

Search for Extraterrestrial Intelligence (SETI) - The Next Steps (34th Symposium) (IAA.1.1)
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SETI I - Technical Aspects (1.)

Author Mr. Mitsumi Fujishita
Kyushu Tokai University, Japan, mfuji@ktmail.ktokai-u.ac.jp

SETI ACTIVITIES AT KYUSHU TOKAI UNIVERSITY

Abstract

There are three SETI activities at Kyushu Tokai University (Kumamoto, Japan) in co-operation with Nishiharima Astronomical Observatory (Hyogo, Japan) and Nagoya University (Aichi, Japan) as is shown below.

1. The radio intensity from Beta Gem was monitored 75 minutes in total from December 17 to 21, 1999. Two phased array antennas, Kiso and Fuji sites, of Solar-Terrestrial Environment Laboratory, at that time, of Nagoya University were used. Simultaneous observation was done using these two anti-symmetric cylindrical antennas of which width and length are 27m and 75m, respectively. The center frequency of the receiver was 327MHz and the bandwidth was 20MHz. The distance of these two sites is 98km and enough to distinguish between signals from intra- and extra-terrestrial intelligences. There was no radio burst received simultaneously over $4 \times 10^{\exp(-27)} \text{ J/m/m}$ with the two antennas during this period.

2. The radio intensities of about 25 M-type stars listed by Turnbull and Tarter (Ap.J.149, 423, 2003) and about 30 IR excess stars listed by Conroy and Werthimer (report, 2003) were observed from March 1 to 5, 2005 with 10m diameter antenna of Mizusawa Observatory of the National Astronomical Observatory, Japan. The observed frequency was 8.4GHz and the bandwidth was 470MHz. Total power data with on-off method and a part of spectral data were obtained. During nights, simultaneous observation was done with "Nayuta," which is the largest optical telescope in Japan, of Nishiharima Astronomical Observatory. Targets are the regions where some radio signals like the so-called "Wow!" signal were reported. Data is under reduction.

3. A new type of radio signal from extra-terrestrial intelligence is suggested by the authors. It is thought that a narrow carrier signal is the most possible one from extra-terrestrial intelligence, because it needs only one parameter, "frequency". However, we have not found any clear signals from extra-terrestrial intelligence these 45 years since the first observation done in 1960 under this assumption. Therefore, there is some possibility that other types of signals are used to inform their existence. Ultra-wide band (UWB) signals are generally advantageous from the standpoint of signal to noise ratio as shown by the Global Positioning System, for example. One possible suggestion is to use a signal of that frequency, shifted in time linearly over its bandwidth equal to the center frequency with a period of averaged pulsar periods. Observations in the experimental stage were done in March 2005.