

SCCARA-GRAM



Santa Clara County Amateur Radio Association

Volume 34, Number 2

February 2018



President's Prose

Mark your calendars for our February meeting. Our speaker will be Ed Fong, inventor of the DBJ-1 and DBJ-2 antennas that were featured in the February 2003 and March 2007 *QST*. His most recent antenna, the TBJ-1 triband base antenna, was published in the March 2017 *QST*. The DBJ-1 is a highly effective dual band VHF/UHF base station antenna and the DBJ-2 is the portable roll up version. The DBJ-2 won the QST Plaque of the Month Award. Both antennas are featured in the ARRL *VHF Antenna Handbook* and the ARRL *Antenna Classic Handbook*. There are over 18,000 of these antennas in use today, about half by hams, half by government and commercial agencies.

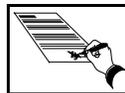
Ed will give a history on how these antennas were developed and the theory on how and why they work so well. There is no "black magic" to antennas, he will explain in a non-mathematical manner. A limited number of antennas will be available for purchase.

Ed Fong was first licensed in 1968 as WN6IQN. He later upgraded to Extra Class with his present call WB6IQN. He obtained the BSEE and MSEE degrees from UC Berkeley and his Ph.D from the University of San Francisco. A Senior Member of IEEE, he has 12 patents and over 40 published papers and books in the area of communications and integrated circuit design. He is currently employed by UC Santa Cruz (previously with Berkeley from 1997-2010) as an instructor teaching graduate classes in RF design and high speed interface. In his 35 year career, he has done work for Stanford University, National Semiconductor, Advanced Micro Devices, and numerous startup companies in the Silicon Valley.



Nick Cassarino N6VOA from county-comm has offered to bring a raffle prize (or two?) to the meeting. Nick will pass out (no charge) raffle tickets to attendees and we will all see who has the best karma when the winning ticket is drawn after Ed's presentation. Good Luck!!

73, Gregg KF6FNA, kf6fna@comcast.net

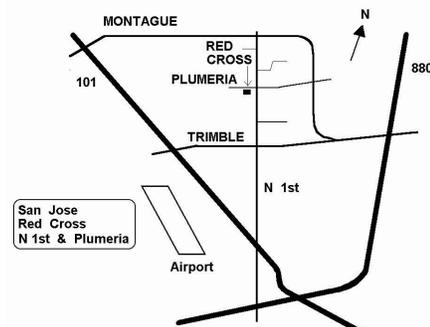
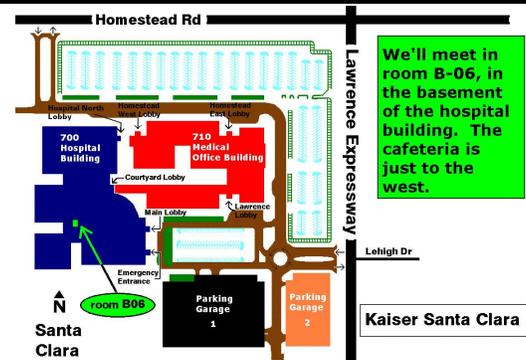


Calendar

- 2/12 **SCCARA General Meeting**
2/19 **SCCARA Board Meeting**--(San Jose Red Cross, 7:30p, all are welcome)

General Meeting

- Day: Monday, February 12, 2018
Time: 7:30 PM
Place: Kaiser Santa Clara, Hospital B-06
Featuring: Ed Fong on his dual band antennas



ARRL News

From *The ARRL Letter*, January 11, 2018

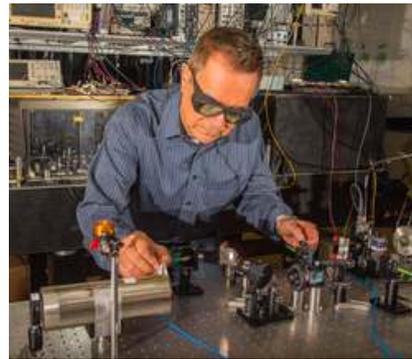
“Quantum Radio” May Offer New Twist on Communicating in Problematic Environments

Researchers at the National Institute of Standards and Technology (NIST) have demonstrated that quantum physics might enable communication and mapping in locations where GPS, cell phones, and radio are not reliable or don't work at all, such as indoors, in urban canyons, underwater, and underground. NIST announced the technology advance on January 2. The technology may have marine, military, and surveying applications. The NIST team is experimenting with very-low-frequency (VLF) digitally modulated magnetic signals, which propagate farther through buildings, water, and soil than conventional electromagnetic signals at higher frequencies.

“The big issues with very-low-frequency communications, including magnetic radio, are poor receiver sensitivity and extremely limited bandwidth of existing transmitters and receivers. This means the data rate is zilch,” said NIST project leader Dave Howe, AD0MR.

“The best magnetic field sensitivity is obtained using quantum sensors. The increased sensitivity leads in principle to better range. The quantum approach also offers the possibility to get high-bandwidth communications like a cellphone has. We need bandwidth to communicate with audio underwater and in other forbidding environments,” he said.

NIST researchers have demonstrated detection of digitally modulated magnetic signals by a magnetic-field sensor that relies on the quantum properties of rubidium atoms. The NIST technique varies magnetic fields to modulate or control the frequency -- specifically, the horizontal and vertical positions of the signal's waveform -- produced by the atoms.



Physicist Dave Howe, AD0MR, aligns a laser beam to pass through a tiny glass cell of rubidium atoms inside the cylindrical magnetic shield. The atoms are the heart of an atomic magnetometer demonstrated as a receiver for digitally modulated magnetic VLF signals. [NIST photo]

NIST developed a direct current magnetometer that uses polarized light as a detector to measure the “spin” of rubidium atoms in a tiny glass cell induced by magnetic fields. Changes in the atoms' spin rate correspond to an oscillation in the dc magnetic fields, creating alternating current voltages at the light detector that are more useful for communications.

“Atoms offer very fast response plus very high sensitivity,” Howe said. “Classical communications involves a tradeoff between bandwidth and sensitivity. We can now get both with quantum sensors,” Howe speculated on an Amateur Radio application.

“The quantum radio is great fun, far better sensitivity than any other receiver, at room temperature, anyway,” Howe told ARRL.

The **SCCARA-GRAM** is published monthly by the **SANTA CLARA COUNTY AMATEUR RADIO ASSOCIATION**, PO Box 106, San Jose CA 95103-0106.

SCCARA was formed in 1921 and became a non-profit corporation in 1947. SCCARA is an affiliate of the American Radio Relay League (ARRL). The club station is W6UW.

Permission to reprint articles is hereby granted, provided the source is properly credited.

The deadline for articles is the last Monday of the month.

Web page: www.qsl.net/sccara

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(officers are also directors)

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SCCARA REPEATERS

SCCARA owns and operates two repeaters under the call W6UU:

2 meter: 146.985 - PL 114.8
70 cm: 442.425 + PL 107.2

Phone auto-dial and auto-patch is available. The two meter repeater is located at Eagle Rock near Alum Rock Park in the foothills of east San Jose. The 70 cm repeater is located at the Regional Medical Center (formerly Alexian), east of downtown San Jose, north of 280 and 101.

SCCARA NETS

On our two meter repeater: Mondays at 7:30 PM, (not the second Monday--our meeting night). Coordinator: Don Village, K6PBQ. On ten meters, 28.385 MHz USB, Thursdays at 8:00 PM. Net control: Wally Britten, KA6YMD. Visitors welcome.

N0ARY PACKET BBS

SCCARA hosts the packet BBS N0ARY (connect to n0ary-1). User ports: 145.09 MHz at 1200 baud, 433.37 MHz at 9600 baud, and telnet sun.n0ary.org (login “bbs”). Sysop: Gary Mitchell, WB6YRU For general packet info, see the NCPA web site ncpa.n0ary.org.

AMATEUR LICENSE TESTING

ARRL/VEC Silicon Valley VE group:
Morris Jones, AD6ZH: 408-507-4698

“The atoms in the gas cell replace the 'antenna' and detection in the classical sense. It would be nice to try modulation in the 2200-meter band using the quantum receiver for detection.” In the future, the NIST team plans to develop improved transmitters.



In the NIST tests, the sensor detected digitally modulated magnetic field signals with strengths of 1 picotesla (one millionth of Earth's magnetic field strength) and at frequencies below 1 kHz.

The researchers hope to extend the range of low-frequency magnetic field signals by boosting the sensor sensitivity, suppressing noise more effectively, and increasing and efficiently using the sensor's bandwidth.

The NIST strategy requires inventing an entirely new field, which combines quantum physics and low-frequency magnetic radio, said Howe, who told ARRL that ham radio enhanced his interest in communications when he was in ninth grade in New Mexico. “So, it's what guided my interest into applied quantum physics in college. Ham radio was the bigger influence in all ways.” Howe retired from NIST last September. He now is a research advisor for NIST and Colorado University.

From *The ARRL Letter*, January 25, 2018

Secretive “Numbers Stations” Persist on HF

For many years, unidentified radio broadcasts have been transmitting coded messages, using numbers, such as “6-7-9-2-6 or 5-6-9-9-0.” Even today, tuning across the HF spectrum typically will yield a “numbers station,” a mechanical-sounding voice (male or female) methodically announcing groups of single-digit numbers for minutes on end. According to Radio World, you may have tuned into a spy agency's numbers station transmitting coded instructions to their minions worldwide.

Numbers station transmissions typically consist of a voice “reading out strings of seemingly random numbers,” explained Lewis Bush, author of *Shadows of the State*, a new history of numbers stations. “These are sometimes accompanied by music, tones or other sound effects,” he said. The Radio World article quotes Paul Beaumont, an associate editor of *Eye Spy Intelligence Magazine*, a publication dedicated to espionage and intelligence, “Voice (numbers) stations are known to be spy messages.”

The article said that one of the best-known numbers stations was “The Lincolnshire Poacher,” so called due to its use of “The Lincolnshire Poacher” folk song played on a pipe organ as an identifier. Radio amateurs used direction-finding equipment to pin down the station's eventual location to an RAF base on Cyprus, the article said.

ARRL member Chris Hays, AB6QK, on the west coast, said this week that he frequently hears a CW station on 7.163 MHz sending random alphanumeric characters, each group terminated by one or more question marks.

Meeting Minutes

General Meeting, Jan. 8, 2017



{No minutes received. --Ed.}

Board Meeting, Jan. 15, 2017



{No minutes received. --Ed.}

Need Help?

Amateurs have a long history of helping each other. An experienced amateur who helps another is traditionally called an “Elmer.” If you have a question or problem, you are encouraged to ask one of SCCARA's Elmers. Below is a list of topics and who to contact for each. If your topic isn't listed, ask one of the Elmers under the topic that comes closest and we'll ask around.

If you consider yourself to be reasonably competent in at least one area of amateur radio and would be willing help others, please fill out an Elmer form from the club secretary.

Topics:

Antennas, feed-lines, tuners: NV6W, W6JPP, K6PBQ
Lightning protection, grounding: WB6YRU
Station set-up, equipment: K6PBQ, W6JPP
TVI/RFI: WB6YRU
Homebrew projects, construction: WB6YRU
Packet Network (BBS, forwarding): WB6YRU
Code operating and installations: NV6W, K6PBQ
DX (long distance/propagation): NV6W
Emergency operating/preparedness: WA6QYS
HF operating techniques (SSB, CW): NV6W, K6PBQ
Legal/FCC rules: WB6YRU
SCCARA (club inner workings): K6PBQ, WB6YRU, WA6QYS
EchoLink:
License testing, new amateurs: W6JPP

Contacts:

NV6W, James D. Armstrong, Jr.,
evening & msg: 408-670-1680

W6JPP, John Parks, 408-309-8709
e-mail: w6jpp@arrl.net

K6PBQ, Don Village, 408-263-2789
e-mail: donvillage7@yahoo.com

WA6QYS, Lou Steirer, 408-241-7999
e-mail: wa6qys@arrl.net

WB6YRU, Gary Mitchell, 408-269-2924
packet: home BBS N0ARY
e-mail: wb6yru@ix.netcom.com



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FIRST CLASS

ADDRESS SERVICE REQUESTED

SCCARA Membership Form for 2018

If renewing and none of your info has changed, we only need your name and call

Name: _____ Call: _____ Class: _____

Address: _____ Licensed since (yyyy): _____

City: _____ State: _____ Zip: _____ Licence Expiration
 Date: (mm/dd/yyyy): _____

Telephone: _____ New Member Renewal I'm also an ARRL member

E-mail: _____
only for club communications and the SCCARA-GRAM newsletter (pdf)

Membership type and dues: Individual, \$20 Family, \$25 Student, \$10 (under 18)

Memberships start January 1 and expire December 31.

Family memberships (more than one member per household): please include the above info for each member, use separate forms.

New members:

Dues are prorated: dues x (11 - month) x 10% (Example: July would be \$20 x (11-7) x 0.1, which is \$8)

If joining in November or December: normal dues for next year, the rest of this year is included free.

I want the paper newsletter delivered by U.S. Mail for an additional \$30 per year

(Prorated, \$2.50 per month. That's \$27.50 if starting in February, \$25 if starting in March, etc.)

\$ _____ **Total** enclosed

Give this completed form and payment to the Secretary or Treasurer at any meeting or mail to the club address.