



**SAN BERNARDINO MICROWAVE SOCIETY, Incorporated**

FOUNDED IN 1955

A NON-PROFIT AMATEUR TECHNICAL ORGANIZATION DEDICATED  
TO THE ADVANCEMENT OF COMMUNICATIONS ABOVE 1000 MC.

# Activities of the San Bernardino Microwave Society for May 2014

Walter Clark, Editor

## Tech Talk for the May 1<sup>st</sup> Meeting Using Microwave Harmonic Mixers with Spectrum Analyzers



Recently Doug has been doing a bit of research on various mixers and has learned a lot about how they perform at 79 and 120GHz. Most mixers are not specified at these frequencies. Some were expensive and others were cheap. How well did they actually do? Come to the meeting and find out.

He will also cover the construction of the Tektronix mixers and have a series of suggestions on the care and feeding of harmonic mixers.

Doug K6JEY is an ARRL Technical Advisor in Metrology. He maintains standards in time, frequency, resistance, voltage and RF power in his home lab. From his home also, he does moon bounce. He has microwave rigs on 2, 3.4, 10, 24, 47, 79 and 122 GHz.

His main interests are building and operating in UHF and up. But he is also active with CW, SSB and AM on HF, and VHF. It would appear that his goal is be conversant from DC to light. What's after that Doug; gravity waves?

# **Activities at the March Meeting of the SBMS**

**(that would be of interest to the General Ham Radio Community)**

**Presiding: Chris Shoaff      (16 in attendance)**

## **Old Business**

- A line was formed where Dick sits to pay Membership Dues which were due for all of us at the April Meeting. It seemed to work out well.
- Wayne brought up the point that the Northern Group will be out in force. He asked Mel if Cactus will be available. Mel said he would look into it and later announced that Cactus will indeed be available for the SBMS contest.
- Pat Coker read the Sheraton proposal for hosting MUD and thought those who would be interested can participate in discussion during the break.

## **New Business**

- It was announced by Chris, our president that officer nominations are in order.
- Walter pointed out that it is natural that an office holder who wants to quit feels like a quitter when he makes such an announcement. But that unless he goes ahead and does so, no one will come forward to take his place.

## **Upcoming Events identified by members**

**(this month from Marty Woll N6VI)**

- The 902-and-up Sprint is Saturday morning, May 3.
- Six-meter Spring Sprint, Saturday May 10 from 4:00 PM to 8:00 PM Pacific time (actually 2300 May 10 to 0300 May 11 UTC).

Here's the link to the announcement and rules for all the Spring Sprints:

<https://sites.google.com/site/springvhfupsprints/2014-information>

- The Maker Faire in San Mateo, CA is May 17-18. → <http://makerfaire.com/>
- **And of course, The SBMS 2 GHz & Up contest:**  
**Saturday, May 3 and Sunday, May 4.**

<p><b>The editor is not interested in contesting enough to seek out these events. So if you want it posted, you, the reader have to submit them. Anytime→ <a href="mailto:walterclark@roadrunner.com">walterclark@roadrunner.com</a></b></p>
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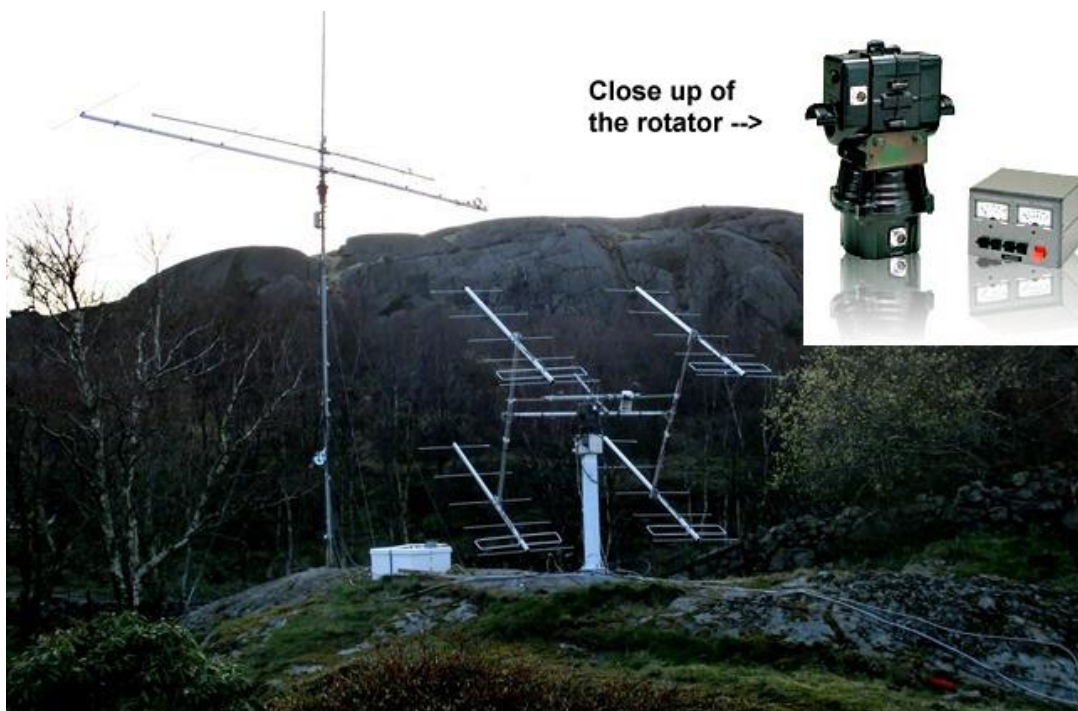
# What Our Members Are Working On

- **Brian Thorson (Corona)**
  - Worked some more on the Kolbly 10 GHz rig
  - And played with the new dish he focused with the sun the month before.
- **Pat Coker N6RMJ (Lake Los Angeles)**
  - Working on 1 meter dish to put 10ghz on 40 foot tower at home
- **Rein Smit W6SZ (Alta Loma)**
  - Did some sun measurements with his 1.2 meter dish
  - No one but him was on home2home the night before the meeting
  - He reports that the PV beacon seems to be off.
- **Frank Kromann AG6QV (Trabuco Canyon)**
  - Surfed the web for LMAs for sale. Found one with a .4 dB noise figure
  - Working on the transmitter circuit under the expensive transistor he bought the month before.
- **Wayne Overbeck N6NB (Tustin)**
  - Passed around a picture of a box containing transverters and amplifiers for all bands from 902 to 10 GHz. It will be going on the tower at his new house in time for the 2.3 and up contest.
- **Walter Clark (Fullerton)**
  - Brought in some examples of cheap digital panel meters to remind the club to include them in any project because they are now as cheap as LEDs.
- **Jerry Mulchin N7EME (Corto de Caza)**
  - Packing for his move to his new home in Arizona
- **Mel Swanberg WA6JBD (Upland)**
  - Did some trouble shooting of a PLL problem for a 1200 MHz rig (a 3 day project)
- **Courtney Duncan N5BF**
  - Put up an Alpha-Delta DX 80 to get myself back on 75/80 meters after the GAP failure last November.
  - Missed the March meeting because he and his family were on a Spring Break trip to Texas. (Did a little mobile HF and VHF on the way out and back.)
  - Asked what to do when we find a beacon out of order.
  - The first answer was blank stares. The second answer was, "That's a good question." (Neither of these is satisfactory.)
- **Dick Palmer WB6JDH**
  - did some QRP with his SDR on four bands; 160 m to 10 m
  - there was a glitch in the CW transmitter (2.5 W, \$80)
- **Doug Millar K6JEY (Long Beach)**
  - was able to upgrade his measurement capability by being able to measure frequency and power up through 119GHz.
  - was able to measure 119,023.129 MHz with an amplitude accuracy of 2db.

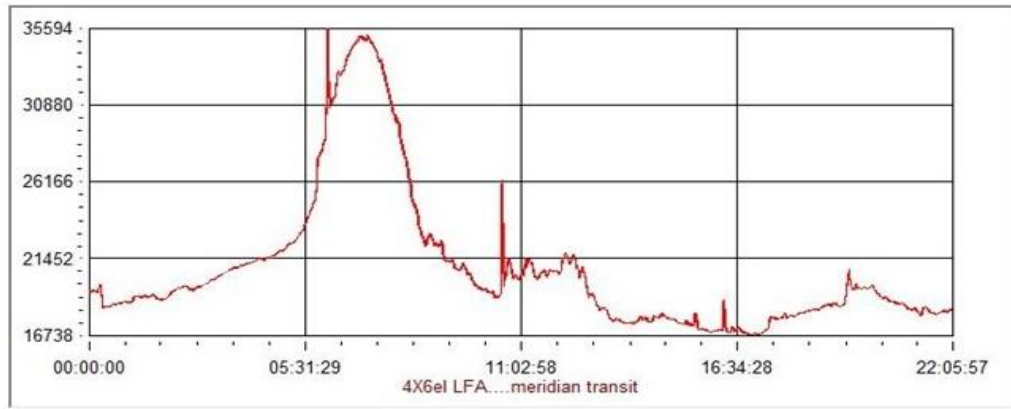
- He is seeing his signals at 79 and 122GHz; signals generated by a phase locked DRO at 13ghz, followed by a 3x active multiplier and a 2x or 3x passive multiplier.
  - JEY Labs. is open for business
  - **Jeff Fort KN6VR (Phelan)**
    - Got two responses from the state on the club's corporate and tax status. Still we wait.
    - And wait and wait.
  - **Dennis Kidder W6DQ (Fullerton/Inyokern)** ←absent but emailed in
    - Working to complete the manuscript of his book. All but two chapters have been submitted to the editorial team at McGraw-Hill.
  - **Ed Munn W6OYJ (Sand Diego) Reporting on the Activities of the San Diego Group (They normally meet 3<sup>rd</sup> Monday at Karry Banke's house.)**  
 If anyone would like to go this sister club to SBMS, write to Ed Munn at [remunn@earthlink.net](mailto:remunn@earthlink.net)
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## First Light of new Amateur Radio Telescope (RA/EME antenna array for 144MHz)

By Jan Lustrup LA3EQ Norway



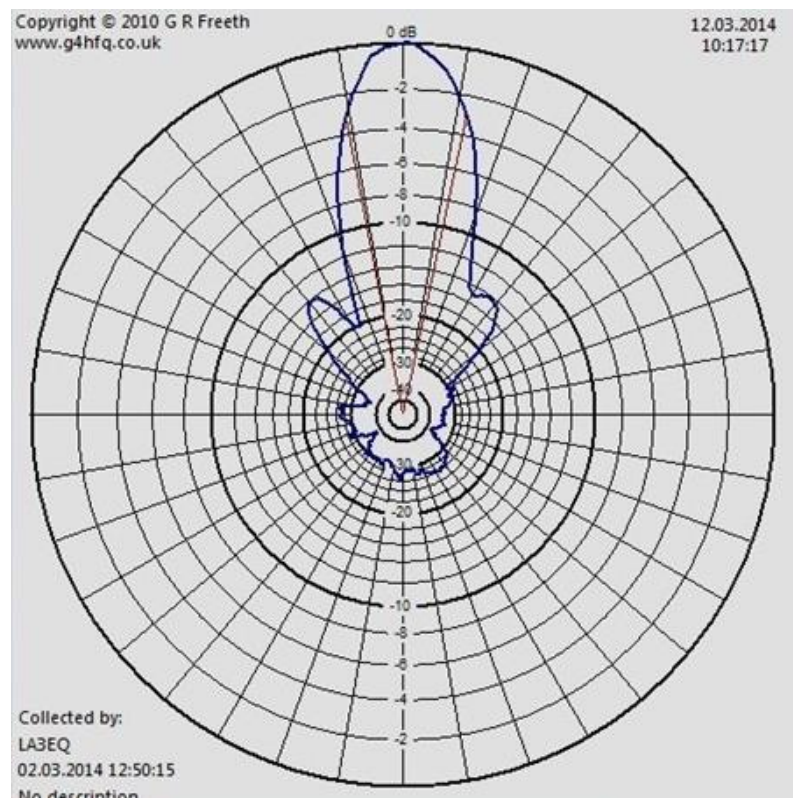
Moon/Sun tracking is fully automatic with the “SATPC32” satellite tracking program. I have not yet been able to make this tracking system work with “Radioeyes” program. Graves radar in France on 143.050MHz is very strong via the Moon reflection here at +30dB over the noise floor on my receiver.



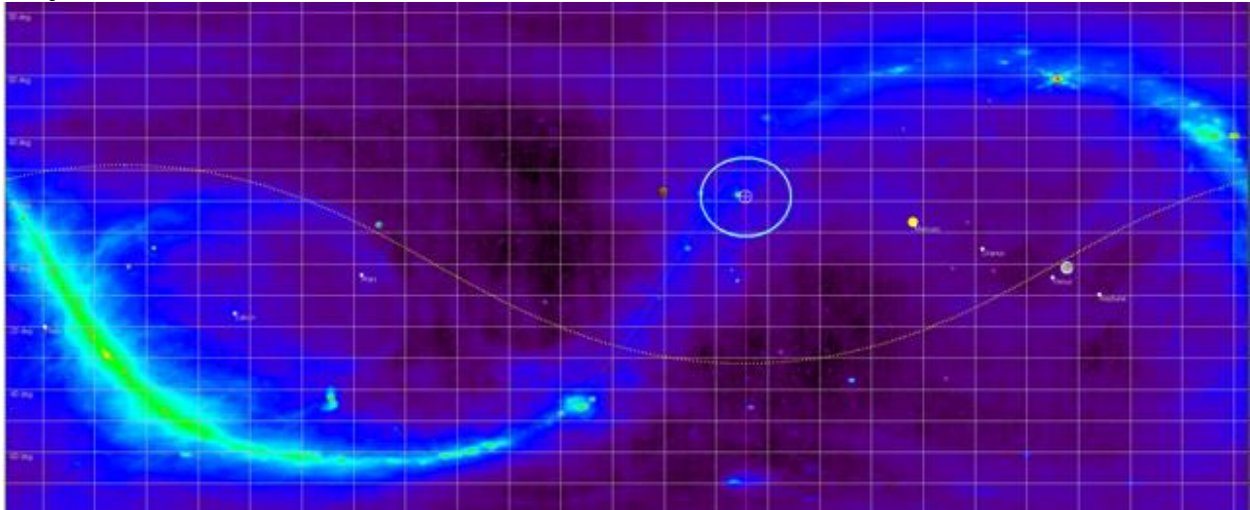
The antenna array today is much too low over the ground, so the next project is building a small 4 meter tall mast to put it on. I made this 22 hour recording with Radioskypipe showing the meridian transit on 144.1MHz in 2.6kHz BW. The big hump is the galactic plane center and the second smaller hump with spikes is the active sun around noon and the last hump is also the weaker back side of the galactic plane.

This was the first light of my new E.M.E. antenna project. It is also for radio astronomy of course! The first weekend I was able to make 18 different ham radio contacts via moon bounce using only 150 Watts of transmitting power and using digimode software by Joe Taylor’s program “JT65B”.

My new antenna system is made up of 4 six element LFA Yagis fed in phase, mounted on a H-frame (2.1 meters by 2.1 meters) and a 4 way power combiner harness using LMR-400 coax to each antenna, a 0.6dB LNA, and 20 meters run of LMR 400 coaxial cable to the radio shack and a Kenwood TS-2000X transceiver radio.

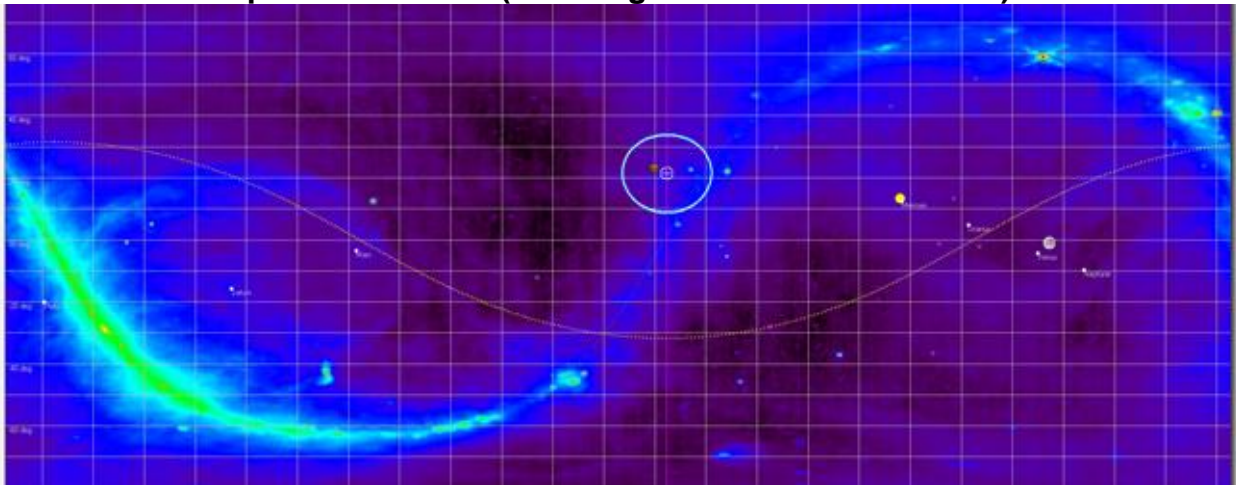


The raise in noise caused by the transit of the Galactic plane was about 4.5 dB. The Sun was very active that day so I had to smooth and average the graph a lot! The gain of the antenna is around 20dBi. The rotatorsystem is a Yaesu G-5500 az/el rotator, a homemade relay interface card and Labjack U12 USB A/D.

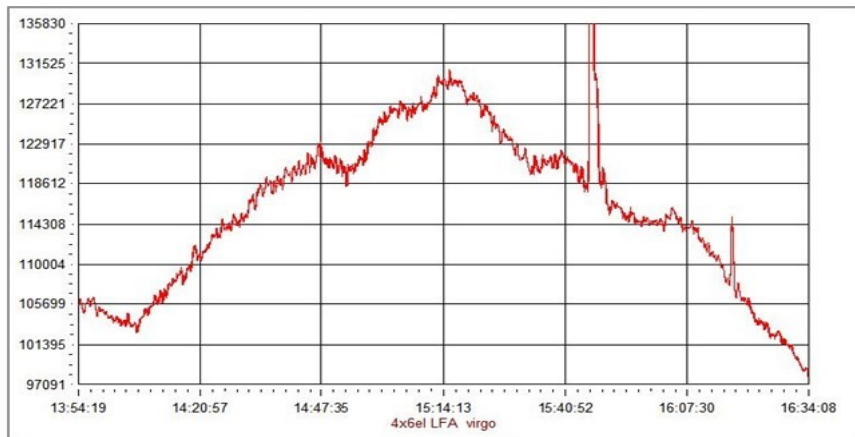


Using the program RadioEyes, reveals Taurus to be transiting at 14:47.

Then at 16:07 Jupiter is revealed (to the right of Taurus about 1cm)...



The minor GP transit at 15:14 UTC is easy to see, but the other signal peaks I am not sure of.



The first is at 14:47UTC  
 The second is at 15:07 UTC  
 The third is at 15:40UTC  
 The fourth is at 16:07UTC

The big spikes at 15:50 and 16:15 are either solar flares or just some local noise. Not sure

## Tech Talk (Last Month)



Art Goddard talked to SBMS on Amateur Radio In The 21st Century...

Amateur Radio, he pointed out, is not an entitlement. Rather, the Amateur Radio Service is expected to provide public value as defined by the FCC. He addressed how well are we doing and more important, how we can get our report card out to decision-makers and the public. Who is to do that, of course, is us.

A copy of his address as given at the meeting is available at the SBMS website:

[http://www.ham-radio.com/sbms/presentations/W6XD/AmateurRadio\\_V3-SBMS.pptx](http://www.ham-radio.com/sbms/presentations/W6XD/AmateurRadio_V3-SBMS.pptx)

Art suggested that we can also visit his website in the future for updated versions:  
[www.w6xd.com/Future/AmateurRadio](http://www.w6xd.com/Future/AmateurRadio)

(You will need Microsoft PowerPoint on your computer to see this. If you don't have that you can use Google to find a "free power point viewer". Install it and then go to either of these links.)

## Gary Heston's ATV Mobile Studio

Not only can you watch our meetings live (well delayed by 240 milliseconds) You chat to other viewers about what you are watching (or anything else.) Enter the chat room by clicking on the white space on the right of the website described below.

**Just as a reminder, this is how you watch SBMS meetings from home:**  
[http://www.batc.tv/ch\\_live.php?ch=2&id=139](http://www.batc.tv/ch_live.php?ch=2&id=139)

Better yet memorize the following  
Keywords: BATC TV  
and use Google

The TV part is easy to remember. Think of the BATC as batch without the h. It's a British website (that's the B) Once you are there, on the left, you have to pick a stream. The stream to choose is:

### **W6ATN.**

Memorize W6ATN as ATN in California. W6ATN is the club call sign for six ATV repeaters that are a part of the Amateur Television Network in Southern California. (ATN-CA)

Gary Heston's mobile studio beams its signal to the ATN repeater on Santiago Peak which is provided by: Roland Hoffman, KC6JPG



- The newsletter is to keep member informed on current activities of the “active” members; the members that come to the meetings or use ATV to report in.
- The website is for articles and all activities of the past.
- But questions or even bragging is for the SBMS Reflector. Send your email message to: [sbms@ham-radio.com](mailto:sbms@ham-radio.com). More than 80 people will see your question or your bragging. (To sign up go to: <http://lists.altadena.net/mailman/listinfo/sbms>.)

## Microwave Mystery Device of the Month



Hint: Yes it is old, 75 years old but it is indeed a microwave device.

Please take a snap of anything interesting you have. Remember you don't have to know yourself what it is. Send it to the Newsletter editor at:  
[walterclark@roadrunner.com](mailto:walterclark@roadrunner.com)

## Needs, Wants and For Sale

- **For Sale:** 30w 1296 MHz PA kit \$50 + \$5 for US shipping Chris Shoaff, N9RIN cshoaff@yahoo.com
- **For Sale from Bill Burns** (Bill will only rarely come to the meetings, so if you want any of this, please contact him by email at . . . [bburns@mediacombb.net](mailto:bburns@mediacombb.net))  
His address is: 247 Rebel Road Ridgecrest CA 93555 and phone: 760-375-8566
  - 8 watt 5 GHz TWT's with power supplies \$50 each
  - copper wire enamel coated #14 many feet coils \$10 each
  - Bencher BY1 Iambic paddle key \$90

## Member Ads

### Sixty North Electronics

#### Kits Made by member KL7UW

Let Ed Cole assemble your Down East Microwave kit. For kits in stock, he can deliver an assembled unit to your custom design preferences within 30-days of a paid order. **His prices are the same as you pay DEMI for an assembled transverter, but much quicker delivery time. And comes with 90-day written warrantee on labor (guaranteed to work)!**

Shipping for a transverter is typically that of medium-size flat-rate Priority Mail anywhere in the USA.

For examples of his work click on... <http://www.kl7uw.com/kits.htm>

Contact him at [kl7uw@acsalaska.net](mailto:kl7uw@acsalaska.net)

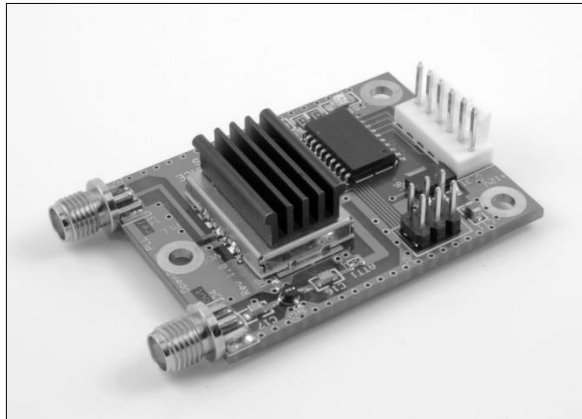
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If you are a member you can have a picture ad here yourself.  
For the time being this service is free.  
eMail [WalterClark@roadrunner.com](mailto:WalterClark@roadrunner.com)

## About SBMS

The San Bernardino Microwave Society is a technical amateur radio club affiliated with the ARRL having a membership of over 90 amateurs. The focus of the club is microwave activities in the Southern California. ***Our sister club is San Diego Microwave Group (SDMG). At least one meeting a year are joint meetings.*** SBMS dues are \$15 per year, which includes a badge and that's about it. The dues are more in the way of a donation to pay for outreach things such as video portals, a bank account, and rent for the building. When to pay is not a matter of remembering. The Corresponding Secretary will contact you by email and will then hound you like your own personal PBS telethon. Dues can be handed to the treasurer at the meeting, or mailed to the address of the treasurer listed in the banner below.

Meetings are first Thursday of the month, 7:00 PM at the American Legion Hall, Corona. For carpooling from North Orange County call Walter Clark @ 714 882-9647

### ***The Reflector (SBMS Group Email)***

The most active method of information exchange is our group email called the SBMS Reflector. You don't need to be an SBMS member to participate. To subscribe fill out the form at the website: <http://lists.altadena.net/mailman/listinfo/sbms> (If you are getting email on the SBMS Reflector now, and you want to write your own message, pull up a recently received message, click on "Reply to List." Don't forget to change the subject line and delete all previous text as appropriate.)

### **The SBMS Website and Newsletter**

The SBMS Reflector is ephemeral. There's no record kept. The Newsletter has a slightly longer life. It is sent to members and past issues are recorded in the website. It's URL is: <http://www.ham-radio.com/sbms/> You don't have to memorize that or write it down, just enter SBMS into any internet search engine.

**Newsletter: Walter Clark:** [walterClark@roadrunner.com](mailto:walterClark@roadrunner.com)

**Website: Rein Smit:** [rein0zn@ix.netcom.com](mailto:rein0zn@ix.netcom.com)

The newsletter is created about the middle of the month and broadcast as a link inside an eMail letter to the members. This is mailed to you on the weekend prior to each meeting. SBMS Newsletter and website material can be copied as long as SBMS is identified as source.

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