



NATIONAL RADIO ASTRONOMY OBSERVATORY

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Ms. Donna R. Searcy
Secretary
Federal Communications Commission
1919 M Street, NW
Washington, DC 20554

FEB 17 1993

Dear Ms. Searcy:

I write in support of the request to establish a radio astronomy communications zone in Puerto Rico (RM 8165).

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

The radio telescope located near Arecibo, PR is truly a unique scientific instrument and a national resource. It has been used to study the nearest astronomical objects and the most distant. I have used this telescope a number of times for my research which involves the study of galaxies through the signature of neutral atomic hydrogen, a spectral line that occurs at 1420.4 GHz. Such studies allow us to derive (1) the total mass (i.e., all the matter) of a galaxy, (2) the fraction that is interstellar hydrogen, (3) the total brightness of the galaxy, and finally (4) the redshift of the galaxy, which is a measure of the recessional velocity of the galaxy and reflects the expansion of the Universe. And even more can be learned of our own Milky Way Galaxy. You can see why the frequency band near 1420 MHz is protected. But because of the expansion of the Universe most of the galaxies we study are found at smaller frequencies (longer wavelengths) outside the protected band.

It is unrealistic to expect this frequency protection to be widened. Instead the radio astronomy community works with potential sites of interference, especially radio transmitters. The goal is to study such problems and in a nearly always collaborative climate, to lessen the interference. The establishment of a communications zone would greatly assist the engineers and astronomers of the Arecibo Radio Observatory in this effort.

I urge approval of this request.

Sincerely,

Morton S. Roberts
Senior Scientist

MSR/clw

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