



# Physics Tempo

The Newsletter of The St. Louis Area Physics Teachers  
an affiliate of the American Association of Physics Teachers  
March 1993

Vol. 3 No. 4

## Notes and News from The January 1993 Meeting

by Paul Discher

A regular meeting of the St. Louis Area Physics Teachers was held at Valley Park High School, Saturday January 23, 1993. Jim Small was our host and opened the meeting by welcoming the 22 teachers in attendance. A special guest was Tim Siebe, student, and master cartoonist at Valley Park High School. Tim rendered his humorous interpretations of the meeting activities, and later offered copies to teachers.



The "Physics Donut Gang",  
cartooned by Tim Siebe, student,  
Valley Park High School

The main topic for this meeting was "Second Semester Lab Sharing". This session was intended as a sharing session in topics traditionally covered in the second semester of general physics. These topics usually are heat, sound, electricity-magnetism, and optics. Prior to the main sharing topic, Robert Mulgardt spoke on "Engineering Design".

### Robert Mulgardt, Clayton Senior High School,

was one of 24 teachers selected to attend last year's summer program at the Thayer School of Engineering - Dartmouth. The summer program for the physics teachers was an accelerated version to the normal 10-week undergraduate (required) course at Dartmouth, ENGS-21 *Introduction to Engineering*. The goal of this course, was to teach engineering problem solving techniques early in a student's college experience. The purpose of this teacher enrichment course, was to offer the concept of "engineering design" to high school physics teachers, with potential applications to the physics classroom.



Robert Mulgardt

Attending teachers were divided into "companies". Each company was comprised of officers. Their task was to establish "a foundation" in their company, provide "background planning", and finally prepare and submit a "proposal". The six step Thayer School problem solving approach to engineering design starts by (1) Defining the Problem, (2) Generating Specifications, (3) Generating Alternatives through 'Brainstorming', (4) Analyzing the Alternatives, (5) Selection of an Alternative, and finally, (6) Iterate steps 2 through 5 again.

Robert detailed steps taken by his team in developing an automotive safety item, a backup warning system. This was a very interesting talk, and if you would like a copy of the meeting video, or any other

meeting video, (except Feb 1993), please state in your request which month's tape you would like, and send a check (*Payable to Paul L. Discher*) in the amount of \$8.00 for each tape to: Physics Tempo Editor: Paul Discher, Washington University Electrical Engineering \ Campus Box 1127, St. Louis, Missouri 63130-4899.

**Frank Cange** commenced with the business meeting by reminding all attendees of the upcoming St. Louis Area Physics Teachers officer nominations and election at the March meeting. He also reminded us of the need to file applications for students if they wish to participate in the upcoming St. Louis University Physics Competition on Saturday April 17, 1993. A discussion ensued about relocating the conflicting April 17 meeting of the St. Louis Area Physics teachers to the same site of the Physics Competition. The teachers decided this would be a most beneficial meeting place and Frank would work on seeking an invitation from St. Louis University. (*See the April 1993 meeting announcement in this issue of Physics Tempo!*).

**Jim Small, Valley Park High School** demonstrated a wide variety of sound evaluation and generation equipment, including, the MPLI-PC interface manufactured by Vernier Software. The MPLI interface, with software, allows a IBM-Turbo XT compatible computer to simulate an oscilloscope within the audio frequency band. Jim set up and demonstrated several sound sources with this equipment and showed his favorite, a Yamaha QY10 Music Sequencer. This small device combines a 30 voice synthesizer with percussion and other sounds.

A number of other teachers shared materials. **Frank Cange** demonstrated physics novelty items, and distributed copies of labs that he used in High School Physics. **Gary Shepek** discussed the optics experiments he uses in his Physics lab and distributed copies to the teachers present. **Rex Rice** reviewed the laboratory exercises he uses for students studying constructive and destructive interference. These experiments could



Gary Shepek

cover both sound and light. A number of other teachers shared items before the meeting was drawn to a close at 11:45 a.m.

## Notes and News from The February PTRA-Plus Electricity workshop submitted by Rex Rice

A regular meeting of the St. Louis Area Physics Teachers was not held in the month of February. Instead, the third of this year's Physics Teaching Resource Agents-Plus Workshops, (PTRA-Plus) "Teaching About Electric Circuits" was presented at Clayton

High School. This program was hosted by Missouri PTRAs Gene Fuchs, Debbie Rice, and Rex Rice on Saturday, February 13, 1993 from 8:30 a.m. - 2:30 p.m. Twenty-nine teachers participated in the workshop. The cost of the workshop was \$10.00 and the funds are used to perpetuate the PTRAs -Plus program.

This workshop included activities on electric field mapping, batteries and bulbs, resistors, diodes and light emitting diodes, transistors, capacitors, as well as an activity using a 555 timer integrated circuit. Circuits were constructed on solderless breadboards. From all indications, the workshop was a success.

The second PTRAs-Plus training session will be held this summer in Boise, Idaho, at which time the PTRAs will be trained to present at least two more workshops on new topics. Watch the *Tempo* for details on future PTRAs-Plus physics workshops.

### Next Meeting — March 1993

#### “Lasers and Optics”

**Date:** Saturday March 20, 1993

**Time:** 8:30 a.m.

**Place:** SIU-Edwardsville

**Host:** Dr. Fred Zurheide

A meeting of the St. Louis Area Physics Teachers will be held on Saturday, March 20, 1993 at the campus of SIU-Edwardsville. Our meeting host will be Dr. Fred Zurheide. Important business will be conducted at this meeting. New officers for the 1993-94 academic year will be elected. Dr. Zurheide will also be available for teachers seeking college credit in lieu of their PTRAs-Plus workshop attendance.

The topic of our main program will be “Lasers and Optics”, and we will be fortunate to have talks by Dr. Gerald J. Pogatshnik, Associate Professor of Physics, SIUE and Dr. Arthur J. Braundmeier Jr. Professor and Chairman of Physics SIUE.

Dr. Gerald J. Pogatshnik will be demonstrating optics experiments from the SIUE undergraduate Physics courseware. Dr. Pogatshnik received his B.S. degree from State University of New York at Cortland, and completed his M.S./Ph.D. from the University of Connecticut. He is currently consultant for Oak Ridge National Laboratory and McDonnell - Douglas Astronautics Company. Dr. Pogatshnik has authored more than 15 publications and presented 12 major papers, and he co-authored SIUE's University Physics Laboratory Handbook.

Dr. Arthur J. Braundmeier Jr., will be presenting a talk on the principles and developments in Thin Film Optics. Dr. Braundmeier received his B.S. from Eastern Illinois University, and his M.S. / Ph.D. from the University of Tennessee. Besides his credentials as Professor of Physics at SIUE, Dr. Braundmeier maintains certification to teach Physics in Illinois secondary schools. He has authored more than 20 publications and presented 20 major papers and is currently a consultant for Oak Ridge National Laboratory and McDonnell - Douglas Astronautics Company. Dr. Braundmeier was presented Junior Professor Award for Teaching Excellence in 1972, and received the SIUE Research Scholar Award in 1978 and 1988.

SIU-Edwardsville campus is located Northeast of St. Louis on Illinois Rt. 157. The campus is a few miles east and north of the intersection of Interstate 270 and Interstate 255. Either interstate routes could be used to get to the Illinois 157 exit (north) to the SIU-Edwardsville Campus. Once on the campus proceed north on South University Drive. Drive north and turn left on Circle Drive. Continue on Circle Drive and then turn right on Whiteside Road. Continue on Whiteside Road and use Lot E or Lot D near the Science Building. The meeting will take place in Room SL-0210, this is located on the ground floor of the Science Laboratory Building. (An SIUE campus map has been enclosed in this issue).

The rescheduled, Third Annual High School Science Olympiad will also be meeting Saturday March 20, 1993 from 8:30 a.m. to 4:30 pm at the SIUE campus. Teachers are welcome to remain on campus to observe this competition.

### Next Meeting — April 1993

#### “Topics on Modern and Nuclear Physics”

**Date:** Saturday, April 17, 1993

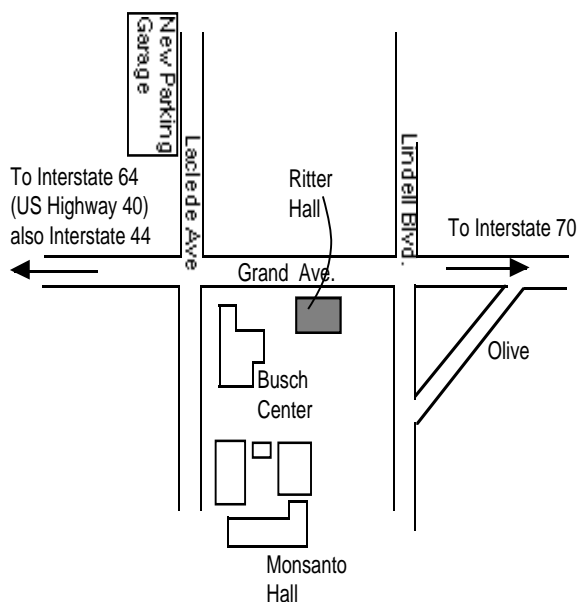
**Time:** 8:30 a.m.

**Place:** St. Louis University Dept. of Physics

**Host:** Dr. Larry Stacey

A meeting of the St. Louis Area Physics Teachers will be held on Saturday, April 17, 1993 on the campus of St. Louis University. Our meeting host will be Dr. Larry Stacey of the St. Louis University Department of Physics. Newly elected officers will be introduced as well as other subjects in a short business meeting. The annual St. Louis University High School-Physics Competition will be taking place at another location on campus. Teachers that accompanied their students to the Physics Competition will be invited to attend our meeting and talks.

Gail Haynes and Joan Biela, will talk on the subjects of Nuclear and Modern Physics. Joan will be reviewing her experiences last summer at Fermi Lab. Gail will be detailing some modern Physics materials and techniques that she has employed in her Advanced Physics classes.



Map of St. Louis University Campus

A special multimedia computer presentation will be made by Dr. Robert Delaney, Chairman of the Physics Dept. at St. Louis University. The presentation, "An Electronic Blackboard for University Physics" is a unique Macintosh HyperCard stack, scripted by Dr. Delaney.

St. Louis University is located between Lindell and Laclede Ave. at Grand Ave., in mid-central St. Louis City. The meeting will be held in Ritter Hall, Room 320 at 8:30 a.m.. Driving on US Highway 40 (Interstate 64) from either the east side or west St. Louis county one should proceed to the Grand Ave. Exit. Go north on Grand and turn left at Laclede Ave. Park in the newly constructed Parking Garage. Parking tickets will be validated at the meeting.

### Next Meeting — May 1993 "Computers in Teaching High School Physics"

**Date:** Saturday, May 15, 1993  
**Time:** 8:30 a.m. through 11:30 a.m.  
**Place:** Lafayette High School - Rockwood District.  
**Host:** Michele Atkins  
**Speaker:** Rudy Reyna, Southwestern Bell Telephone

The next regular meeting of the St. Louis Area Physics Teachers will be held on Saturday, May 15, 1993, 8:30 a.m., at Lafayette High School. The meeting host is Michele Atkins. Michele has been teaching Physics at Lafayette High School for the past 2-years, and she will have the unique distinction of "hosting" the very first meeting she attends. The topic for this meeting will be "Computers in Teaching High School Physics". A short business meeting will precede the main program.

The guest speaker is Rudy Reyna, Director of User Interfaces, Southwestern Bell Corporation Technology Resources. At Southwestern Bell, Mr. Reyna's team is responsible for the coordination and the implementation of advanced technology in aspects of customer products / services and information management. Mr. Reyna will be providing a multi-media presentation on the use of computers in teaching.

Mr. Reyna earned his BS/EE at Texas A&M University, MS/CS from Columbia University, and completed coursework at Illinois Institute of Technology towards his PhD/ in Computer Science. He currently teaches Computer Science at St. Louis University, as well as instituting post-MS projects in Artificial Intelligence at Washington University-St. Louis. Mr. Reyna is Vice President of the Rockwood Board of Education, member of the Association of Computing Machinery (ACM), IEEE, National Engineering Honor Society, and National Electrical Engineering Honor Society. Mr. Reyna is past President and Vice-President of the Association of Mexican American Professionals (AMAP). He has also served previously as President and Vice President of the Hispanic Association of Communications Employees (HACEMOS)-St. Louis Chapter.

Regrettably, due to the relocation of key elements of Southwestern Bell Telephone Corporation, Mr. Reyna will be leaving St. Louis with his family to take up residence in his home town of San Antonio Texas.

Lafayette High School is located at 17,050 Clayton Road near the intersection of Highway 109 and Clayton Roads.

Directions as follows: Drive west on Interstate 44 and turn off at the Eureka, Highway 109 exit. Proceed north on Highway 109 for about 10 minutes. Turn right on Clayton road, driving east for a short distance, and enter the Lafayette High School campus. The front entrance of Lafayette High School is designated by the flagpole and circle drive. This will be the only entrance open. Signs will be posted directing you to Room 234.

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## A message from your Editor Physics Tempo....MEMBERSHIP TIME.

Another year will be drawing to a close, (faster than you think) and its time for our annual membership drive. Enclosed is a new registration data card. Completion of the new data card assures that we have the most accurate information in our mailing database. Please complete the information on the card and mail to the address attached. It is our preference to mail to your "home address" when you provide it. All teachers enclosing the requested \$10.00 dues will be provided with a 1993,94 copy of the Physics Teachers Telephone Directory. This new directory will be distributed to attending teachers at the September 1993 meeting, and mailed at that time to absent teachers. **Please make checks payable to Paul L. Discher.**



All of the dues collected pay for the printing and mailing of the St. Louis Area Physics Teachers publications. This year, with the mailing subsidy from Six Flags we had the funds to print the Telephone Directory. At this time we have 42 paid members, and continue mailing to 226 teachers and VIP's in the St. Louis Area. I believe the newsletter is a worthwhile endeavor, and am proud to serve the St. Louis Area Physics Teachers as editor of Physics Tempo.

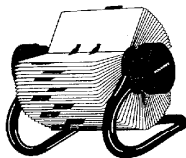
Please take the time to jot any comments you have about our Physics Tempo, or the Telephone Directory on the back side of the membership data card. Also indicate what subjects you teach in the areas of sciences or math on the back or edge of your data card. For teachers that have already received the 1992-94 directory last year, please communicate to me any address changes or deletions. You can fax changes to the Electrical Engineering Department, at Washington University at 935-4842, and save some postage.

Best Wishes

Paul L. Discher  
Editor: Physics Tempo  
The newsletter of the St. Louis Area Physics Teachers

## 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.



Worldwide Inventory Network / 314-385-3006

5100 San Francisco Ave.

St. Louis, Missouri 63115

WIN (Worldwide Inventory Network) is a distributor of donated materials. WIN obtains various goods from corporations for donations to non-profit organizations (IRS 501k classification). A warehouse administration charge is all you pay (about 15% of the estimated retail price of the goods, some less). WIN has, electronic items, parts, instruments, cable, office supplies, computer equipment, clothing, consumer appliances, hardware and all sorts of other stuff. WIN accepts school purchase orders. You must file a tax letter before you make any purchases. Contact WIN directly by phone before you visit. WIN is located 1 block north, and 1 block west of the intersection of North Kingshighway and Natural Bridge on 5100 San Francisco Ave.

Gateway Electronics / 314-427-6116

8123 Page Blvd.

St. Louis, Missouri 63130

Surplus Electronic items, parts, ham radio gear, some new instruments, magnets, gears, motors, etc. Moderate to high pricing for similar items.

Electronic Exchange / 314-426-3056

8644 St. Charles Rock Road

St. Louis, Missouri 63114

Surplus Electronic and consumer electronic items including parts. The Exchange will handle consignment goods. Normal charge for consigned sale is 20% of selling price. Low prices on most items.

West County

A to Z used Computers 314-291-2221

2612 Metro Blvd.

Maryland Hts, Missouri 63043

South County

A to Z Used Computers 314-842-5552

13088 Tesson Ferry Road

St. Louis, Missouri 63128

A to Z used Computers is a consignment shop for use computer equipment. Apple, IBM, PC-clones, Atari, etc. Consignment fee is 20% of sale price.

### Mission Statement

Physics *Tempo* is the newsletter of and by the St. Louis Area Physics Teachers, an affiliate of the American Association of Physics Teachers (AAPT), and is intended as an organizational support group for the betterment of Physics and Physical Science teachers throughout St. Louis and Illinois.

Subscription cost is \$10.00 per academic year, September through June. Collected donations are entirely used to print and mail the newsletter. Please make checks payable to Paul L. Discher.

Physics *Tempo* is dedicated to report achievements and announce the activities of the St. Louis Area Physics Teachers. In addition, Physics *Tempo* is intended to help disseminate useful and innovative information for teaching High School Physics, Physical Science and Chemistry. Physics *Tempo* is your newsletter. Editorial contributions are encouraged and welcomed. No idea is too small. Send articles, as well as subscription requests to: Physics *Tempo*, Editor / Paul Discher, Washington University-Electrical Engineering Campus Box 1127 St. Louis, Missouri 63130-4899. You can also FAX articles or ideas to Washington University- Electrical Engineering Fax Line: 314-935-4842. Please mark your fax mail to the attention of the *Tempo* Newsletter Editor, Paul Discher.

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## Physics *Tempo*

*First Class Mail*

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*Editorial and Subscriptions information:*

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