Ontario Association of Physics Teachers

NEWSLETTER

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THE DEMONSTRATION CORNER

Electrostatics with Ping Pong balls

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Introduction

Many of our old favourite electrostatics demonstrations can be improved using ping pong balls painted with graphite to replace pith balls. In particular, a simple but very sensitive electrostatic torsion balance can be used to demonstrate both the attraction of opposite charges and the repulsion of like charges.

Construction

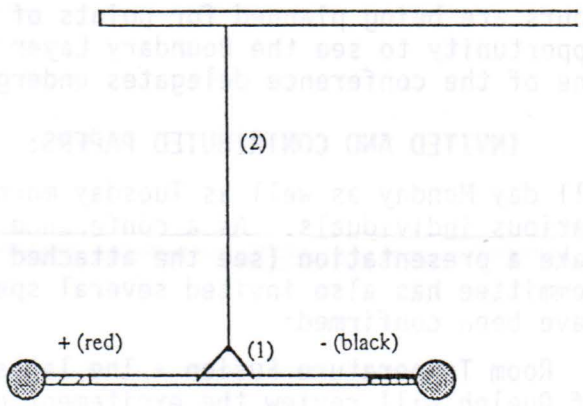
Glue a ping pong ball to each end of a plastic drinking straw with model cement. The balls are then painted with graphite. Make two holes through the straw about 5 cm apart, one on each side of the center. Then thread a short length of string (1) through the holes, tying it at each end. A second length of string (2) can then be tied to this string in such a way that it can be slid back and forth to balance the suspended straw. One end of the straw should be coloured red and the other black in order make it easier to remember the polarity of the charge on each ball.

The only part that is not readily available is the graphite. I used a graphite solution called CARBON-X manufactured by GC Electronics, which is intended to be used to repair potentiometers. Colloidal graphite aqueous suspension (cat # 31338-01, $10.49) is also available from:

CENCO (Central Scientific),
1830 Mattawa Avenue,.
Mississauga Ont. L4X 1K1.

Operation

Both charging by contact and by induction can be demonstrated. Rub a glass rod with silk, and charge the red ball positive by contact. Similarly the black ball can be charged negative using a plastic or rubber rod and some wool (I use part of an old scarf). The repulsion between the glass rod and the red ball, and the attraction between the glass rod and the black ball are easily shown. When a ball is charged by induction, it is first grounded by holding it; the charged rod is brought next to it; and the ball is released. The ball now has a charge of opposite sign to the rod, as can easily be seen from the attractive force between them.



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Submissions describing demonstrations will be gladly received by the column editor.

ELEVENTH ANNUAL
ONTARIO ASSOCIATION OF PHYSICS TEACHERS' CONFERENCE
UNIVERSITY OF WESTERN ONTARIO - LONDON -- JUNE 25, 26, 27, 1989

CONFERENCE PROGRAM

WORKSHOPS:

Two workshops are being planned for this year's conference - one at the beginning on holography and one at the end on electrostatics. *Attendance at both of these workshops is limited. If you are interested in attending either one or both, you should register promptly.*

HOLOGRAPHY WORKSHOP - SUNDAY, JUNE 25, 1989 - 2:00 p.m. - 5:00 p.m.
This workshop will be conducted by Dr. Tung Jeong from Lake Forest College in Lake Forest, Illinois. Dr. Jeong is well known in international circles for his expertise in the area of holography. If you attended his session at the STAO Conference you witnessed his ability to produce a hologram in about five minutes using a very simple technique. Dr. Jeong will teach this technique to workshop participants and share other dimensions of his vast knowledge of holography. Physics teachers who would like to incorporate holography into their classroom will find this session most worthwhile.

ELECTROSTATICS WORKSHOP - TUESDAY, JUNE 27, 1989 - 1:30 p.m. - 4:30 p.m.
This workshop will be conducted by Bill Wreitz from Cuyahoga Falls, Ohio. It is billed as a workshop on electrostatics for high school teachers by a high school teacher. Bill Wreitz will provide instruction and "hands on" experience on demonstrations and activities that can be used in teaching electrostatics to students. The techniques he uses are guaranteed to work in humid weather and utilize inexpensive materials. In view of the fact that electrostatics is now part of the grade 10 curriculum in the new science guideline this workshop is sure to benefit general science teachers as well as physics teachers.

TOURS:

Tours are being planned for points of interest on and off campus. This is your opportunity to see the Boundary Layer Wind Tunnel at the university or to watch one of the conference delegates undergo examination using ultrasound.

INVITED AND CONTRIBUTED PAPERS:

All day Monday as well as Tuesday morning are devoted to presentations by various individuals. As a conference delegate you are given the opportunity to make a presentation (see the attached pages). The conference planning committee has also invited several speakers. The following conference features have been confirmed:

* Room Temperature Fusion - The latest word! Dr. Innes MacKenzie, University of Guelph will review the excitement of recent weeks and provide us with an update.
* Motivating Students in Science - Larry Butt, Stratford, will share some of his novel ideas about getting students excited about science.
* Lasers and Holography - Dr. Tung Jeong, Lake Forest College, Illinois will show how and why lasers, light, and holography are assuming great importance in modern technology.
* General Level Physics - Bill Tallman, Saunders Secondary School - London, will provide some ideas for teaching physics to general level students.
* Science R Us - Gene Easter and Bill Wreitz both from Ohio will illustrate the use of toys in teaching physics concepts.
* Computers and Rocketry - A representative from Spacebound (Mississauga) will show how computers can be used in data collection in a model rocketry program.

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Delegates Registration Form

[PLEASE PRINT]
Name (Mr/Miss/Mrs/Ms) _____
Surname First Name

Home Address _____
No. Street City Postal Code

Business Address _____
Institution

_____
No. Street City Postal Code

Home Phone _____ Business Phone _____

Membership ($5.00): Membership includes a newsletter published four times a year and reduced rates to the annual conference. I wish to

renew my membership for 1988-89 ☐ become a member for the first time ☐

Secondary School ☐ University ☐ College ☐ Other ☐

CONFERENCE FEES

REGISTRATION: $35...(members) $40...(nonmembers)

WORKSHOPS:

Sunday afternoon (June 25) Holography (Make your own hologram)
$30...(members) $33...(nonmembers)

Tuesday afternoon (June 27) (Low cost Electrostatics)
$10...(members) $12...(nonmembers)

ACCOMODATION:

Single Room (...nights) at $24 per person per night = $.....
Double Room (...nights) at $19 per person per night = $.....
(Please specify roomate if known) .....

*MEALS:
(available on Monday and Tuesday)
Breakfast: .....(no.) at $5.25 = $.....
Lunch: .....(no.) at $8.95 = $.....
Banquet: .....(no.) at $20.00 = $.....

SUMMARY:	
Membership	.....
Registration	.....
Workshops	.....
Accomodation	.....
Meals	.....
Total	.....

Please send this form by May 31 with your money order or cheque, payable to OAPT to:

T. D. Gaily
Physics and Astronomy Building
University of Western Ontario
LONDON, Ontario
N6A 3K7
Telephone: (519) 661-2111 ext 6426

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Abstract Form

Conference attendees are encouraged to make a short presentation at the conference. Your presentation could take the form of:

* a short talk on a topic of interest to you
* a demonstration that you use in teaching physics (which can become part of the "My favourite demonstration session")
* a computer program that has become an integral part of your teaching program
* a teaching strategy that works well for you and that you would like to share with others

Participate in your physics conference!

[PLEASE PRINT]
Name (Mr/Miss/Mrs/Ms) _____
Surname First Name

Home Address _____
No. Street City Postal Code

Business Address _____
Institution

_____
No. Street City Postal Code

Home Phone _____ Business Phone _____

SESSION:

Oral Presentation ☐ (12 minutes + 3 minutes questions)

My Favourite Demonstration ☐ (5 minutes)

Title of Presentation: _____

Short Description or Abstract:

_____

_____

_____

_____

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Equipment Required:
slide projector ☐ overhead ☐ 110 VAC ☐ IBM Computer ☐
other requirements, VCR, etc.? ☐ _____

Please send this form by May 31 to:

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