsurface utility engineering. Then summer school at UF

Edwin Homan
2nd year
Chemistry REU at UF ALL SUMMER LONG

Nick Kvaltine
2nd year
Taking classes at UF. Exploring the Amazon and discovering a new species.

Raj Mehta
3rd year
Visiting India, spending time with family, taking adventures, exploring, and experiencing the culture.

Nick Park
1st year
Working with Dr. Acosta programming in C++ for the Compact Muon Solenoid project at UF.

Doug Sparks
2nd year
Going to Tennessee to see family in Chattanooga. Then lion-wrestling in Kenya.

Jacob Tosado
2nd year
Research in Dr. Biswas's lab.

Justin Zumsteg
3rd year
Possibly astronomy research in the Canary Islands, future site of the Gran Telescopio Canarias (GTC), the largest land based telescope. Otherwise stay at UF and work in the Astronomy department under Dr. Lada.

Gen Ed (S) Course Suggestions

Once again the time has come to map out the next little section of our lives dubbed the 'semester.' Here are some staff picks for classes you might be interested in for fulfilling that pesky Social/Behavior Science General Education requirement.

Cathy Yeh Picks:
IDH2931 (B,S GR-E 6,000 words)
Section 8335
Biological Perspectives on Contemporary Social Issues (Honors)
Dr. David Evans

This class covers many hot topics today like genetic engineering, cloning, abortion, animal experimentation, etc. The reading is a bit heavy but necessary if you want to be informed about current issues and engage in discussions in and out of the classroom. For each class, students gather around in a circle with Dr. Evans to hear groups present parts of the reading and discuss their thoughts and opinions. I learned a lot and enjoyed the discussions with my classmates. Dr. Evans is a knowledgeable, very cool teacher. He even held a dinner at his house where his wife made a delicious home-cooked meal, heaven for those of us subsisting on Cheerios and PB&J in the dorms. On the whole, the class consists of reading, discussion, group work, two papers, light weekly homework, and no quizzes/exams/final. The forum style (no lectures) is great, and I highly recommend it.

http://www.zoo.ufl.edu/dhefish/dheidh.html

Erica Bolin Picks:
CGS3063 (S, GR-E 3,000 words)
Section 2305 (NON Gordon Rule)
Computers in Modern Society
Dr. Gerald Haskins

Dr. Gerald Haskins - he's got a law degree, and a D.D. - a doctorate in religion - yet he works in the CISE department, intriguing already, isn't it? He livens up lectures with stories and discussion, despite the fact that there are 100+ students in the room. Computer basics are covered the first half of the semester (history and components) while the second half delves into social issues surrounding technology (privacy, crime, etc.) during lectures that are twice a week. There is also an out-of-class assignment portion in which you are required to build a webpage straight typing HTML (no program generated code allowed.) The class is designed for all skill levels – from those who can barely use e-mail and up. Of course, if you're more experienced with the technical aspects of computing, you may be a little bored. The Gordon Rule credit is optional – if you need it, you must register for the correct section and must write a term paper on the social topic relating to computers of your choice. For more information, visit the class web page – make sure you check out the classmates' web pages for samples of what students produce in the assignments.

http://grove.ufl.edu/~u3063bnk

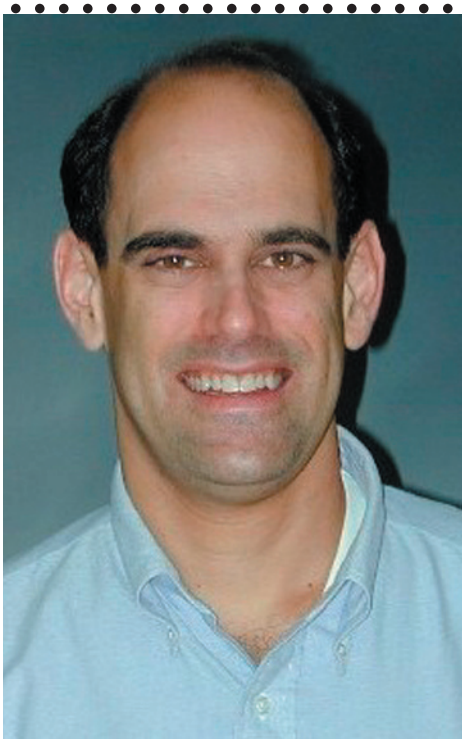
Getting to know you: Advisor Series

Final Installment: Dr. Selman Hershfield and Dr. Yoonseok Lee

Every physics major should talk to one of our four excellent undergraduate advisors in the physics department: Darin Acosta, Eugene Dunnam, Selman Hershfield, and Yoonseok Lee. Their advising times and locations are:

Acosta	M 1-2PM W 1-2PM	NPB 2035
Dunnam	M 10-11AM T 10-11AM	NPB 2364
Hershfield	R 2-3PM F 2-3PM	NPB 2138
Lee	T 2-4PM	NPB 2233

We are running a series of advisor spotlights to give you a feel for their backgrounds. So maybe the next time an advisor absolutely blows you away with his infinite wisdom, you can express your gratitude by cooking his favorite dish or taking him out to his favorite sport ... or you can just thank him nicely.



Dr. Selman Hershfield
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NPB 2138

Specialization/field
Condensed Matter Theory
Birth place
Washington, DC
Favorites:
food - Pasta
movie - I like movies with a positive ending ("Stand and Deliver", "It's a Wonderful Life")
book/author - I like biographies (recently read Lance Armstrong's "It's Not About the Bike" and David Herbert Donald's biography of Lincoln). I also like fiction novels (Shipping News by Annie Proulx), and some science fiction/fantasy (recently first five books in Harry Potter series).
programming language - Matlab
hobby - taking care of twins under one year in age
sport - swimming
quotation - "Creativity is more important than knowledge." --Einstein
color - blue?
operating system - Unix
physics hero -John Bardeen. Upon hearing he had just won his second Nobel prize, he is reputed to have said "I guess I will have to shave today."

Dr. Yoonseok Lee
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NPB 2233

Specialization/field
Low Temperature Physics/ Experimental Condensed
Birth place
Seoul, Korea
Favorites:
food - Any foods well prepared including raw fish
movie - Once Upon A Time in America and Deer Hunter (Both have Robert DeNiro in them).
book/author - Landau Series Vol.5 Statistical Physics, L.D. Landau and E.M. Lifshitz
programming language - FORTRAN77/BASIC but I forgot all.
hobby - Playing with my kids and cooking
sport - Football (both American and Soccer)
quotation - "Mountain is mountain, water is water." by Monk Sungchul because I have no idea what he was trying to deliver.
color - Blue
operating system - Long time Mac user. Converted PC user, Windows2000
physics hero - Kammerlingh Onnes and L.D. Landau

UP Staff

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Submissions
We welcome your news!
Please send submissions to upnews@phys.ufl.edu by the third Monday of each month.