



THE DILATED TIMES

*The newsletter of the Drew University
Society of Physics Students*

APRIL, 1990

The second edition of the SPS newsletter has finally reached your mailbox! We, the editorial staff, hope you like the new style and title, and look forward to your many ingenious contributions. The Dilated Times will be published monthly to keep you informed of upcoming SPS events, recent physics news, and other points of interest. So, get involved!

WHAT I DID FOR SPRING BREAK

*by Mike Richichi, SPS Vice-President, Zone 4
Associate Counselor*

My spring break saw me going to Anaheim for the 1990 SPS Council Meeting. This is the annual meeting where the SPS Council (which is all of the Zone Counselors and Associate Zone Counselors and the SPS Executive Board) get together to make plans for the year ahead and make changes.

The meeting was quite interesting. I got there Saturday, there was a brief meeting of the AZCs, and then dinner. I got to meet the Associate Counselors from all of the other zones. They were truly an interesting bunch. After dinner, a group of us did some experiments at the Disneyland Amusement Park. We should be publishing "Relativistic Effects in Space Mountain" very soon (just kidding).

Sunday (all day) was the big meeting. We discussed last year's and this year's budgets, status of the SPS awards, and the educational mission of SPS. In the afternoon, we broke into smaller committees to work on specific tasks. I was on the Zone Meeting Cookbook committee. We basically are going to rewrite the Zone Meeting Cookbook to make it smaller and more general, and it also will now be in the SPS Information Book. This probably doesn't mean much to most of you, but it will enormously help chapters who wish to host zone meetings.

The other big change is that the structuring of the zones will change next year, with the number of zones increasing from 12 to 18. This change came about because some zones are very large geographically and thus it is hard for SPS members in those zones to come together and have meetings. The actual boundaries of zones will no longer be

limited to state lines either. This change should be really good for SPS.

All in all, the meeting was fun. If anyone has any specific questions about it, or ideas they think should be brought to national attention, please don't hesitate to talk to me or Dr. Fenstermacher (he's the Zone 4 Counselor).

THE QUANTUM CHICKEN

by Mike Kelly, SPS President

A while back, someone asked how many generic chickens would fit into a generic Pontiac. This question has been on my mind recently, so I decided to work out this problem, for the benefit of all humanity.

I. It has been proven successfully that chickens have a definite wave-like nature. In reproducing Thomas Young's famous double-slit experiment of 1801, Sir Kenneth Harbour-Thomas showed that chickens not only diffract, but produce interference patterns as well. (This experiment is fully documented in Sir Kenneth's famous treatise "Tossing Chickens Through Various Apertures in Modern Architecture", 1897.)

II. It is also known, as any farmhand can tell you, that whereas if one chicken is placed in an enclosed space, it will be impossible to pinpoint the exact location of the chicken at any given time t . This was summarized by Helmut Heisenberg (Werner's younger brother) in the equation:

$$d(\text{chicken}) * dt \geq b$$

(where b is the barnyard constant; 5.2×10^{-14} domestic fowl * seconds.)

III. Whatever our results, they must be consistent with the fundamentals of physics, so energy, momentum, and charge must all be conserved.

A. Chickens (fortunately) do not carry electric charge. This was discovered by Benjamin Franklin, after repeated experiments with chickens, kites, and thunderstorms.

B. The total energy of a chicken is given by the equation:

$$E = K + V$$

where V is the potential energy of the chicken, and K is the kinetic energy of the chicken, given by $(.5)mv^2$ or $(p^2) / (2m)$.

C. Since chickens have an associated wavelength, w , we know that the momentum of a free chicken (that is, a chicken not enclosed in any sort of Pontiac) is given by:

$$p = b / w.$$

IV. With this in mind, it is possible to come up with a wave equation for the potential energy of a generic chicken. (A wave equation will allow us to calculate the probability of finding any number of chickens in automobiles.) The wave equation for a non-relativistic, time-independent chicken in a one-dimensional Pontiac is given by:

$$[V * P] - [(b^2)/(2m)] * D^2(P) = E * P$$

P is the wave function, and $D^2(P)$ is its second derivative.

The wave equation can be used to prove that chickens are in fact quantized, and that by using the Perdue Exclusion formula we know that no two chickens in any Pontiac can have the same set of quantum numbers.

V. The probability of finding a chicken in the pontiac is simply the integral of $P * P * d(\text{chicken})$ from 0 to x , where x = the length of the Pontiac. Since each chicken will have its own set of quantum numbers (when examining the case of the three-dimensional Pontiac) different wave functions can be derived for each set of quantum numbers.

It is important to note that we now know that there is no such thing as a generic chicken. Each chicken influences the position and velocity of every other chicken inside the Pontiac, and each chicken must be treated individually.

It has been theorized that chickens do in fact have an intrinsic angular momentum, yet no experiment has been yet conducted to prove this, as chickens tend to move away from someone trying to spin them.

Curious sidenote: Whenever possible, any attempt to integrate a chicken should be done by parts, as most people will tend to want the legs (dark meat), which can lead to innumerable family conflicts which are best avoided if at all possible.

SPS CALENDAR OF EVENTS

Wednesday, March 28 at 4pm in HS244: Mike Kelly will give a presentation on "wiggling asteroids" for us in preparation for his presentation at the SPS zone meeting in Washington, D.C.

Tuesday, April 3: This is the last day that tee-shirt ideas can be submitted. (tee-shirts...wait a minute. What tee-shirts?) SPS tee-shirts!!! Although it has been a frequently mentioned idea in the past, this year we are making a consorted effort to get SPS tee-shirts. Color and design suggestions can be submitted to: SPS Tee-shirt Contest, Box 1750 any time before April 3rd.

Thursday, April 5 at 4:30pm in HS316: An exciting physics documentary will be shown in HS316. Soda and munchies will be available.

Saturday, April 7 in the UC: Spring Saturday! SPS will once again create as dazzling display of physics phenomena for future freshmen. Suggestions and volunteers are more than welcome.

Sun.-Mon., April 15-16: A small group of SPS'ers will be making an overnight car trip to Washington to the SPS zone meeting to hear our own Mike Kelly give a presentation. Also, Mike Richichi will be helping coordinate the meeting as the new Zone 4 Associate Counselor.

Wednesday, April 25: This is the date of the SPS banquet. The banquet usually begins at 6pm in the faculty dining room in the Commons. Awards will be presented, new Sigma Pi Sigma members will be inducted, and a respected member of the physics community will give a lecture.

Mid to late April: Comet Austin, being called by some the "celestial spectacle of the decade," will be visible in our early morning sky. The observatory will be open for viewing Austin on

several mornings. Interested SPS members are invited. Specific dates and times will follow.

Saturday, May 5: It's Spring Picnic time!!! This is a time for REAL food, fun, and the famous annual SPS softball game. Coincidentally, this is the day after FAP, so SPS will provide free "test the law of gravity" wake-up calls right to your door for those who request them.

BIRTHDAY FEATURE

compiled by Bill Kimler

Carl Friedrich Gauss (Apr. 30, 1777 - Feb. 23, 1855)

In the month of April we celebrate the birthday of one of the most outstanding German physicists of the nineteenth century, Carl Gauss.

A child prodigy, Gauss taught himself reading and arithmetic by the age of three. Recognizing his talent, the Duke of Brunswick in 1792 provided him the stipend to allow him to pursue his education. While still attending Caroline College (1792 -95), Gauss formulated the least-squares method and a conjecture on the distribution of prime numbers among all numbers. During this period, Gauss did not have access to a good mathematical library and therefore rediscovered many theorems that had already been accepted.

The four years after college proved to be productive ones for Gauss. In 1799, the University of Helmstedt granted him a Ph.D. degree for a dissertation that gave the first proof of the fundamental theorem of algebra.

In 1801 Gauss published his Disquisitiones Arithmeticas, which set the pattern for future research in number theory. Also in that year, Gauss gained widespread recognition in his discovery of

the asteroid Ceres. Using an improved theory, he accurately calculated its orbit and predicted its appearance in the sky. During the 1820's, with the collaboration of the physicist Wilhelm Weber, he explored many areas of physics, including magnetism, mechanics, acoustics, and optics. In 1833, he constructed the first telegraph.

Up to 12 volumes of Gauss's works have been published, opening the pathway in research for years to come.

MIKE KELLY'S DREW-FAMOUS PEANUT BUTTER COOKIES

Ingredients:

- 1/2 cup peanut butter
- 1/4 cup shortening
- 1/2 cup brown sugar
- 1/2 cup sugar
- 1 egg well beaten
- 1 cup sifted flour
- 1 tsp baking soda

Instructions:

Cream peanut butter and shortening, adding sugar gradually. Cream until light and fluffy. Add egg. Sift flour and baking soda together, add to above mixture. Mix well. Bake at 350 F for 8-10 minutes on a greased cookie sheet. Enjoy!

Suggestions? Ideas? Comments? This is OUR newsletter, so please help make it work. Send your messages to: Sandy, Box 1750. Thanks!

Editorial Staff of The Dilated Times:

Leith Dwyer, Steve Gausepohl, Bill Kimler, Mike Richichi, Sandy Sweller.
And then there's Karl...

FOX TROT

By Bill Amend



From the Columbia State Newspaper