

# The PROPAGATOR

March, 2004

The Monthly Newsletter of South Orange Amateur Radio Association

## What's New in Hidden Transmitter Hunting

Hidden transmitter hunting has become one of the fastest-growing special interest areas of ham radio. More and more clubs, including SOARA, are holding mobile "T-hunts" with big and small boundaries. All-on-foot



"foxhunting" is taking off too, as hams of all ages compete for medals in national and world championships. (You may also hear it referred to as "radio-orienteeing" and ARDF").

Joe Moell, K0OV, will show you how easy it can be to get involved in either mobile or on-foot hunting, or both, using simple equipment that you either already have or can build in a jiffy. He will also update you on the latest foxhunting news. Did you know that USA's national championships of ARDF will take place right here in southern California in mid-June? It's open to anyone of any age, with or without a ham license. The ARDF World Championships take place this coming September in the Czech Republic, with over a dozen hams from the USA expected to be in the competitions.

Regular ARDF demonstration and practice sessions are taking place all over southern California in anticipation of the USA and World Championships. The next one will be right here in southern Orange County. Mark your calendar and plan to be at O'Neill Regional Park on March 20 (the Saturday after the SOARA meeting). You can try it for yourself and see expert radio-orientees in action, including Newsline's Young Ham of the Year Jay Thompson, W6JAY. Equipment will be available for loan. Bring the whole family

## New Board Members Appointed

At the last regular Board of Directors meeting, March 1, 2004, two new members were appointed to fill vacancies on the SOARA Board. First, Jim Yetter, K6LIO, a longtime SOARA member was appointed to the office of Vice President. Jim brings much experience to the job, having held this position and several others with the Beach Cities Wireless Society. This opening is resulted from Malcolm Levy, KO6SY, stating some time ago that he would like to be relieved. A move to Yucaipa, CA, and extensive business travel have made it increasingly difficult for Malcolm to fulfill his responsibilities as well as he would have liked. Just a note, Malcolm will still continue to be SOARA's "Auctioneer Emeritus". Many thanks to Malcolm for a job well done over the years, and thanks to Jim for stepping up to fill the job.

The second appointment was Steve Perluss, KR6CE, to the position of treasurer. This vacancy was created when Jerry Di Schino, KN6QK, moved to the Mennifee Valley area. We greatly appreciate Jerry's faithful years of service to the club and have been glad to see him make several of the meetings, in spite of the drive he now has to make. We also thank Steve for taking on this very responsible position. □

Ray Hutchinson, AE6H, President

especially the kids and grandkids.

Details on the March 20 event, including maps, can be found at Joe's Website:

[www.homingin.com](http://www.homingin.com)

Joe Moell, K0OV, is ARRL's National ARDF Coordinator and moderator of the annual CQ National Foxhunting Weekend. He has written a book and over 180 magazine articles on direction finding, including his "Homing In" columns that ran in 73 Magazine for 15 years and can now be found in CQ VHF Magazine. □

## The Next Best Thing to Being There!

Most of us will never go on a DXpedition half way around the world. Those who attended the February general meeting came close to the experience. Art Goddard, armed with a large selection of fantastic photographs, was our guide.

From packing the radios, the adventure of the flight to The Gambia, the smallest country in Africa, to all of the challenges of setting up the stations, Art presented the trip with humor and technical details. You could feel the excitement of racking up winning points in the DX contest and enjoy all of the beauty of the country. It was most of the fun of actually being there and none of the work. A hearty thanks to Art for another enjoyable presentation. We hope you will be able to visit SOARA again before too long. □

The Membership Committee concluded its drive for new members with a drawing at the February meeting. Entered in the drawing were all SOARA members who had recruited new members in the previous quarter. The size of the prize was based on the total number of new members recruited. Ernie Senser, W6ETS, was the winner of the recruitment \$125 prize. Congratulations to Ernie, and thanks to all who participated. □

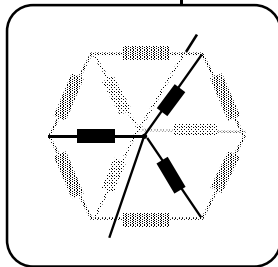
Jim, k6eee, Membership Director





## The Way I See It: Understanding Radio Theory Without Math.

Last month's Puzzler asked you to figure out the resistance of a cube whose edges were made up of one ohm resistors as measured from diagonal corners. The hint was that this could be easily solved by taking into account the symmetry of the arrangement. That does make it easy, but you have to be able to pick out the symmetry. The figure below is a diagram of the cube as viewed from one of the corners. For convenience, we have made the cube transparent so that the opposite corner can also be seen. Wires are attached to the nearest and farthest corners.

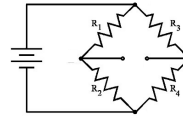


From this view you can see the symmetry. Since all of the resistors are of equal value, the symmetry in the geometry is preserved. If we assume that current enters at the near terminal (the darkest elements), then it will divide equally among the three paths available. The same is true of the current leaving the circuit at the far point. At the far end of each of the three near resistors the current will divide equally between the two paths available to it. (Remember the symmetry and that the resistors are all of equal value.)

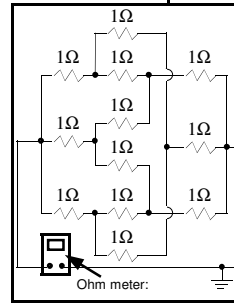
If the total current entering the cube is one ampere (a convenient value), then the 1/3 ampere through a one ohm resistor will produce a 1/3 volt drop. Half of the 1/3 ampere, or 1/6 ampere, will flow through one of the outer "ring" of resistors leading to a voltage of 1/6 ohm. The last set of resistors will have a 1/3 volt drop just as with the first three. Adding up the voltage drops we get  $1/3 + 1/6 + 1/3 = 5/6$  volt at one ampere, i.e. 5/6 ohm. (Remember, an ohm is a volt per ampere.) If we write 5/6 as a decimal, we get 0.833  $\Omega$ .

It is interesting to contemplate a circuit like this as a challenge, but does it have any practical use? This particular circuit probably not, but there is a well known circuit that does depend on symmetry. The Wheatstone Bridge consists of four resistors (see the

figure below). If the resistors R1 and R2 are in the same ratio as R3 and R4, then we say the bridge is balanced. The voltage between the two mid-points is equal to zero.



The really convenient thing about this arrangement is that we can detect the balanced condition by putting a sensitive current meter between the two mid points. No particular requirements are imposed on the meter — we only want to detect the zero current condition. Also, there is no particular requirement on the voltage used to drive the bridge. If one of the resistors in the bridge is unknown and one is variable (but calibrated) then we can make an accurate measurement of the unknown resistor without a precision voltage or current measurement!



Lets get to the question of how a problem like the cube would be solved if the resistors had random values. It is just algebra and if you went through an undergraduate program in Electrical Engineering, you would learn the details of solving such a problem. But in the real world today, even working engineers don't go through page after page of algebra. Such problems are solved on digital computers using circuit analysis programs.

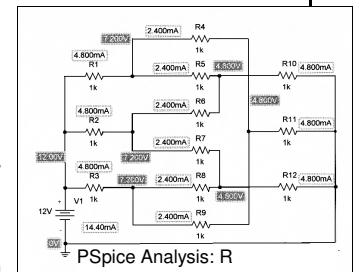
The most widely used circuit analysis program is SPICE (Simulation Program with Integrated Circuit Emphasis). This program was developed at the University of California Berkeley in the early 70s. It was released into the public domain in 1972. Two engineers at Silicon Systems in Tustin left to form the company MicroSim. They wrote PSpice, the first PC version of SPICE. This became a very successful product and MicroSim was eventually purchased by ORCAD. Now ORCAD is a part of Cadence.

When MicroSim was an independent company, they produced a "student version" of PSpice. This was a free version of SPICE available to schools for use in engineering classes. (Guess what SPICE program all those students want to use when they get out in industry.) Of course, there were limitations on the student version, but it was a very usable program; it wasn't just a "demo."

ORCAD continued to produce a student version of PSpice until the latest release. The good news is that the older version, PSpice 9.1 student version, is still available on the internet. It is free and you may download it and use it. A little study of the manual, and you are set to go. You start by "drawing" the circuit and labeling the component values.

I have shown the circuits drawn and analyzed by two versions of SPICE. To the left is the result from MultiSim. It is handy in that it has virtual instruments such as signal generators, oscilloscopes, and the multimeter shown in the figure. Below is a similar result from PSpice. It has the useful feature that you can request the voltage at each node and the current in each branch. Note that I had to include a battery (a voltage source) in order to have a current flow.

If you want to try using SPICE, it is easy to obtain the software, and there are many resources to help you on the net. The student version is available and worth playing with. Other club members have used it and so help with questions should be readily available. Have fun!



PSpice Student Version Release 9.1 can be found at:

<http://hw.ufsc.br/pub/PSpice-Student/>

You will find a PowerPoint introduction at: [www.ece.mtu.edu/ee/faculty/gearcher/EEIabs/EE2303/PSpice/Intro\\_to\\_P-Spice.ppt](http://www.ece.mtu.edu/ee/faculty/gearcher/EEIabs/EE2303/PSpice/Intro_to_P-Spice.ppt)

SIMatrix, a SPICE version from the UK is available free at:

[www.catena.uk.com/Pages/download.html](http://www.catena.uk.com/Pages/download.html)  
I have not tried this program, but have heard that it is easy to use.

These programs are quite long and may not be practical to download with a dial-up connection. I can put both these programs on a CD-ROM for those who want them. Send an e-mail to me at [w8rrv@soara.org](mailto:w8rrv@soara.org).

Year 2004	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
<b>General Meeting</b> 7:00 PM	26	23	15	19	17	21	19	16	20	18	15	No meeting
<b>Program</b>	WB6NOA <i>Antennas</i>	W6XD <i>Gambia</i>	K0OV <i>Foxhunt</i>	WA6OPS <i>HDSCS</i>	Auction						Auction	
<b>VEC Testing</b> 5:30 PM	26	23	15	19	17	21	19	16	20	18	15	—
<b>Propagator Deadline</b>	18	15	7	11	9	13, 26	11	8	12	10	7	
<b>Board Meeting</b>	2/2	3/1	22	26	24	28	26	23	27	25	22	
<b>ARRL Field Day</b>						26/27						
<b>SOARA picnic</b>								2				
<b>SOARA Holiday Party</b>												7

## Please Help SOARA Weigh In

Ray Hutchinson, AE6H, President

Two significant issues are before the FCC. Both will definitely greatly impact the future of Amateur Radio. These issues are important enough that the SOARA Board of Directors wants to weigh in on them to the FCC and to our elected representatives in Congress. To be sure, the stated position the club takes on these issues is consistent with the feelings of the majority of our members, and we are asking for your input.

While there isn't enough space here in the Propagator to completely explain all sides of these issues, there is much available in QST, AR Newsline, on the ARRL website, and numerous other publications that if you haven't already, you should easily be able to learn the facts and make an informed decision.

The first is the proposed restructuring of the Licensing Procedures, in view of the recent ITU decision to remove Morse code proficiency as a prerequisite to HF privileges. The ARRL, as well as several other groups, have submitted proposals to the FCC. Most, but not all of these proposals advocate opening some or all of the current HF spectrum to no code licensees. We believe the ARRL proposal will be the one the FCC takes more seriously, so tell us what you think.

The second proposal is, in my opinion, the more onerous of the two. This is a Notice of proposed Rule Making to allow and enable the Electric Grid owner-operators within the

U.S. to start providing broadband internet services over the power lines, (BOPL) or (BPL) as this proposal is known. Tests recently conducted in other nations have all resulted in very serious interference to the HF radio bands because the technology involves adding HF carrier signals to the power lines to transmit the data long distances over these lines. Any ham knows the result of having a very long and good antenna on the HF bands! The tests conducted in other countries have all been shut down early because of the severe interference they radiated, but the FCC remains undaunted with one commissioner labeling BOPL "Broadband Nirvana".

Please take a few minutes to familiarize yourself with these two important issues. Then let a board member know, either in person, at the next meeting, or by e-mailing us at "board@soara.org". □



## For Sale

Kenwood TM-631A dual band mobile, with Comet sb214W dual band antenna, small trunk lip mount, antenna cable assembly. asking \$450.

Kenwood TH-315A 220 mtr hand held, battery, trickle charger and manual in box. asking \$200

Icom IC-03AT 220 mtr HT, 2 batteries (1 is questionable), trickle charger, mike (clip on back of mike broken), copy of manual. Asking \$125.

Buyer pays shipping. Reason for selling is there is very little 220 activity here in Northern Ca. All gear is in very good to good condition.

Charlie Lukes, [WA6VIU@juno.com](mailto:WA6VIU@juno.com)  
30 Cafaro Circle  
Sacramento, Ca 95834

Charlie usually checks into the Sunday morning 40 meter SOARA net and is available to answer questions on this equipment.

Cushcraft R7 HF Vertical Antenna  
Covers 10, 12, 15, 17, 20, 30, and 40 meter amateur bands. This is an off-center fed half wave length antenna rated at 1800 Watts.  
Asking \$150

Dale Griffith, [w8rrv@soara.org](mailto:w8rrv@soara.org) □

# The PROPAGATOR

South Orange Amateur Radio Association  
P.O. Box 2545  
Mission Viejo, CA 92690



**Meeting: March 15, 2004 at 7:00 PM**  
**Joe Moell, K0OV**

☛ **SOARA** meets at the Mission Viejo Community Center, 26932 Veterans Way, Mission Viejo, the third Monday of every month at 7:00 PM. Changes to the meeting time or place are announced in this newsletter and on the 147.645 two-meter repeater.

☛ **License Exams:** Amateur License Exams are given prior to SOARA meetings. Exams are from 5:00 to 7:00 PM. Walk-in applicants are welcome. For information call Paul Levey, NZ1M, at 949-481-5454.

☛ **Contacting SOARA:** Questions about SOARA? Send e-mail to: [info@soara.org](mailto:info@soara.org), or leave a message at 949-249-1373.

☛ **Web Site:** SOARA maintains a web site with current club information. The URL is: <http://www.soara.org>.

☛ **Repeaters:** The SOARA 2-meter, 70 cm and 224.100 MHz repeaters are open to all licensed hams.

**SOARA 2m** — 147.645 – (110.9) Laguna Beach

**SOARA 2m** — 146.025 + (110.9) San Clemente

**SOARA 2m** — 145.240 – (110.9) Trabuco

**SOARA 220** — 224.100 – (110.9) Laguna Beach

**SOARA 440** — 445.660 – (110.9) Laguna Beach

The SOARA 220 and HROC 440 repeaters are shared by members of both clubs. Each machine is subject to the operating rules of its respective club. Call KG6GI for details.

**SOARA 220** — 224.640 – (123.0) Santiago Pk. (C)

**HROC 440** — 447.180 – (131.8) Santiago Pk. (C)

☛ **Nets:** SOARA 2 m repeater open net is held Tuesday 8:00 PM  
40 meter HF net (7.268 MHz +/- for QRM), Sunday 7:30 AM.

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