

## Notes and News from the September 1993

### Meeting at Six Flags — “Physics Day Workshop & Boomerang Physics”

by Paul Discher



Chris Geisert, Six Flags Sales Representative

A very special meeting of the St. Louis Area Physics teachers and the Math Educators of Greater St. Louis (ME GSL) was held Saturday September 18, 1993 at Six Flags Over Mid-America Theme Park. Thirty-two teachers from both organizations were present as this meeting was called to order at 10:00 a.m. Chris Geisert, Six Flags Sales Representative, was our host, and began by welcoming everyone and introducing officers from the St. Louis Area

Physics Teachers as well as

Mr. Tom Yaeger, President of MEGSL. Chris Geisert reminded us of Six Flags interest in improving the Physics and Math day activities and welcomed any suggestions.

Turning to business, Dave Bross reviewed the posted agenda for the upcoming year of the St. Louis Area Physics Teachers. He reminded attendees of the “events” scheduled, the APS High School Physics Day and the ISTA and STOM Share-a-Thons.

Our special guest speaker, Mr. Tom Fitzgerald, was introduced by Ellen Barr. Mr. Fitzgerald presented a talk and demonstration on the physics and construction of boomerangs. Mr. Fitzgerald is a native St. Louisian, and has been involved in the throwing and construction of boomerangs for the past 7 years. In 1989 he formed his company, Return to Sender Boomerangs. Since the company's inception Mr. Fitzgerald has made hundreds of boomerang presentations for schools and organizations, and has sold tens-of-thousands of boomerangs and related materials. Mr. Fitzgerald showed a wide variety of boomerangs at our meeting, and discussed their origins, construction, and throwing techniques. The presentation was adjourned to an outside courtyard where a brief boomerang throwing clinic was conducted.

Mr. Fitzgerald is also founder and president of the St. Louis Boomerang Club. The Boomerang Club, in cooperation with the St. Louis Science Center, cosponsored the 6th Annual Gateway Boomerang Classic competition this May 1993 at Forest Park. Mr. Fitzgerald maintains an ongoing relationship with The St. Louis Science Center, and in the past four years participated in the Center's annual “Festival of Flight”. He is currently on the Board of the Australian-American Chamber of Commerce of St. Louis, and has previously served on the Board of the United States Boomerang Association. Teachers can arrange for a boomerang presentation for their students by contacting Mr. Fitzgerald directly at: Return to Sender Boomerangs, 314-839-1604.

A video tape is available of this meeting for \$8.00 by sending a check in this amount, Payable to Paul Discher, to: Paul Discher - Editor Physics *Tempo*, Washington University - Electrical Engineering, Campus Box 1127, St. Louis, Missouri 63130-4899. All proceeds beyond costs producing and archiving of meeting videos are placed into the treasury of the St. Louis Area Physics Teachers.

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## News from the October 1993 Combined Meeting of the Missouri Section -AAPT and the St. Louis Area Physics Teachers”

by Paul Discher



Mr. Tom Fitzgerald holding a Kylie, a unique type of boomerang

A unique joint meeting of the Missouri section of the AAPT and the St. Louis Area Physics Teachers was held Saturday October 30, 1993 at Parkway West High School. Dave Bross was our host and he called the meeting to order at 9:00am. Thirty-eight attendees were present and many came from distant parts of the state for this meeting. Dave welcomed all of the attendees and detailed the schedule for the morning. Numerous speakers were scheduled.

Projectile Motion with a Potato Cannon was a talk presented by Dr. John Tansil, Southeast Missouri State University. A home built plastic cannon made from PVC pipe and charged with aerosol hair spray propellant was used to launch a slug made from a potato core. Numerous tests were made in an attempt to use the cannon as a projectile motion study tool, with many difficulties.

A.M. Soellner and C.K. Templeton, Southeast Missouri State University, presented a paper on the investigation of Notch Filters to obtain the Fourier Coefficients of Electrical Waveforms. V.K.Bhashyam and M. Samiullah, Northeast Missouri State University, presented a paper on: The Normal Modes For Vibration in an Arbitrarily Connected N. Atom System.

Our invited speaker was Dr. James A Guffey, McDonnell Douglas Aerospace, and his talk was titled, "Applications of a Physics Education". Mr. Guffey received his B.S. Degree in Physics in 1972 from University of Missouri at St. Louis. Dr. John Rigden was a major influence in his study of Physics. Later he received his Masters and Doctorate in Physics at Kansas State University, and did Post-Doctoral work at Florida University in Gainesville. After a short period with a software company he joined McDonnell Douglas in 1979 and moved through the company in the last 14 years to his present position of Section Chief of Strategic Technology Plans and Assessment group of the Aircraft and Missiles Division of McDonnell Douglas Aerospace. Dr. Guffey spoke on the non-science facets of a Physics education, that is, a good problem solving discipline. A skill that he used in advancing his career at McDonnell- Douglas. In addition Dr. Guffey 's multi-media presentation and discussion of McDonnell-Douglas technologies was very interesting and impressive.

Bill Brinkhorst and Val Michael presented a make & take workshop in which moment of inertia demonstration rods were constructed. For \$5.00 attendees were able to construct these demonstrators simply made from plastic pvc pipe and steel reinforcement rods. When rotated like a baton, dissimilar weighted rods would demonstrate the affect of unlike moments of inertia.

Morning refreshments and lunch for the meeting was provided at nominal cost by the Parkway West High School student science honor society  $\beta\chi\pi$ . Celebrating it's 10th anniversary this year,  $\beta\chi\pi$  was the brainchild of Parkway West teacher Melba Jones, and is now recognized and promoted statewide by STOM. Students are admitted by their science grade-point averages. Joanne Thomes, is the faculty sponsor at Parkway West, and indicated that last year the 30-member  $\beta\chi\pi$  society started its first scholarship program, awarding its very first \$200.00 cash scholarship to a graduating Parkway West senior. If you are interested in seeking to organize a science honor society  $\beta\chi\pi$  at your school, contact STOM or Joanne Thomes at Parkway West High School for more information.

Additional speakers were scheduled for the afternoon session including John W. Northrip, Southwest Missouri State University, "Delta Plotting and the examination of curriculum and style in introductory Physics". David L. Carleton, Southwest Missouri State University, "Is Enough Too Much", and Dr. Peter Handel, University of Missouri - St. Louis, "Quantum 1/F electronic noise" The meeting was concluded with announcements and a short business meeting.

## **News from our Special Event: "ISTA, Illinois Science Teachers Association Annual Convention & Share-A-Thon" by David Bross**

The Illinois Science Teachers Association held their 26th annual convention October 1st and 2nd at the Gateway Convention Center in Collinsville Ill. We had six members participate as the St. Louis Area Physics Teachers presented a two hour share-a-thon that drew a constant stream of high school, middle school and elementary teachers that were intrigued by our demos and loved our handouts.

Rex & Debbie Rice demonstrated Kinematics and promoted their PTRA programs, Ellen Barr performed Physics Magic, Frank Cange showed AC circuit projects, Fred Zurheide hosted a small make-& take booth for constant velocity machines built from soft drink cans, and Dave Bross showed rotational inertial and home built airtrack projects. Thanks to all those that helped. A similar session for STOM, Science Teachers of Missouri, will be held in St. Charles on Saturday November 20, 1993. We are unable to report in time on this event due to the publishing deadline for Physics *Tempo*.

## **News from :"APS, High School Physics Teacher's Day"**

*by David Bross*

Thirty two teachers attended the High School Physics Teachers Day Friday November 5, 1993, at the Adams Mark Hotel as part of the APS International Meeting of Plasma Physicists. Dr. Don Correll of Lawrence Livermore Labs gave an informative talk and handed out educational materials to be used in the classroom on Fusion and the current research being done.

It was a special treat when Dr. Russell Hulse stopped by to talk to teachers before his lecture on the discovery of the Binary Pulsar that we also got to attend. Dr. Hulse will receive the Nobel prize for physics later this year. We welcomed some new members as a result of this event and I want to thank all of those that helped in the presentations and workshops.

## ***News from the AAPT Summer Meeting — Boise Idaho — The PTRA Plus Program***

*by Rex and Debbie Rice*

This summer in Boise, Idaho, at the American Association of Physics Teachers Summer Meeting, the PTRA Plus Program continued with the second of three training sessions for new and veteran PTRAs. PTRA, which stands for Physics Teaching Resource Agents, is a program which began in 1985 and continued through 1988. It has been reincarnated as PTRA-Plus, and is being funded by a grant from the National Science Foundation. Approximately 25 new PTRAs and 60 veteran PTRAs participated in the program. Participants came from as far away as Hawaii and Puerto Rico.

There was a six day training session before the conference for the new PTRAs. The veterans joined the new participants for the final three days. Participants were trained to give workshops in five areas; Dynamics, Light Wave Communication, Waves and Sound, Magnetism, and Astronomy. The new PTRAs shared physics teaching ideas on the final day of the training session.

The new and veteran PTRAs are now obliged to do 90 clock hours of workshops over the next two years. These workshops must be in the areas in which participants were trained. The workshop fees are intended to provide a means by which the PTRA program can become self-sustaining. For each workshop area a manual has been developed. The copyrights for these manuals are owned by the AAPT. We will only be allowed to copy and distribute those pages necessary for workshop activities.

On the final day of the PTRA session we discussed a very controversial topic, the fees that we will be required to charge each participant. After much discussion the directors of the program, Larry Badar, Robert Beck Clark and Jim Nelson decided that we will be required to charge \$5.00 per hour. It is recommended that workshop participants ask their school districts to fund teachers. A possible source of money would be Eisenhower funds.

The St. Louis Area Physics Teachers were represented this year by four of our regular members. Gene Fuchs of Mehlville High School, Richard Garner of Roosevelt High School, and Deborah Rice of Gateway Institute of Technology and Rex Rice, of Clayton High School. Missouri added a new PTRA, Dennis Nickelson, from the Jefferson City area.

In the next year, 25 new PTRAs will be added to the program. Veteran physics teachers who are interested in helping to improve the quality of physics

teaching are encouraged to participate in the upcoming training session. We hope you will support our efforts in improving physics teaching and support the AAPT and the PTRA Plus program by attending our workshops. There should be something at each workshop which all physics teachers will find interesting and useful.

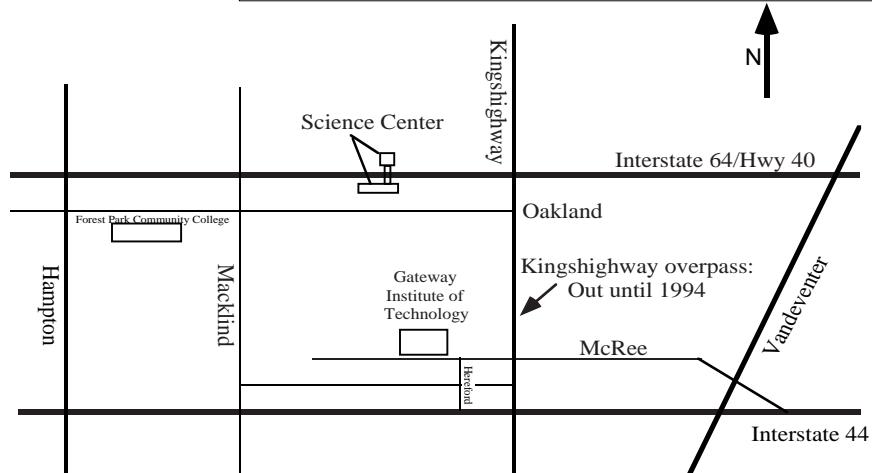
The first workshop, Teaching About Dynamics, will be held at Gateway Institute of Technology, December 4, 1993. A second workshop is planned for February 1994, at Clayton High School.

### ***Special Event: PTRA Workshop “Teaching about DYNAMICS”***

**Date:** Saturday December 4, 1993  
**Time:** 8:00am - 12:00 noon  
**Place:** Gateway Institute of Technology  
**Host:** PTRAs Debbie and Rex Rice  
**Contact:** Debbie or Rex Rice  
314-862-2845

The first of two PTRA Plus Workshops will be hosted at the Gateway Institute of Technology. This workshop will be on December 4, 1993 from 8:00 - 12:00. The building is located at 5101 McRee, which is north of the Kingshighway exit of Interstate 44. (See the map below and on the enclosed flyer).

There will be a \$25.00 charge for this workshop to cover the cost of materials and fees AAPT. Those members who are teachers in the city of St. Louis should contact Florence Gillespie at State and Federal Programs at Raymond Ave. Ms. Gillespie has agreed to pay fees for city teachers to attend this workshop. We suggest that county teachers inquire about having their fees paid with Eisenhower Funds from their respective districts..



**Gateway Institute of Technology  
5101 McRee  
St. Louis, Missouri 63109**

## **Next Regular Meeting and Workshop Washington University**

**Date:** Saturday January 8, 1994  
**Time:** 8:30am - 12:00 noon  
**Place:** Washington University  
Dept of Electrical Engineering  
**Host:** Paul Discher  
**Phone:** 314-935-4187 Washington University  
314-487-0587 Home

The next regular meeting of the St. Louis Area Physics Teachers will be held Saturday January 8, 1994, 8:30am on the campus of Washington University, Bryan Hall Room 305. The meeting host will be Paul Discher, and a short business meeting will precede the day's events. Business to discuss, will be the selection of a new Physics *Tempo* editor for the 1994-95 academic year. In addition, there will be open discussion and review of proposed new organizational by-laws, identifying and naming executive position titles, their duties and terms. Following the meeting we will have a unique workshop where participants will be able to construct electrical demo devices that were developed for teaching at Washington University by Paul Discher.

Titled "On the Blackboard Electrical Demos" the workshop involves constructing enclosures for electrical components made from video tape storage boxes that can be attached magnetically to your blackboard for vertical presentation to your class. (1). You must have magnetic blackboards in your lecture classrooms for the components made in this workshop to be useful. (2) You must be able to provide your own MULTIMETER for your classroom demonstrations. **DO NOT BRING YOUR METERS TO THIS WORKSHOP.** If you do not own multimeters a discussion of what type and cost ranges of such instruments will be discussed at the workshop.

This workshop will be open in a unique fashion. You can attend as a "participant" or as an "observer". **"Participants"** will need to register in advance and will receive a complete demo kit (five pieces and connecting cables) along with the documentation for two complete "On the Blackboard Electrical Demos".

**The registration fee will be \$10.00** per kit, and we request that participants restrict their subscriptions to only one kit per person in order to minimize the logistics of this project. **"Observers"** will be allowed to attend free but will not receive any materials from this workshop. Observers will be given handouts and may build the "on the board" demo fixtures on their own if they wish.

This is really a easy project to construct with simple tools at low cost and offers a great potential for variations of your own. Previously, Paul Discher presented concepts for using video tape storage boxes for electrical demonstra-

tions and experiments in the May 1993 meeting at Lafayette High School. One example was the solderless breadboarding system built upon empty video tape boxes. This system had previously been shown at a meeting of April 4, 1992, at Parkway West Senior High School where two of these breadboarding units were raffled off to attending teachers. At the Lafayette High School meeting Paul demonstrated a second method for using video tape boxes for teaching, "On the Blackboard Electrical Demos".

The blackboard demo system was devised to uniquely meet the needs for demonstrations at Washington University. These fixtures are currently used by faculty in teaching EE280 an Electrical Networks class. Dr. Robert Krchnavek, a member of the Electrical Engineering faculty will be co-presenting at this meeting. He will be discussing the evolution of the devices, his experiences using them in the classroom, and presenting the concepts of the two simple demos that will be worked out and published for you. The first demonstration will be simple ohms law with series and parallel resistances. The second demonstration will be a balanced bridge circuit, slightly more advanced, but demonstrating some really interesting facets of the ohms law relationships.

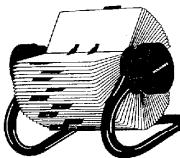
**Registration:** If you would like to attend as a participant you must mail your check, payable to Paul L. Discher, in the amount of \$10.00 before December 24, 1993. Please mail to: **Paul L. Discher, 5123 Mild Drive, Mehlville Missouri 63129.** **There will not be sufficient supplies for late registration.** Many of the components for this project are inexpensive, easy to find, and lend themselves to substitution. If you choose not to participate come as an observer and see how to make these ingenious devices.

The Electrical Engineering Department Conference Center is located in Bryan Hall Room 305. Bryan Hall is located on the North side of the Washington University Hilltop Campus at Lindell & Skinker. You can access large multilevel parking garages at the traffic signal on Millbrook Blvd about 900 feet east of the KETC Channel 9 studios at Millbrook and Big Bend Blvd. Once parked in the garage proceed east on foot towards the historical Washington University power plant chimney. Just west of the Power Plant Chimney you will find pedestrian elevated crosswalks that connect the campus for foot traffic across Millbrook and Throop Drive (campus service drive). Walk over the crosswalk South towards the campus. Enter the courtyard and the end of the pedestrian bridge and you will be between second floor entry doors for McMillian Hall on the right (Chemistry) and Bryan Hall on your left (Engineering). Entering Bryan Hall on the second floor, take the first stairwell to the right proceeding to the 3rd floor. Bryan Hall 305 will be immediately across from the stairwell door.

If you are unable to attend this workshop and would like a reprint of "On the Blackboard Electrical Demos", Please write Paul Discher directly.

## *The Physics Teachers Rolodex*

This is the Physics Teachers Rolodex, the place where you find the places to get the things that you really didn't know you needed.



Hosfelt Electronics Inc.

2700 Sunset Blvd.

Steubenville, OH 43952

1-800-524-6464

Mail Order parts house for components, relays, switches, cable, connectors, they even have 3 full pages of wall mount transformer/power supplies. Good prices.

Jameco Electronic Components

1355 Shoreway Road

Belmont, CA 94002

1-800-831-4242

..originally they sell electronic components etc., however, lately catalogs concentrat on PC compatible computers and components. A good place to go if you are tinkering with your PC and want to "soup it up". Moderate Prices; good quality company.

Naptech

P.O. Box 30

Cobb, CA 95426

1-707-928-1961

All kinds of electronic test & measurement equipment. They, buy, sell, rent and lease equipment. They have really good prices and good personal service.

Marlin P. Jones & Assoc.

P.O. Box 12685

Lake Park, FL 33403-0685

407-848-8236

Various surplus goodies like magnets lenses switches power supplies, fans, connectors etc. They have 1.0 Farad Capacitors for \$6.00 and unique instructional electronics videos.

Tucker Electronics & Computers

1717 Reserve St.

Garland, TX 75042

1-800-527-4642

Originally they rebuild, buy and sell all sorts of surplus test and measurement equipment. Lately they too have gone into selling new computers, test equipment and ham radio gear. Average Prices, quality company.

R.S.R. Electronics Inc.

365 Blair Rd

Avenel, NJ 07001

1-800-972-2225

88 page catalog of the (alleged) "lowest prices" on electronic tools instruments and components. This company also will assemble "kits" of electronic parts for you...very similar to things we have done in make & take workshops. Good Prices



**The Newsletter of The St. Louis Area Physics Teachers  
an affiliate of the American Association of Physics Teachers**

*Editorial and Subscriptions information:*

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**Washington University-Electrical Engineering**

**Campus Box 1127**

**St. Louis, Missouri 63130-4899**

*First Class Mail*

# **1993-94 St. Louis Area Physics Teachers Calendar**

December 1993

PTRA Workshop Teaching About Dynamics

Date: Saturday, December 4, 1993

Time: 8:00am

Place: Gateway Technical High School

Host: Debbie & Rex Rice

January 1994

Regular Meeting & Workshop -

"On the black board Electronics demos"

Date: Saturday, January 8, 1994

Time: 8:30am

Place: Washington University

Dept of Electrical Engineering

Host: Paul Discher

**Build and take apparatus for real DC electricity demos on the black board. Developed for teaching at Washington University.**

February 1994

PTRA Workshop "Light Wave Communications"

Date: Saturday, February 12, 1994

Time: 8:00am

Place: Clayton High School

Host: Debbie & Rex Rice

March 1994

"High Speed Photography Workshop"

Date: Saturday, March 12, 1994

Time: 8:30am

Place: Parkway Central High School

Host: Val Michael

**Demonstration and construction techniques for equipment used in producing High Speed Photographs.**

April 1994

"St. Louis University Physics

Competition and Annual Meeting"

Date: Open

Time: 8:30am

Place: St. Louis University

Host:

**Annual meeting for Physics Competition**

**Meeting Topic Open**

May 1994

"Laboratory Practium - SIUE"

Date: **Open**

Time: 8:30am

Place: SIUE

Host: Mr. Zurheide

**Physics Lab Practium**

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