



Swing Dance Florida

.....by *Jacob Tosado*

Have you been spending too much time at a computer screen? Do you have any pent up energy you simply need to let loose? If you do, then would you like to dance? Swing dance to be more specific. The music fires up while the campus locals come to dance the floor every Wednesday and Friday night starting up at eight o'clock. This event seems to lure everyone from the dancing novice to the dancing expert creating a nicely jazzed up crowd of thirty to forty souls.

You have to ask, what goes on at a place like this? Simply put, proliferation of a good time. Those who happen to attend begin to rock out to a free class tailored specifically for them. For a full hour, Gainesville's dance experts throw around so much rhythm and skill that you can't leave the class without being compelled to snap your fingers to some kind of beat.



Here's Jake in action, leading his partner...

The general environment is hot. With no exaggeration one of the coldest days this year received a turnout of around fifty people plus or minus a few. They stood out in the freezing Florida weather with coats and jackets on just to participate in this unique American dance. By half past nine coats were off and people were flying!

Swing dance originated in this country towards the end of the 1800's in a style called the Charleston. During



Swing dancers dip to a good time.

the pre and post WWII eras, this form of dancing exploded into many styles representing the many cultures within the U.S. Swing progressed to the sixties. Perhaps it was the day the music died or the uprising of the Vietnam War, but from then till now swing dance has been lying a little low.

However, here at the University of Florida the dancing tradition has gone on and kept strong. These events, which happen Wednesdays at the Reitz Union and Fridays at the Unified Training Center are sponsored by the UF Swing Dance Club. Their mission is to have a good time while keeping swing dancing alive.

Now of course not every one will find this attractive. The dance itself tends to be reminiscent of times long ago; times more wholesome than now and in effect those people who are drawn to these ideals are the ones who frequent these events. Nevertheless you'll find people from all around the world and from every different background at any given night, eager to see what it's all about.

Come, stop by. You are guaranteed to have a good time and if you're just not feeling it, at least you can hang out in an easy environment where you can get to know people. See you there!

Check out the Florida Swing Club Online at <http://grove.ufl.edu/~swinguf/>

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Thursday, February 2nd Tea with Professor 5:30pm in NPB 2205

*A joint meeting of SPS and the Femaly
Physics Forum, featuring guest
Dr. Teresa Montaruli from the University
of Wisconsin, Madison*

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.

Restaurant Reviews

by Joe Gleason

Grillmasters

\$ 10 - 20

Just West of Tower Road on the North side of Newberry Road

Owned by the same people as Steak and Pasta Works, Grillmasters is an attempt at a higher class version of their so-so but affordable, Steaks, Pasta and Seafood. In my opinion, it is a failed one. My first impression was that the atmosphere was a sad attempt at looking like something that the dirty industrial carpeting and cheap formica tables told me it wasn't. It was Sunday night on which you can get the prime rib special, an eight oz. cut for nine bucks. Not a bad deal but I would rather have tried the rib eye had it not been \$18.00 for a mere 11oz. Not even the finest steak houses in the country charge that much per oz. for a rib eye. Both my guest and I agreed the salads were barely edible. The one redeeming feature was my prime rib and my guest's seared tuna both of which surprised us after the lousy salads. They were not redeeming enough however for me to give this one my recommendation. Unless it's Sunday and you are dying for a cheap prime rib I would avoid Grillmasters.

Liquid Ginger

\$ 12 - 20

Located in the Sun Center in downtown Gainesville

If you are looking for a unique and delicious Asian experience without the slow service of Chopstix Café or the dress codes of Mr. Han look no further than Liquid Ginger. Tucked away in the Sun Center behind "Maude's," this is a restaurant that is often overlooked not being situated directly on a roadside. Liquid Ginger truly has a style of its own from the charming 'tea room' style interior design to the traditional bento style in which the food is served: all on one tray with individual bowls for each item. My favorite part is how each meal is served as a complete package that includes cake and coffee at the end. Considering this, the prices are more than reasonable. Before your meal try one of a variety of hot teas available. Also of note is the subdued and peaceful atmosphere that makes this location great for a romantic evening for two.

Physics Professor Lies on Bed of Nails to Illustrate Physics

...and other demonstrations in PHY 2060 – do we have cool classes or what!

by Sarah Joy

Many demonstrations in this introductory mechanics course were presented to further the understanding of the topics and to provide a chance for a bit of fun.

Milk jug rockets that contained evaporated alcohol were set off with the intention of displaying conservation of momentum, and to watch these objects fly across the classroom and collide with the wall. Another example of momentum conservation was demonstrated with Coca Cola cans containing firecrackers in much the same way.

At the beginning of the semester, projectile motion was exhibited by the classic example of a monkey hitting a dart. Due to animal rights laws a real monkey was not plausible, but using a simple ping pong ball got the point across. One day a volunteer was selected from the audience and asked to sit on a rickety looking chair and hold a set of dumbbells. The chair was able to rotate on its four legs and the volunteer was asked to extend and then pull in his arms repeatedly while holding the weights as the chair was spun around. As the student held his arms out, the rotational inertia was larger and the angular velocity was smaller; when he brought his arms in, the opposite was true. This demonstrated conservation of angular momentum, since the values for angular momentum were the same in both situations.

The classic example of oscillation by a spring with a mass attached was shown when Dr. Ingersent jumped on a neon pink and green pogo stick.

When studying center of mass, a large map of Florida was pivoted at several points and lines were drawn to locate the center of gravity of the sunshine state.

But surely the most talked about demonstration of the semester took place the last day of class, when Dr. Ingersent lay on a bed of nails and had a cement block cracked on his chest. Other than pure entertainment, this demo was related to physics in two ways,



Dr. Ingersent (identified by the horizontal orange band of his shirt in the center) rests on nails, waiting for the sledge hammer to crack a block on his chest

both concerning the amount of pain the person would experience in this act. The pain due to the nails was reduced by the larger surface area and amount of nails included in the board, plus the fact that your back contains less nerve endings than other areas of your body such as your hand. After the second bed of nails was laid on our professor's chest, a thick rubber block was laid on top and then the cement block. The rubber added to the mass, which reduced the velocity of the hammer and the total pain endured. Dr. Ingersent mentioned having bruised ribs for a few weeks after doing this demo without the rubber block. He also mentioned that he performs this exciting demonstration for every introductory physics course he teaches, so for those in 2060-enjoy!

Astrophysical Engineering: The Next Step?

..... by Youssef Faltas

I am sure you have thought about it once. Or at least someone you knew had thought about it once. Or perhaps it was someone who knew someone you knew did who had, but I am most certainly sure that someone that you have no connection with whatsoever has never given a distant thought to what I am talking about. What am I talking about? What is my point in all this talk about people that I probably don't know? (You probably have forgotten about the title of this article at this point, along with the reason you are reading it, yet that too is not my point). Yes, I was going to talk about Astrophysical Engineering. So it seems fair enough that I start telling you what it actually refers to. As its name implies, it is the branch of engineering that deals with astrophysical objects; sorry to disappoint, but it is not the kind of engineering that goes into making your daily horoscope. In case "astrophysical objects" sounds obscure, these are the objects that astronomers peek at with large telescopes at night.

To stress that these objects are extreme in many aspects, we mention that objects like the Earth (and yes, there are quite a few places very much like our Earth)

are sometimes not counted as astrophysical objects. This is due to their small sizes, relatively small that is, and on no particular day of week (not even on Saturday), will you be able to imagine how small the Earth is compared to a galaxy or how large it is compared to your iPod. Astronomers sometimes call planets astrophysical objects; this often happens on nights when they are more in contact with the softer side of their cosmic identity, i.e. when they regard the solar system as home. Apart from all this talk about confusion in cosmic identities -a condition, which I am told is very hard to overcome- the engineering part of Astrophysical Engineering, is truly amazing. Astrophysics is well studied, though I wouldn't bet on it being correctly understood, but to put astrophysical theories in practice is plain outrageous. For these objects, it is not only size that matters: other properties like mass, temperature and even spin are hardly pleasant to engineer on, or for that matter to even engineer something around.

The term "Astrophysical Engineering" first reached my ears when Killa' Mike, a colleague of mine, asked me whether it would make a good minor for him. To

both of mine and Mike's dismay, the minor doesn't exist at the University of Florida. Like all great ideas that first come across me, I laughed at its mere possibility. Then I had a *deja-vu* of those other great ideas at which I laughed before, and concluded that Astrophysical Engineering is very probably possible. Sure enough, I found a few books on the subject not counting the *Hitchhiker's Guide to the Galaxy*, which might be describing the future of this field (the exact era depends on your speed, of course), or as Douglas Adams, the author, would have liked it, how it was in the distant past of our Galaxy. Hopefully a more in-depth article follows this present one, explaining the more technical results of Astrophysical Engineering. However, I will leave you with the following tease as a first step. What do you do when an asteroid is about to hit the Earth? Well, you definitely don't send an oil drilling team led by Bruce Willis. How about a gravitational tractor that uses gravity as a towline! NASA's Johnson Space Center recently worked out a model for such a spacecraft that can tow a 200 meter diameter asteroid by simply hovering near the asteroid and never landing on it.

Ga-ga Over Video Game Physics

..... by Harold Rodriguez

When will there be no spoon? When will the gaming experience lead us to believe we're in the "real world", when we're really just in a Matrix? While photo-realism is what some consider the Holy Grail of interactive entertainment, a similar endeavor is already beginning to culminate: the seamless blending of real-world physics into the gaming arena. What started out as Pong (reverse velocity of a ball at a boundary, ad infinitum) became Mario Tennis (add horizontal motion), and then Virtua Tennis (make sure the player's hair is swooshing).

"First person shooter" (FPS) has

always been the envelope-pushing genre (Duke Nukem, Doom, Quake). The shooters were the games that told us our video cards were outdated, our CPU was too slow, and our memory was not enough. This still holds true as today's most intensive games are attempting to achieve reality through perfect physics. Take Half-Life 2, whose Havoc physics engine has allowed millions of players worldwide to pick up a dead enemy's leg, swing him around, and throw his realistically-reacting body into walls.

Even newer is the Unreal Engine

3, which boasts complex vehicles and dismemberable ragdoll animations. Every object in UE3 has physical properties, such as friction coefficients, and physics-driven sound. Coming up on the horizon is a remarkable accomplishment called Offset. The Offset engine provides motion blur for 100% of objects (including particles), specular bloom (shininess), complex- and self-shadowing (again, even particles!), and a full 64-bit floating point HDR rendering pipeline (looking into the sun never felt so good). We're almost there; keep on the look-out for Neo.

U.P. dates & Opportunities

Compiled by Cathy Yeh

SPS Calendar Spring 2006

Dates subject to change. Check www.phys.ufl.edu/~sps for updates.

February

2nd (Thursday)

Tea with Professor. Joint meeting with Female Physics Forum, guest Teresa Montaruli NPB 2205, 5:30 pm

8th (Wednesday)

ROFU (Research Opportunities for Undergraduates)

SPS T-shirt money deadline; cost: \$8

17th (Friday)

Mentor/Mentee ice cream social at Sweet Dreams Ice Cream

23rd (Thursday)

Physics is Fun Show

March

7th (Tuesday)

2006 - 2007 Officer elections

21st (Tuesday)

Tea with Professor. (String theorist possible guest)

25th (Saturday)

Capture the Flag / Paintball with chemistry club

April

4th (Tuesday)

ROFU

8th (Saturday)

SPS Annual Spring Picnic

13th (Thursday)

Senior workshop (advice in hindsight on undergraduate research, graduate school and fellowship applications, scholarships, misc.) + Potluck + Sigma Pi Sigma inductions

28th (Friday)

Senior Dinner

SPS News:

Hurricane Katrina Donations

SPS collected 435 lbs worth of donated physics books (10 full boxes) from the UF physics department. The donated books are going to Xavier University of Louisiana, one of the universities heavily affected by the hurricane. Thank you for your generosity!

A collection of research opportunities and scholarships with upcoming deadlines.

National Science Foundation Research Experiences for Undergraduates

Research opportunities for undergraduates funded by the NSF. Research areas and deadlines vary by site. Typical applications require form, personal statement, letters of reference, and transcript.

<http://www.nsf.gov/home/crssprgm/reu>
Note: The UF department is hosting a 10-week REU program for summer 2006. <http://www.phys.ufl.edu/REU>

Deadline: 2/15

University Scholars Program

Opportunity for students to do research with professors at the University of Florida. Scholars will publish their work in the Journal of Undergraduate Research and present at the USP Symposium. Requires student to find a faculty member to work with and submit summary of proposed research project along with letter of support from faculty mentor.

<http://www.scholars.ufl.edu>

Award: \$2500 stipend, possible additional grant for research support i.e. travel to conferences to present research

Deadline: 3/1

CLAS Scholarship

A general scholarship for students in the College of Liberal Arts and Sciences. Requires application form and 500-600 word essay (no resumé

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Submissions

We welcome your news!

Please send submissions to upnews@phys.ufl.edu by the third Monday of the month

or references). This year's essay topic: "What do you consider to be the most significant thing that has happened in the humanities, the natural sciences, or the social sciences during the past year and why?"

<http://web.clas.ufl.edu/scholarships/clas.html>

Award: \$1000

Deadline: 2/1 - 5:00 PM

University Women's Club Scholarship

Scholarship to honor wives of past presidents of UF and distinguished campus leaders. Applicants must have junior or senior status, minimum 3.6 GPA, and participate in campus/community activities. Requires application form, personal statement, two letters of reference, community service letter, official transcript. Note: women and men both eligible. <http://www.dso.ufl.edu/scholarships/uwc>

Award: \$1500

Deadline: 2/16