



RESEARCH ARTICLE

CONSIDERING RADIO RADIATIONS OF SKY AND RECEIVING FLUX

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ABSTRACT

In this paper first, types of astronomical radio radiations are defined exactly after, trend of producing them and artificial radiations application will be expressed. Then we measure value of receiving flux of radio radiation in sky of Khuzestan state using a telescope at Shahid Chamran university .this measurement has caused to recognize strong radio resources like Cygnus obtained data have been compared with existence maps such as radio Jadrel bank. The main purpose of this research is recognizing and considering radio radiations resources in sky of Ahwaz in Khuzestan state. For this aim, using radio telescope at Shshahid Chamran university values of receiving flux of some radio resources were obtained, then it was compared with data of radio maps JABRELL bank. As the result of this research differences of the fluxes and positions of the fluxes were appointed in sky.

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INTRODUCTION

Electromagnetic radiation is the most important factor to establish relation between the earth and other masses in sky. More recognition of electromagnetic spectrum and extension of detection instruments in other domains of the spectrum occur simultaneously among these radiations, radio waves in addition to less risk, have more penetration, so that they pass from the atmosphere layers and contain useful information about knowing the word. Radio waves as a part of electromagnetic rays, exist when a charged object accelerates with a frequency in radio domain of electromagnetic spectrum and then the rays will be propagated due to oscillations of electrical and magnetic fields [3]. Different layers of atmosphere have reactions depending on this ray propagation. Some of frequencies pass from one layer and the others are reflected of the layer. This property is applied for daily uses such as military, TV and radio. But about astronomical radio one, the radiations are originated from inter and outer parts of galaxy [1]. In milky way, remainings are the strong radio resources. Out of the galaxy, active galaxies are radio radiation resource such as siffrets, and Ionized hydrogen. We could point to 3c8a from siffrets and Cygnus from radio galaxies. The basis of producing these radiations is various [2]. At general, synchrotron radiation, free-free radiation and galaxy dust radiation emphasize the radiations.

Method of measurement

In this paper, the results are obtained using a hyperbolic antenna with an approximately 4.5 diameter working in a frequency band c3- 5 ghz. The telescope could be rotated in directional and height routs. The instrument receives of type

gain, 43.6db resolution of radio dish was calculated about 0.4 degree using fundamental relations. Sky of Khuzestan was swept away thinking of place of the sun as index of calibration. While sweeping away, binding angle was changing.

Sun in focal center of radio telescope dish

In the following 4 figures what the sun was fixed in focal center of radio telescope dish, that is, the dish moved with apparent motion of sun; we expect that receiving flux was maximum. Effect of clouds to decrease flux value received was affected. In the following figures, horizontal and vertical axes are binding angle variations and receiving flux, respectively.

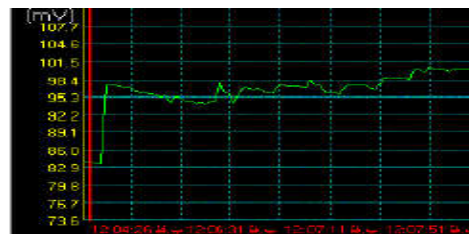


Fig. 1. Sun in focal center of dish without clouds

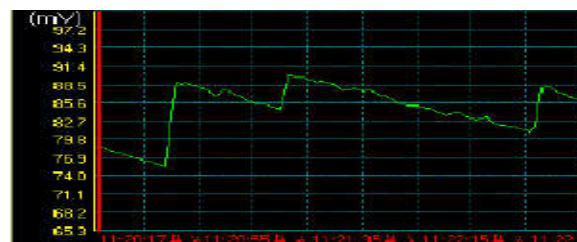


Fig.2. Sun back of cloud in focal center of dish, changing cloud thickness

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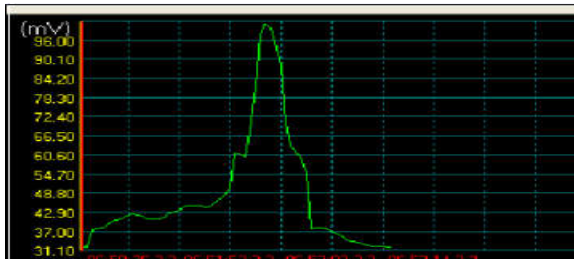


Fig. 3. Sun pulse in clear sky

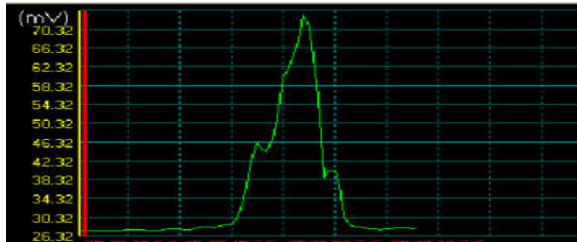


Fig. 4. Sun pulse back of cloud

As we can find of figs.3&4, identity and form of pulse from each resource like sun do not change with cloud and only, maximum of flux intensity would change.

Artificial radiations and effect of artificial moons

While studying background pulse, effect of artificial moons and disturbing rays of the earth have been observed. When sun sets, background pulse climbs a little in south west, and so telerelations occur more and more in west and south west zones.

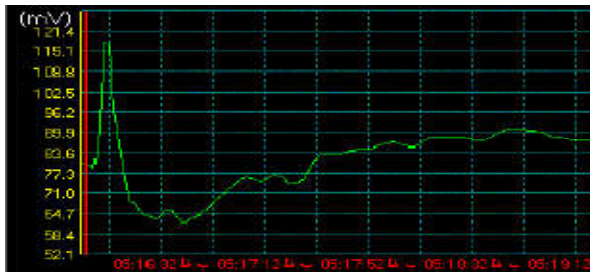


Fig.5. More background pulses in west and south west rather than other zones of sky

It could be found from the above figure that pulses of the earth frequencies without change in form climb. The background of the above test was 20mv while it was 40mv in the past tests; that is, the background pulse has reached 60mv while max pulse of sun to 115mv. The end section in the above diagram, about 85mv, points to television antenna. 5-other radio strong resources as the following figure is about ngc7000pelican [4]. That is a radio galaxy and is in 45degree in Dec.

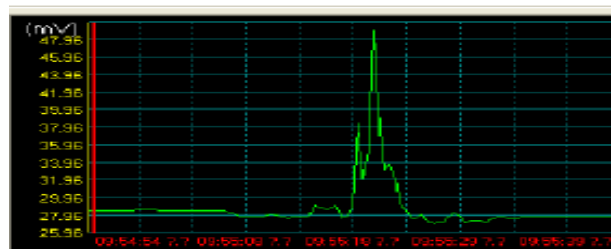


Fig.6 Pulse of ngc7000

Another resource in this domain is 3c48m.that was invented by Allan Sandage extending more than one degree which is about 35degree in Dec.

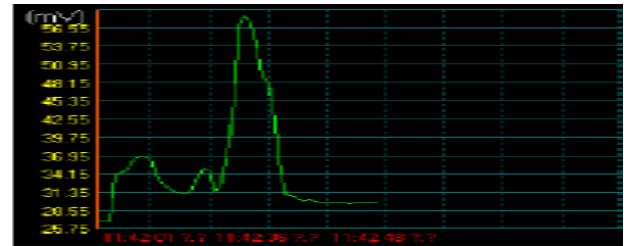


Fig.7. Pulse got 3c48

The maximum receiving flux by a telescope was related to a radio galaxy called Cygnus. Radio galaxies are not radio resources, but most of these masses have two symmetric tails called radio labs as radio resource [4]. Receiving flux is about 250mv in the following figure as a very strong resource.

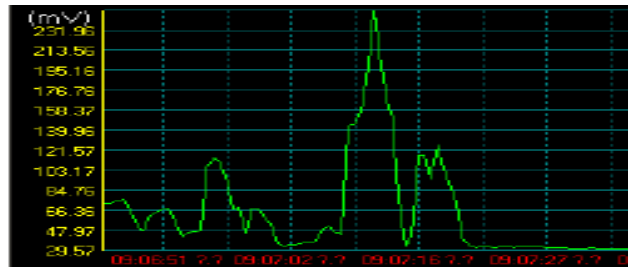


Fig. 8. Cygnus a pulse and its labs

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