

April Meeting

Date: Friday, April 23, 2004.

Time: Socializing at 7 pm, Meeting at 7:30

Place: Covington School, 205 Covington Road, Los Altos

Speaker: To be announced.

Topic: To be announced. Check at the FARS website later for more information [FARS Meetings](#). There may also be an announcement on the N6NFI repeater, 145.230(-), 100 Hz PL. Be sure to bring your questions to submit to Dr. Know-It-All!

March Meeting Report

At the March meeting, Bob Vallio – W6RRG, the Pacific Division Director of the Amateur Radio Relay League talked about BPL (Broadband over Power Lines) and why it's a concern to amateur radio. BPL transmits high speed Internet data over electric power lines.



Bob Vallio, W6RRG



Howard Takaoka, KG6GRO

Howard Takaoka, KG6GRO, carried away the Garmin GPS raffle prize. The "Wish you were here" number for Michael Horner, K6MLH, was chosen. Unfortunately, Michael was not present.

Upcoming Events

Apr 23 7:00 PM Club meeting, Covington School
 May 4 7:30 PM Board Meeting, Los Altos Town Crier
 May 8 Flea Market, see www.asvaro.com
 May 22-23 [ECOMMWEST / Reno HAM Swap](#)
 May 28 7:00 PM Club meeting, Covington School
 Thursdays 8:00 PM, FARS net, 145.230(-), 100 Hz PL
 See more events, [FARS Calendar](#)
[<http://www.fars.k6va.org/events/calendar.shtml>](http://www.fars.k6va.org/events/calendar.shtml)

Copies of the FARS roster will be available at the next club meeting for those who desire one.

Presidents Column

Field Day is fast approaching and we are already preparing for this important event. Our Field Day captain this year is Steve Stearns, K6OIK. We are planning on three stations again this year with a HF SSB station to work 40m, 20m, 15m, and 10m; a Digital/CW station operating 40m, 20m, 15m, and 10m; and a VHF/Satellite station operating 15m (satellite), 6m, 2m, 70cm. Our station captains are Paul Zander, AA6PZ (HF SSB), Phil Hawkins, KA6MZE (VHF/Satellite), and myself Mikel Lechner, KN6QI (CW/Digital). Contact our Field Day captains if you want to participate or have ideas about Field Day.

There will be signup sheets for the setup and takedown crews at our April meeting as well as operating time slots. This is your chance to get a choice timeslot for operating any of the stations. Note there will be Extra class licensed radio operators on site for Field Day, so anyone who's interested can operate on the air at any of the stations. FCC rules permit anyone to operate one of the stations as long as a properly licensed control operator is present to insure proper operation of the station. Members are encouraged to participate, since there is much to do and much you can do to help.

Training Library. This month FARS is starting a lending library of training materials. Michael Zensius, KG6GUE, our Training Officer is handling materials for the library. We are starting with a supply of books and training materials for getting or upgrading your amateur radio license. Then we plan to add materials to the library, depending on the interest. Only members will be allowed to check out materials and are responsible for returning them back to the Training Officer in a reasonable period of time. Contact Michael, KG6GUE, if you are interested in checking out material.

Electronics Flea Market. The next Electronics Flea Market in Sunnyvale is scheduled for May 8 and is hosted by the [South Peninsula Amateur Radio Klub](#). Visit the ASVARO web site <http://www.asvaro.org> for details and directions.

- de Mikel, KN6QI

Secretary's Report

The FARS board held its monthly meeting on the evening of April 6, 2004. It was called to order at 7:40 PM local time by the president, Mikel, KN6QI. Other members present were Frank, K6FCW, Steve, K6OIK, Phil, KA6MZE, Dick, N6ATD, Mike, KG6GUE, Robert, KE6TFU, and Martin, KD6WJW.

There was a discussion of the problems associated with distribution of the club's roster in electronic form. It was decided that only hard copies would be available for distribution to the general membership.

A library of training materials for use by club members is being started by the training officer, Mike, KG6GUE. He plans to bring the first items to the next club meeting.

There was a discussion of Field Day issues and considerable time was spent on club's budget for this year.

The discussion about acquiring a PC projector for use during meetings continued. After reviewing the budget it was determined that such an acquisition was both needed and affordable. The board approved the purchase of a PC projector of up to \$1,200. Steve Stearns was authorized to research, locate, and acquire a PC projector within the approved budget. The vote was 6 to 0 for approval.

The meeting was adjourned at 9:30pm.

- Martin, KD6WJW

CLUB INFORMATION

President: Mikel Lechner, KN6QI
Vice President: Steve Stearns, K6OIK
Treasurer: Frank Weiss, K6FCW
Secretary: Martin Liberman, KD6WJW
Radio Officer: Phil Hawkins, KA6MZE
Training Officer: Mike Zensius, KG6GUE
Relay Editor: Mark Hardy KG6GRR

FARS Board: Dick Baldwinson N6ATD, Herb Davidson KF6BKL, David Cooper KE6PFF, Howard Takaoka KG6GRO, Robert Flemate, KE6TFU.

Station Trustee: Stan Kuhl, K6MA
FARS Web Page: <http://www.fars.k6ya.org>
Download Relay: <http://www.fars.k6ya.org/relay>

Club members and non-members are encouraged to subscribe to the FARS Announcement list by browsing www.fars.k6ya.org/mail, clicking on Subscribe/Unsubscribe and following the instructions under "Subscribing to fars-announce."

You may also submit an announcement to the FARS Announcement at fars-announce@svpal.org. The list is moderated and messages will be posted as approved by the list moderator.

The FARS board of directors may be reached at fars-board@svpal.org

Club meetings are held at 7 PM on the fourth Friday of each month except January (Winter Banquet); and sometimes there are changes for June (for field day) and Nov. & Dec (for holidays).

Annual club membership is \$20. Club badges are \$6. Visitors are always welcome! Directions in this newsletter. Talk-in: N6NFI (145.23-, 100 Hz) or W6ASH repeater (145.27-, 100 Hz).

The FARS *Relay* is the official monthly newsletter of the Foothills Amateur Radio Society. Contributions to the newsletter from members, family, and guests are earnestly solicited! Contributions subject to editing and/or compression. ASCII files via Internet or diskettes preferred; but all readable forms welcome.

Here is how to reach the editor:

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Mail: 2998 Jerald Avenue
Santa Clara, CA 95051
Voice: 408-243-0701 (Before 9 PM, preferred)
Fax: 408-243-0701
Email: kg6grr@arrl.net, At FARS meetings.



MEETING FRIDAY 4/23/04

Covington School in Lost Altos

Map and directions at <http://www.fars.k6ya.org/directions-covington.shtml>.

Dr. Know-It-All – April 2004

Question: Electromagnetic waves are supposed to be "transverse," i.e. the electric and magnetic fields are at right angles to the direction in which the wave is traveling, but I recently heard about "O(3) electrodynamics" and the folks who claim the vector form of electromagnetic theory left out certain details that would allow for the possibility of longitudinal waves. I've also heard that if photons do have a finite mass, this would also allow for longitudinal waves. Are longitudinal electromagnetic waves possible? From Michael Okun, N6EMR.

Answer: Without venturing into the realm of quanta, such as photons with mass, I can say with confidence that longitudinal electromagnetic waves not only do occur but are exploited routinely. In fact, the conditions for transverse electromagnetic (TEM) waves to exist in space and on transmission lines are rather narrow. In space, the medium must be a dielectric that is constant, homogeneous, isotropic, and linear everywhere. In transmission lines, additionally, the conductors must be lossless. If transmission line conductors have loss, as copper does, then the electric field has a longitudinal component near the surface of the metal. Such waves are properly called quasi-TEM (qTEM) because they aren't true TEM waves. Transmission lines that have copper losses can't support TEM waves. The Poynting vector, which indicates the direction of power flow, has a transverse component because the wave delivers power to the copper. The wave loses power steadily as it travels along the line, and the copper gets warmer.

Another case where waves have longitudinal components is in higher order modes in waveguides. TE modes have longitudinal magnetic field component, and TM modes have longitudinal electric field component.

Still another case of waves having longitudinal components is the near field of an antenna. However these field components fall off faster than $1/r$ and so aren't thought of as "radiation" because they don't appear in the far field. But it's nonetheless interesting that antennas generally have longitudinal (radial) field components in their near fields.

An electromagnetic wave is transverse to the direction of its Poynting vector, which is the direction of power flow. In the case of waves in the vacuum of free space, this direction is the same as the direction in which the wave is traveling. However, in the case of waves traveling in anisotropic media, such as crystals, ferrites, and plasmas (the ionosphere), the wave isn't necessarily transverse to its direction of travel. In other words, the directions of wave travel and power flow are different! Even more bizarre behavior occurs when waves travel in negative index or double negative media. For fun, try Googling on "negative index materials," "double negative materials," or "left-handed materials." You'll discover that waves can carry power in directions that are nearly opposite to the direction of wave travel. Some physicists claim that such waves are traveling backward in time!

That's it for this month. You can send your comments or questions about any aspect of Amateur Radio to Dr. Know-It-All. Comments and questions in writing are accepted at the monthly meetings of the Foothills Amateur Radio Society, by email to FARS officers and board members, or through the FARS web site at <http://www.fars.k6ya.org>.