

SARA

Society of Amateur Radio Astronomers

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by Jack Chancellor
Secretary of SARA

THE SOVIETS ARE CONVINCED- SEARCH FOR CTA-102- U.S. AMATEURS WANT MORE

by Jack Chancellor, W9SON

Ever since Sputnik was launched into space and made to orbit earth, the theories and convictions of the Russians are not taken lightly.

In 1965, the Russians calmly announced that the radio source called CTA-102, in the direction of constellation Pegasus, may be sending intelligent radio emissions.

Sixteen years ago a lot of us would have dismissed this as wild speculation I but radio astronomy has come a long way since then. Although the Russian data is sketchy, it reads along the same lines as that of SARA's secretary, who is feeding some probability input to his computer.

This is where SARA participants can lend a hand. Pegasus is scattered somewhere across an area of 1.121 degrees below the Andromeda, Lacerta and Cygnus regime. CTA102 can be located near Homam. Consult your charts for the correct coordinates. Incidentally, many interesting doubles can be observed here. Epsilon-Pegasi is a bright star with a magnitude of 2.7 and is yellow in color. Its companion is a clear violet.

For our own satisfaction, we should train our radio telescopes in the direction of CTA-102 and learn what type of emission (radiation) is being transited. Obviously, SARA participants will need to construct some type of interferometer system for the best or requisite resolving power of a few seconds of arc or less.

It must be remembered that dealing with radio astronomy, minute quantities of energies are being collected. The so-called great intrinsic luminosity of the source still follows the law of FLUX DENSITY. The spectra of CTA-102 (plotted with intensity against frequency) is somewhere near 10^{-7} watts and with a bandwidth of 1000 MHZ. Such values are seldom constant - that is, the spectral index will vary. Now that our curiosity has been developed by CTA-102, a word of advice for newcomers is needed.

Voltages generated by a properly designed radio telescope can be in the range of 0.1 micro-volt. Success in research will depend largely upon the amplifier connected to the radio telescope (antenna, usually a dipole).

The end product of any radio astronomy research is the output data which must have some means of being recorded.

Needless to say, a dual channel chart recorder can be very expensive. The advantages of a chart recorder allows the operator to attend to other facets of the research while its pens record data.

Most radio astronomers have access to a volt meter of some type. The disadvantage here is that the researcher must constantly monitor the meter for any variation in readings.

Radio maps of the sky can involve tedious hours of pencil and paper calculations. This frustration can be relieved through use of the computer.

Figure I shows the results of a computer experiment at the Chancellor Radio Observatory Wanderer (CROW) for a radio source from Cygnus A. Before a map of the radio sky was made, the computer recorded the resulting signal levels

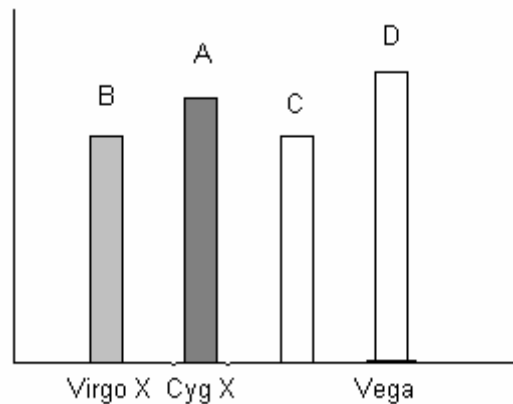


Fig. 1- Histogram from: Commodore PET Computer.

NOTE: At the time this histogram was recorded, the input ports were not properly set so the levels may not be true. However, this graph will give you an idea of the project effort,

by plotting a low density histogram as seen here. The data, of course, is stored on magnetic type. Notice that Cygnus A is not alone on the graph, but it is obvious the antenna scanned the sky for other signal levels. Also notice that variables are assigned to each radio source. Here D is unassigned and therefore equals zero.

When the radio telescope (antenna) is directed to RA 19.58 and DEC +41, the input (port) reserved for Cygnus A displays a bar representing a present signal level. The variable for Cygnus A was designated A.

There are several things to watch for when inputting such data into your PET, APPLE or TRS-80 computer during altitude setting of the antenna:

1. Avoid distant thunderstorms.
2. Noise generated within the electrical system.
3. Man-made radio noise.
4. The sun passing through antenna beam.

Item four is most important since the Sun wipes out all celestial, sources (radio) behind it. Ignore all recorded tracings or readings during solar transit.

The contributions of amateurs to the field of Astronomy are well known. In order to promote more study in the field of amateur radio astronomy, the Society of Amateur Radio Astronomers (S.A.R.A.) has been formed. S.A.R.A. consists of a group of dedicated amateurs who believe useful amateur work can be coordinated to yield worthwhile results. Send for the brochures that will give you additional information on the goals and programs of the society."

One of the major ways that S.A.R.A. serves its membership is by providing information. When a person first becomes interested in amateur radio astronomy, one of the initial questions that comes to and is, 'What information is available, and *where* do I get it?' This is soon followed by a desire to contact other amateurs who share the same interest. S.A.R.A. can assist in these areas through its newsletter, reference service, reading Hats and by serving as a central point of contact for its members."

The field of amateur radio astronomy is wide open to those who wish to participate. S.A.R.A. would like to help you get started. We would be glad to have you join us.

NOVA REMNANTS

STELLAFALNE-WILL NEVER BE THE SAME - Bob Baker,, treasurer of SARA, captured a first prize for his radio telescope antenna during the Stellafane event, It came as a complete surprise to Bob, who had previously wondered when amateur radio astronomy projects would take their rightful place in these events, Nice going, Bob!

KOREA AND MAJOR PATTERSON - Bob Patterson, Vice President of SARA is finally in Korea where he is assistant division signal officer, He is on the air as HL9EZ. Look for him on weekends (1200 to 1500 GMT), 7am - 9am our time, We miss Bob and hope his tour will end fast as we need his expertise for SARA,

GRAPHS AND THINGS - Bob Baker has sent some recordings, We'll try to get them in on the upcoming Holiday issue of SARA. PLEASE help us out. ZEROX a few copies of your newsletter and circulate them to your interested friends,

WE CAN'T DO EVERYTHING. Well, we've asked for articles the length of the ones appearing in SARA, but no contributors, If you don't help us build, who will? It takes everyone to make a great organization,

TAKE IT EASY.... and let's hear about the projects you're working on so we can include it in this newsletter,