



# Physics Tempo

**The Newsletter of the St. Louis Area Physics Teachers**  
an affiliate organization of the American Association of Physics Teachers  
July 30, 1997  
Vol. 8 No. 1

The first edition of *Physics Tempo* was published in March of 1991. Since that time the St. Louis Area Physics Teachers has continued to grow and prosper. Does anyone remember why this newsletter is called the *Physics Tempo*? Paul Discher, our first editor, chose the name because *tempo* is defined as the relative speed at which a musical composition is played, or a characteristic rate or rhythm of any activity. He thought that tempo best described our organization, because our group could be likened to an unending musical piece. "There is a characteristic but variable rhythm in the organization activities, having crescendos as well as quiet passages."

Paul thought that the name *Physics Tempo* was appropriate in 1991, and I think that it is still fitting in 1997. We are like a fine piece of unending music, and our mission to enhance physics education and report and announce the activities of the St. Louis Area Physics Teachers continues to this day.

This newsletter is yours and I encourage you as the new editor to make contributions. If you have ideas to share, achievements to report (either your's or your student's), or activities to announce please send your contributions to:

Debbie Rice  
6051 Kingsbury Ave.  
St. Louis, MO 63112

or email me at:

[drice@dtd1.slps.k12.mo.us](mailto:drice@dtd1.slps.k12.mo.us)

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## Notes From The President

Welcome to the '97-'98 school year. The officers this year are Val Michael, Bill Brinkhorst, Debbie Rice, and Dave Bross. Dave will take care of money and awards again; so, send in your dues. Debbie is in charge of the newsletter. If you have any items such as dates you need published, contact Debbie. We are also interested in articles developed by you folks. You can submit these articles to Debbie. Bill and I, along with Linda Kralina, Gary Shepek, Dave Bross, Bill McConnell, and Gene Allard, have put together a packed schedule for this year. We start at Nerinx Hall on August 23 where Michele Perrin will host a breakout workshop on Time and Motion. In this workshop we will have sessions on computer timing methods, CBL timing methods, and the good old paper tape timer. There will be

teachers primed to share lab work that has worked well for them. For example, I will be bringing a CBL lab and a ranking task (see article). Be prepared to share (please!!!!!!). This means that you should bring a lab, device, activity, or worksheet that you like on the topic of motion and timing.

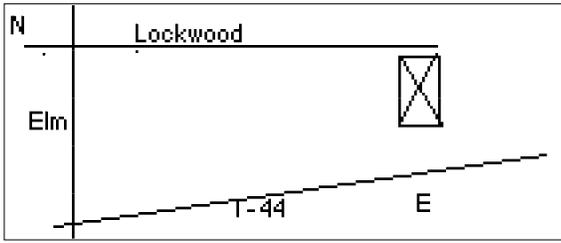
Next, on October 11, we will head out to the St. Louis Science Center. Several people have commented that it would be nice if the Science Center had a set of Physics activities like Six Flags. Well, in October you have the opportunity to join us in the creation of this material. Once there we will combine forces, divvy up work, form a review committee and produce the packet which will become available to all teachers. The only qualification for the job is a desire to participate in the work and have fun. We need major help with this one and we need a fresh look at these activities so come on down and be in on the ground floor of this pursuit!

The above meetings are firm. We are still putting together the other workshops, but let me tantalize you by sharing some of our plans. We are working on getting a holography workshop here in November. Rex and Debbie will present a new PTRA workshop in February. I am currently working on a sound and pipes workshop where we explore the theory of sound in closed and open pipes, make a set of pipes to use in class, and end the session with an investigation of sound and an organ. More on this later. In April we will head out to the St. Louis University Competition. Bill McConnell and Jerry Taylor are going to work on an Internet workshop for the teachers during this competition. Finally Gary Shepek will host a Make N Take in Belleville. We will make several devices and demonstrate how to use them. So watch your newsletter for more details. Now is the time for you to share with us your ideas and hopes for topics and workshops for later this year and the next. Please feel free to contact any officer and let us know. Well, all for now folks. Have the best of all starts of the school year!

Val

## AUGUST MEETING

When: AUGUST 23, 1997  
Topic: Timing and Motion  
Where: Nerinx Hall  
503 E.Lockwood  
Host: Michele Perrin  
Phone: 361-8814  
Time: 8:30 A. M. - 11:30 A. M.



**OCTOBER MEETING**

When: OCTOBER 11  
 Topic: Create a booklet of Physics activities for use at the St. Louis Science Center.  
 Where: St. Louis Science Center  
 Host: Linda Kralina  
 Phone: H-530-7162 or W-995-7343  
 Time: 8:30 am - ?

You should park on the south side of US 40. Parking is free provided you enter the front door on the south side and get your parking ticket validated at the front desk. **Call Linda and get your name on the list to be given to the front desk.** We will meet in Classrooms 3&4 in the Exploradome. This workshop will be heavily intensive in equipment use. It will also be very creative so we ask you to bring the materials you think are necessary. For example, if you use CBL's at your school, you might bring a microphone amplifier, an accelerometer, a motion detector, a photogate ( a good outside gate can be made using the light intensity probe and a pen laser or just the sun), and a force probe. We really want the labs to cover a wide spectrum; so, some stop watches, meter sticks and string would make appropriate lab tools. We would also like to encourage some conceptual labs. Calling all physical science teachers - can you help too?!!!!

**TENTATIVE SCHEDULE**

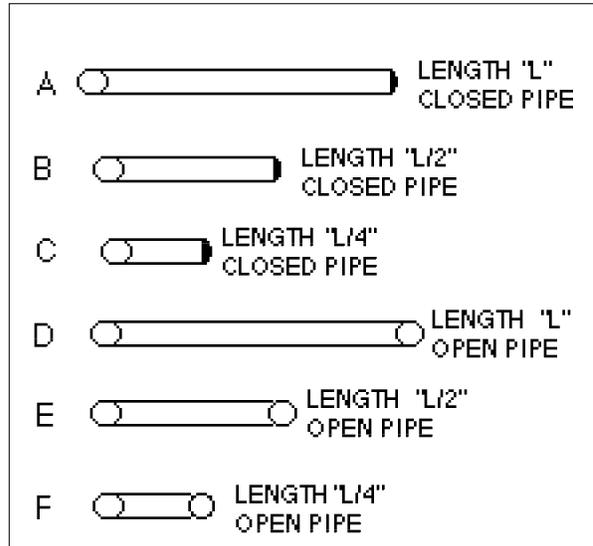
August 23	Time & Motion	Nerinx Hall
October 11	Lab Book	Science Center
October 24	ISAAPT	
Nov. 22	Holography	
February	PTRA	Clayton
March	Pipes	Cathedral??
April	Competition	St. Louis U
May	Make N Take	Belleville

**RANKING TASKS By Val Michael**

I was introduced to ranking tasks last summer at the AAPT meeting in Maryland. I took a workshop by O'kuma, Hieggelke, and Maloney and was real pleased with

what I learned. The goal of the ranking task is to give the students about six situations that are similar in context. The student must rank the situation from greatest to smallest allowing for the possibility that some ties occur. The students must not only rank the situations in order but must also give their reasoning for the ranking as well as give a ranking on their confidence on the correctness of their answers. The tasks are like a simpler thought practicum. They really force the students to commit to what they think and what their real perceptions are. When students 'blow' a task, you have their perceptions in front of you so that you can design the correction based on their thought processes. In the workshop, we were given a book that the gentlemen had created and used in their classes. But we were also encouraged to write our own. So I will share the one I wrote since it ties into the workshop on pipes we are getting ready for this spring .

Rank the following pipes from greatest to least according to their fundamental frequency.



A \_\_\_ B \_\_\_ C \_\_\_ D \_\_\_ E \_\_\_ F \_\_\_  
 Reasoning: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Confidence: Circle one to indicate your confidence in your answer.

Low High  
 0 1 2 3 4 5 6 7 8 9 10

\*\*\*\*\*

EXPECTED ANSWER

A 4 B 3 C 2 D 3 E 2 F 1

**Have you ever thought about hosting a meeting of the SLAPT at your school? Well, we need folks to both host meetings and provide refreshments. Just give one of the officers a call and volunteer!**

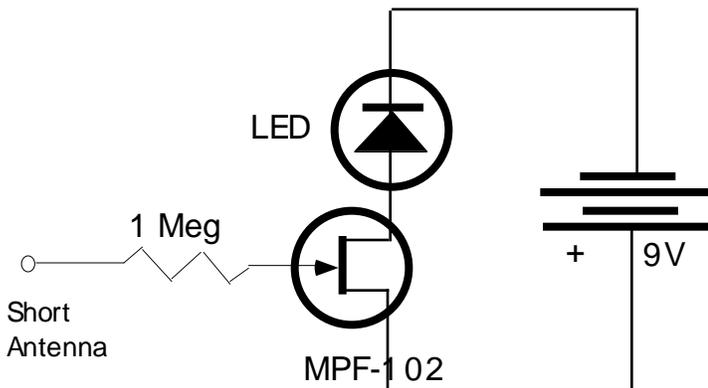
#### RIDICULOUSLY SENSITIVE CHARGE DETECTOR

(C)1987 William J. Beaty

This simple circuit can detect nearby electrified objects. It acts as an electronic electroscope. Unlike foil-leaf electroscopes which deal with electrostatic potentials in the range of many hundreds or thousands of volts, this device can detect one volt. On a low-humidity day and with a 1/2 meter antenna, it will respond strongly when someone combs their hair at a distance of five meters. If a metal object on a non-conductive support is touched to the sensor wire, it can sense the presence of "static charge" on the metal at a level as low as one volt!

(The earth-ground is not required.)

#### Simple Voltage Detector



#### PARTS LIST:

- 1 - Standard 9-volt battery
- 1 - MPF-102 N-channel Field Effect Transistor (FET)  
Radio Shack #276-2062
- 1 - Red Light Emitting Diode (LED) Radio Shack #276-041

#### MISC:

- Clip Leads (#278-1156)
- Battery connector (#270-325)
- solder, if desired
- plastic, fur, foil, comb, tape dispenser, plastic cup

This material appears on The Physics Hobbyist Webb Page.

## The Physics Teacher's Rolodex

Laser Institute of America  
12424 Research Parkway, Suite 130  
Orlando, FL 32826  
1-800-34-LASER

Arbor Scientific  
P.O. Box 2750  
Ann Arbor, MI 48106  
1-800-367-6695  
Lab apparatus and lots of neat demo equipment

Oriental Trading Co., Inc.  
P.O. Box 2308  
Omaha, NE 68103  
1-800-228-2269  
Toys

Kipp Brothers Inc.  
240242- South Meridian St.  
P.O. Box 157  
Indianapolis, IN 46206  
Toys

## Webb Sites Worth browsing

Science Hobbyist /This site has great demos and science exhibit designs.

<http://www.eskimo.com/~billb>

The Science Club/Kids' science projects:  
<http://www.halcyon.com/sciclub/kidproj1.html>

The Virtual Home of Allan Cairns  
Great links to lots of physics pages and other goodies too!  
<http://www-hpcc.astro.washington.edu/scied/mypage.html>

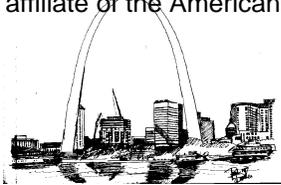
**If you have a favorite webb site or address for the Physics Teacher's Rolodex please forward it to me at**

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