

Winter Banquet

Date: Friday, January 22, 2009

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

Place: Covington School, 205 Covington Road, Los Altos

Speaker: Thomas H. Lee, Professor, Stanford Microwave Integrated Circuits Laboratory

Topic: From Arc Alley to Silicon Valley



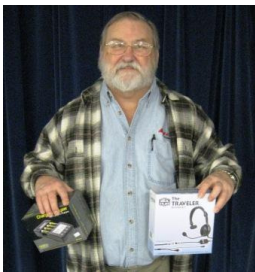
Summary: Professor Lee of the Stanford Microwave Integrated Circuits Laboratory will speak on the early history of radio and its relationship to the development of Silicon Valley. His talk is based in part on his book chapter entitled "A Nonlinear History of Radio."

Prizes: We plan for approximately \$800 in valuable prizes at the Winter Banquet!

Sign-ups for the Banquet must be received no later than Monday, January 18th. To meet this deadline, sign-ups by regular mail should be posted no later than January 14th. Sign-ups may be done online by Paypal or credit card through noon on Jan. 18th.

December Meeting Report

Howard Califf, W6HOC, talked about New and Exciting Goodies for the Ham Shack. He showed us everything from radios to bongo ties. There were desktop holders for HTs, various antenna mounts, connectors and adapters, handbooks and books, PSK31 gear, various meters, battery charger/analyzer, speakers and headphones, power supplies, chokes, a keyer, various powerpoles, a coax switch, a pocket Morse code reader and more.



Howard Califf, W6HOC
December Speaker



Carrol, Bill and Bernard
Raffle Winners

The first prize, a Yaesu FT-1900 2-meter 55-watt mobile transceiver, was won by Carrol Kerns, KG6YPH. 2nd prize, 37 feet of Belden 9913F7 High-Flex 50 ohm coax, was taken home by Bernard Van Haecke, KI6TSF. Bill Parsons, AF6AE, took home the third prize, a 2009-2010 Repeater Directory. The Wish You Were Here number for Bob Cortez, KF6CXC, was chosen. Unfortunately, Bob was not present to claim the prize.

President's Corner



Winter Banquet 2010. The FARS/PAARA Winter Banquet 2010 is scheduled for **January 22nd**. Our speaker is Professor Thomas H. Lee of the Stanford Microwave Integrated Circuits Laboratory. His talk From Arc Alley to Silicon Valley, covers some of

the history of technology and radio in the Silicon Valley. His presentation is taken from his book chapter entitled A Nonlinear History of Radio. All the details and sign-up forms are available at <http://www.fars.k6ya.org/events/banquet>. We've teamed up with the Palo Alto Amateur Radio Association once again to make this event extra special. It's a fabulous dinner at a great venue with all your amateur radio friends. It includes desert and a no host bar. Of course, don't forget the raffle prizes. We've worked hard to hold the line on prices, so do your part and sign up now!

Membership Meeting. There is no regular membership meeting in January. Instead we have the FARS/PAARA Winter Banquet. The next regular meeting is Friday, February 26th at 7pm). The program is to be announced. For our March 26th meeting, Gary Gordon, K6KV describes "A Field Day Triplexer" that permits three stations to operate simultaneously on different bands sharing a single antenna.

Am-Tech Day. The first Am-Tech Day of 2010 is scheduled for January 30th. The scheduled program at 1:30 PM is "**Robust Microwave Communications System Design for Remote Locations**" with Edward Johnson, WB6CFW. As always there is food, radios to operate, and hams to meet. Check the web site (www.fars.k6ya.org/amtechday/) or the email list (www.fars.k6ya.org/mail/) for the date and program information.

Electronics Flea Market. The Electronics Flea Market is closed for the winter months. The next flea market is scheduled for March 2010.

Email Notices. Subscribe to the FARS Announcement list (www.fars.k6ya.org/mail/) to receive reminders of FARS activities and other news.

de Mikel, KN6QI

Upcoming Events

- Jan 22 6:00 pm, [Winter Banquet](#), Michael's at Shoreline
- Feb 4 7:30 pm, Board Mtg at the Los Altos Town Crier
- Feb 20 8 am to 9 pm, [Am-Tech Day](#), SLAC NAL
- Feb 26 7:00 pm, [Club meeting](#), Covington School
- Mar 4 7:30 PM, Board Mtg at the Los Altos Town Crier
- Mar 13 [Electronics Flea Market](#) hosted by
- Mar 20 8 am to 9 pm, [Am-Tech Day](#), SLAC NAL
- Mar 26 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.k6ya.org/events/calendar) <<http://www.fars.k6ya.org/events/calendar>>

CLUB INFORMATION

President: Mikel Lechner, KN6QI
Vice President: Steve Stearns, K6OIK
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Secretary:
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Training Officer: Kevin Weiler, K6XXX
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K6YA Trustee: Phil Hawkins, KA6MZE
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 submit announcements to the FARS Announcement at fars-announce@svpal.org. The list is moderated and messages will be posted as approved by the list moderator.
Contact the FARS board of directors 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 \$9. Visitors are always welcome! Directions in this newsletter. Talk-in: N6NFI (145.23-, 100 Hz) or W6ASH repeater (145.27-, 100 Hz).
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 are subject to editing and/or compression. All readable forms welcome.
Here is how to reach the editor:
Mark Hardy, K6MDH
Mail: P.O. Box 2248
Santa Clara, CA 95055
Voice: 408-243-0701 (Before 9 PM, preferred)
Email: mark.af6do@gmail.com, At FARS meetings.

The A to Z of Batteries A Cheat Sheet of Common Terms

Having trouble remembering what's what when it comes to batteries? Download this free cheat sheet now for brief explanations of all of the most common technical terms, from accumulators to zinc chloride batteries.

http://www1.electusdistribution.com.au/images_uploaded/battglos.pdf

Battery Information

Need a comprehensive primer on anything and everything battery-related? Battery University has a series of in-depth articles that covers battery chemistries, the best battery choices and ways to make your battery last longer. <http://www.batteryuniversity.com/index.htm>

FARS/PAARA Winter Banquet 2010

The FARS / PAARA annual banquet takes place on Friday evening, January 22, 2009. The Foothills Amateur Radio Society and the Palo Alto Amateur Radio Association (www.paara.org) team up to put on this special ham radio event. The banquet will be held at Michael's at Shoreline in Shoreline Park in Mountain View. Reservations are required.



Topic: From Arc Alley to Silicon Valley

Speaker: Thomas H. Lee, Professor, Stanford Microwave Integrated Circuits Laboratory

Speaker Information: Professor Lee of the Stanford Microwave Integrated Circuits Laboratory will speak on the early history of radio, and its relationship to the development of Silicon Valley. His talk, is based in part on

his book chapter entitled "A Nonlinear History of Radio."

Professor Lee has pictures of a Palo Alto home (at Channing Ave. and Emerson St.) that was the birthplace, in 1909, of the first high-tech company in what would later become Silicon Valley.

Professor Lee will provide an overview of the contributions to radio technology by pioneers such as Maxwell, Hertz, Marconi and many others.

We plan for approximately \$800 in valuable prizes!

Banquet Sign-up

You may print the form in this Relay or from the website at <http://www.fars.k6ya.org/events/banqsignup>. Fill it out and mail along with your check for payment. Paper sign-ups should be mailed by January 14th so that they will be received by the January 18th deadline. Last minute sign-ups, after January 14th, should use the on-line form.

You may register online with a PayPal account or a credit card at <http://www.fars.k6ya.org/cgi-bin/bq-signup> to make your payment. To register, you need to provide at least your name and email address. On-line sign-ups will be accepted until noon on Monday, January 18th.

See the FARS website at <http://www.fars.k6ya.org/events/banquet> for more information and for refund policies.

Schedule: 6:00pm - Open Bar (No Host)
7:00pm - Dinner
8:00pm - Presentation
9:00pm - Announcements, Awards, Raffle

Menu

Choice	Menu Description	Price
Beef	Roast Prime Rib of Beef	\$ 42
Chicken	Breast of Chicken, Florentine	\$ 31
Fish	Broiled Salmon, Lemon Beurre Blanc	\$ 37
Veg	Vegetarian Brochette w/ Wild Rice	\$ 27

We have a NO HOST BAR for soft drinks, wine, beer, etc.

[The banquet is open to anyone who wants to attend. Note that unlike our regular meetings, attendance at the banquet is by reservation only and prepayment of fees is required. Our arrangement with the restaurant does not allow us to accept walk-ins.]

N0AX Transistor Questions

Credit to Ward Silver, N0AX, of ARRL.

1) What parameter is used to specify the current gain of a bipolar transistor in a common emitter configuration?

- a. Alpha (α)
- b. Beta (β)
- c. Mu (μ)
- d. Rho (ρ)

2) Adding impurities to a pure semiconductor, creating p-type or n-type material is called:

- a. Peaking
- b. Passivating
- c. Stagger tuning
- d. Doping

3) In the acronym "MOSFET," "MOS" stands for

- a. Metal Oxide Semiconductor
- b. Metal On Sapphire
- c. Metal Over Silicon
- d. Metallic Organic Source

4) In a transistor fails from excessive voltage, which is the most likely cause of failure?

- a. Thermal runaway
- b. Miller effect
- c. Avalanche breakdown
- d. Parasitic oscillation

5) What is the term that describes FET gate bias reaching the point at which current flow from drain to source stops?

- a. Pinch-off
- b. Punch-through
- c. Charge starvation
- d. Saturation

6) True or False: To cause current to flow in an NPN transistor, electrons must flow into the base terminal.

7) True or False: In an FET, increasing device temperature causes drain current to decrease.

8) True or False: Bipolar transistors for RF power amplifiers require impedance matching to drive a 50 Ω load because their collector impedance is very low.

9) Match the bipolar and field-effect terminals that have similar functions:

- a) Emitter d) Drain
- b) Base e) Source
- c) Collector f) Gate

10) Which parameter specifies the maximum voltage that a bipolar transistor can withstand from the collector to emitter with the base terminal open?

- a. BV_{CEO}
- b. BV_{EBO}
- c. P_{DISS}
- d. I_{DSS}

11) Which instrument is used to determine the linear region for a transistor?

- a. Network analyzer
- b. Octopus
- c. Curve tracer
- d. Beta tester

12) In a bipolar transistor, the charge carriers are

- a. electrons and positrons.
- b. electrons and holes.
- c. monopoles.
- d. torts and writs.

Bonus: Which type of transistor was invented first -- bipolar or field-effect?

Answers to questions are on the next page.
(Sent to the Relay by Steve Stearns, K6OIK)

Superheterodyne Receivers 101: Free Primer

Need some help figuring out the basics of superheterodyne receivers? Download this free tutorial now for a primer on designing superhet receivers, including common problems to watch out for and how to resolve them.

http://www.zen118213.zen.co.uk/Systems_And_Devices_Files/SuperHet.pdf

AC Power Guide

Get a guide to AC power in this free online guide! The topics covered include:

- Reactance & Impedance - Inductive
- Reactance & Impedance - Capacitive
- Resonance
- Mixed-Frequency AC Signals
- Transformers
- Polyphase AC Circuits
- AC Metering Circuits
- AC Motors

http://www.allaboutcircuits.com/vol_2/index.html

Answers to Transistor Questions

1. b
2. d -- The "dopants" are elements whose atoms have one more or one less electron than those of the semiconductor in their outer shell.
3. a -- The gate of the MOSFET is a deposit of metal on a layer of insulating silicon oxide over the underlying source-drain channel.
4. c -- The avalanche is of electrons that are driven across the transistor's internal potential barriers, causing current to flow unchecked through the transistor.
5. a -- Viewed in cross-section through the source-drain channel, gate bias gradually reduces the area through which current flows, eventually reducing it to zero, as in pinching off water flow through a hose.
6. False -- Conventional current (the flow of positive charge) flows into the NPN base, but electronic current (the flow of electrons) must flow out of the base.
7. True -- Because channel resistance increases with temperature, reducing current, this helps prevent the thermal runaway effect present in bipolar transistors.
8. True -- Sometimes the output impedance of a large transistor can be a fraction of an ohm!
9. a-e, b-f, c-d
10. a -- "BV" stands for *breakdown voltage*, "CE" stands for *collector-to-emitter* and "O" stands for *remaining terminal open*, which is the base.
11. c -- Curve tracers present a graph of many combinations of current and voltage through a device.
12. b -- See also the answer to questions 2 and 6.

Bonus: Field-effect devices based on copper-oxide were first described in the 1920s and 1930s, while the bipolar device was invented in 1948. The bipolar device proved practical to fabricate, though, and became widely used.

Silent Key

With deepest regrets and condolences to family and friends, FARS notes the passing of Red (Edward) Lee Gentry, KG6KKP. A notice was published in the Mercury News on 3 January and can be seen online at the following website. There is also an online guest book that can be signed. A Memorial service will be held January 16 at 3 pm, Redwood Church, 901 Madison Ave, Redwood City, CA 94061

<http://www.legacy.com/obituaries/mercurynews/obituary.aspx?n=red-lee-gentry-kgkcp-edward&pid=138107647>

2009 Banquet Raffle Winners



Above is a picture of some of the Raffle winners from the 2009 FARS/PAARA Winter Banquet at Michael's at Shoreline. The banquet last year was very enjoyable, with a wonderful speaker, terrific friends, and a great raffle. The 2010 banquet promises to be an enjoyable evening for all. Please use the sign up sheet below or sign up online and join us for this event. <http://www.fars.k6ya.org/cgi-bin/bq-signup>

FARS Website

Members and registered users may login to the web site at <http://www.fars.k6ya.org/cgi-bin/login> to update their profile, sign up for (or renew) membership, or create/modify a public biography. Members may also search the club roster to contact other members. Not a member, then register online at <http://www.fars.k6ya.org/cgi-bin/register>, or sign-up at one of our meetings.

FARS 2010 MEMBERSHIP RENEWAL FORM

Date: _____

PLEASE fill out the form for all new/renewal memberships.

Name(s) & Callsign(s) & Class (E-A-G-T-N-None): _____

Mailing Address: _____

Home phone: _____ Work phone: _____

Fax (H or W?) _____ Packet BBS Address: _____

E-mail: _____ ARRL Exp Date(s): _____

Preferred modes: (e.g. HF-SSB/VHF/QRP/Other): _____

I'm willing to Elmer new hams with: _____

Special topics of interest / suggestions for club meeting speakers:

Dues: \$20 per year. Add \$9 for badge if desired. **Please note:** Membership runs from January 1 to December 31.

FARS/PAARA 2010 WINTER BANQUET SIGNUP (January 22, 2010 at Michael's at Shoreline)

Deadline for signups for the banquet is January 18, 2008. Please mail no later than January 14th.

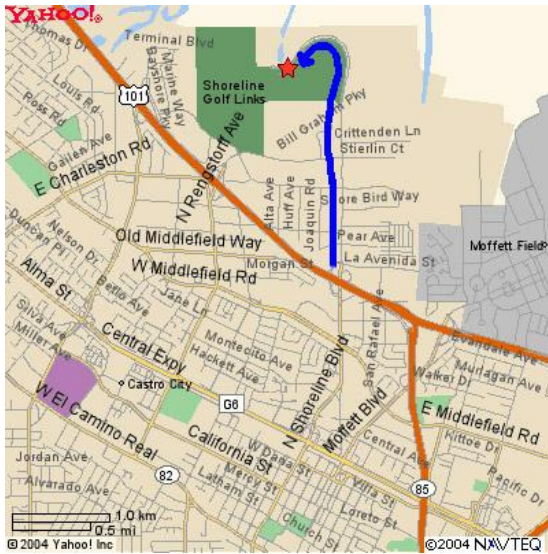
<u>Name & Call</u>	<u>Meal Choice</u>	<u>Amount</u>
You _____	_____	_____
Email _____		
Guest1 _____	_____	_____
Guest2 _____	_____	_____
Guest3 _____	_____	_____
Guest4 _____	_____	_____
	Membership Dues	_____
	Total	_____

This form may be used for membership renewal, banquet signup or both.

Send your check payable to FARS, to:

David A. Cooper
PMB 41
270 Redwood Shores Parkway
Redwood City, CA 94065-1173

Choice	Menu Description	Price
Beef	Roast Prime Rib of Beef	\$ 42
Chicken	Breast of Chicken, Florentine	\$ 31
Fish	Broiled Salmon, Lemon Beurre Blanc	\$ 37
Veg	Vegetarian Brochette w/ Wild Rice	\$ 27



Directions

The easiest way to find Michael's is to take highway 101 to Mountain View. Exit onto Shoreline Blvd. (aka Stierlin Road) north (towards the bay). Follow for about 1 mile until you reach the gate for Shoreline Park. Alternatively, you can exit onto Amphitheatre Parkway from 101 and follow it north/east (towards the bay) to Shoreline Blvd. Turn left (north) onto Shoreline and follow until you reach the gate for Shoreline Park.

Enter the park through the gate, which will be open. Follow the road (~3/4 mi.) in a wide left curve around the park. Look for a sign pointing left for Michael's. Take a left turn and enter the Parking lot. The building next to the parking lot is Michael's.

TALK-IN via the [N6NEI](#) (145.230-; 100Hz PL) repeater or the [W6ASH](#) 145.27- (100Hz PL) repeater.

FARS/PAARA Winter Banquet FRIDAY 22 January 2009 Michael's at Shoreline