Measurement of advanced electromagnetic radiation

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For the purpose of detecting advanced electromagnetic radiation predicted by Wheeler-Feynman absorber theory for the case of incomplete absorption of retarded electromagnetic radiation, pulses in duration of 6 ns to 24 ns, wavelength from 91 cm to 200 cm where supplied to three different transmitting antennas. Detection was done with a λ/20 monopole antenna in the advanced time window at a time 2r/c before the arrival of the center of the retarded pulse. At distances ranging from 430 cm to 18 m, advanced signals were measured in the SNR (μ/σ) range from 15.4 to 30.9.

Within the framework of Wheeler–Feynman absorber theory [1,2], in case of incomplete absorption of electromagnetic radiation by the matter of the future Universe, advanced effects will occur. One of the effects is the reduction of radiation reaction force of the emitter which, according to WF theory, is caused by the advanced radiation of the absorber. Second effect is the incomplete cancellation of advanced radiation of the emitter, which is also caused by the advanced radiation of the absorber.

Partridge [3] attempted to experimentally detect the first effect, by measuring the difference in input current of microwave source depending on whether the microwave radiation is directed to the local absorber or to the free space towards the zenith when the zenith is perpendicular to the galactic plane. Possible reasons for negative result were given in [4,5,6] and new experiments were proposed. Schmidt [7] tried to detect the second effect in an experiment which is similar to the experiment presented here, with three important differences which are the probable cause of the negative result. First difference is that Schmidt, just as Partridge, performed an experiment in a microwave range at a wavelength of 3 cm. It is possible that, due to the red shift in the distant future, microwaves of shorter wavelengths become stretched to the wavelength of 21 cm and absorbed by interstellar hydrogen, as suggested by Fearn [8]. Second difference is that transmitting and receiving antennas are placed so that the line connecting them points to the horizon when extended. In such configuration, advanced signal is severely weakened, as can be seen in Figure 2, and in conditions of high relative humidity of the air and overcast sky it completely disappears. Third difference is that a λ/2 dipole antenna was used for detection. From Figure 3 it can be seen that the advanced signal disappears completely when antenna of ≈λ/6.7 or bigger is used. In addition to these two published experiments, at least one unpublished experiment was performed with negative results, which was performed by Cramer with neutrinos [9]. Recently Niknejadi [10] proposed measuring the advanced reaction field in the near field of the antenna by electrically small dipole antennas, λ/10 or smaller.

THE EXPERIMENT

In the period from 10 April 2016 to 30 August 2016, at least 2000 runs were performed in an attempt to detect advanced electromagnetic radiation at wavelengths ranging from 12 cm to 68 cm. Attempt of detection was done with a vertical λ/2 dipole antenna at distances of 3 m to 10 m. In the advanced time window at a time 2r/c before the arrival of the center of the retarded pulse, no statistically significant signal above the level of the noise was detected.

Taking into consideration suggestions from [8,10], around 500 runs were performed in the period from 03 December 2016 to 05 January 2017 at wavelengths ranging from 91 cm to 200 cm. On the first day, a λ/10 dipole antenna was used for detection, and on subsequent days a λ/20 monopole antenna was used. First clear signal was observed on the second day after which tests were carried out with the purpose of detecting a possible source of systematic error. Measurements of changes in signal strength, depending on the target which is located in the extension of the line connecting two antennas, behind the receiving antenna, were also performed.

The block diagram of the basic experiment is shown in Figure 1. RF signal generator Signal Hound VSG25A generates pulses in duration of 6 ns to 24 ns (FWHM) and 10 mW (CW) power. Signal is supplied with an 8 cm long coaxial cable to the RF amplifier Mitsubishi M57796MA from which the signal amplified to ≈100 mW (CW) is supplied to a λ/10 monopole transmitting antenna, placed 200 cm above the surrounding terrain. At a distance of 430 cm, a receiving λ/20 monopole antenna is placed at the height of 300 cm above the ground. Angle between the horizon and the line connecting the two antennas is ≈10°. Received signal is supplied by 60 cm long coaxial cable through simple high pass filter to 50Ω input of 300 MHz oscilloscope Rigol DS2302A and a 100 MHz wide digital band-pass filter is applied to the signal. Horizontal scale is set to10 ns/div, vertical scale is set to 500 μV/div, while the mathematical scale in which the filtered signal is shown is set to 200 μV/div.

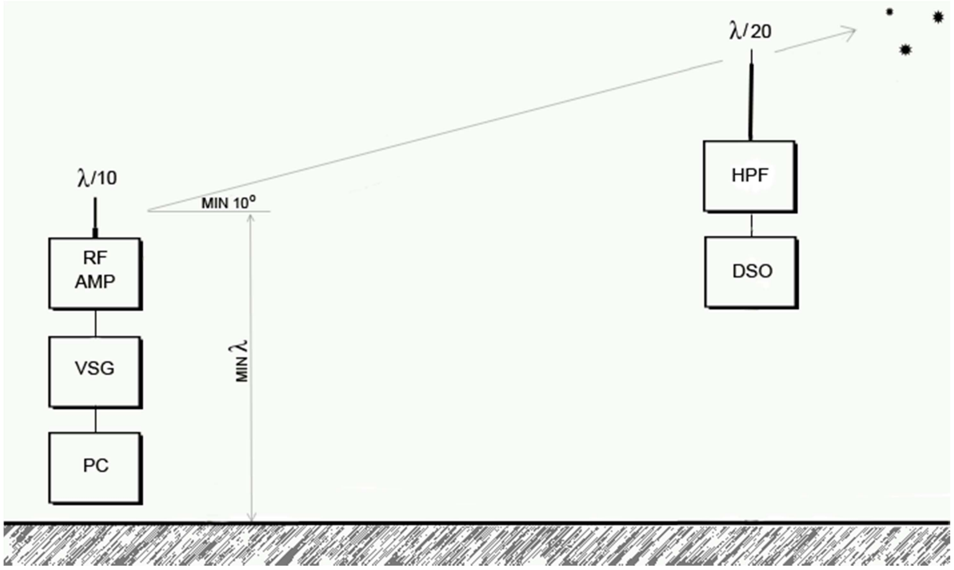

Fig. 1

Figure 2 A shows a signal measured in the above described configuration at an angle of ≈10°. Peak of the retarded pulse, 12 ns FWHM, wavelength of 167 cm is at 0 ns. Peak of the advanced signal is at -28.6±0.2 ns. Average value (Vrms) of advanced signal after 1000 pulses is 252.3±9.5 μV. Error is the standard deviation. As shown in Figure 2 B, by raising the transmitting antenna by 50 cm and thereby by reducing the angle to ≈ 3.5°, the advanced signal weakened to 35.4±5.1 μV. Runs were made 5 minutes apart at clear skies and low relative humidity. Same effect can be achieved by lowering the receiving antenna to the height of the transmitting antenna. In conditions of high relative humidity of the air or cloudy weather, the signal completely disappears at angles smaller than ≈5°.

Signal is lost when a metal reflector is placed behind the receiving antenna at an angle at which the reflection is directed towards the horizon in configuration from Figure 1. Signal appears when, in configuration with both antennas placed at the same height and at the same angle of 0°, when there is otherwise no signal above the level of noise, a reflector is placed behind the receiving antenna at an angle of 45° so that the reflection is directed toward zenith.

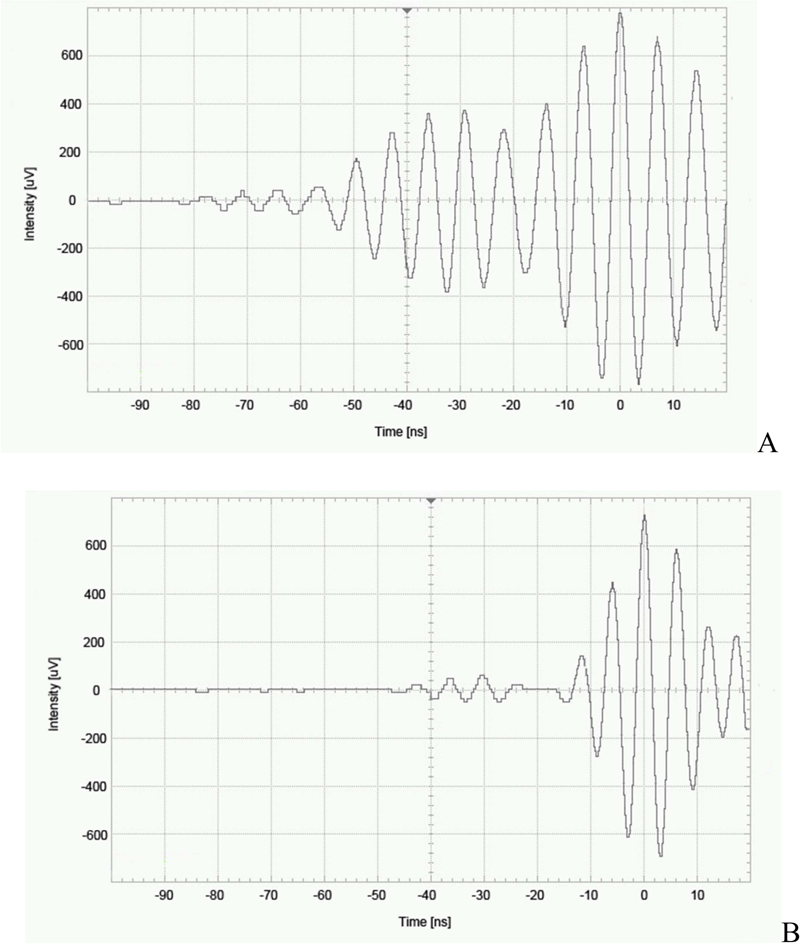

Fig. 2

Figure 3 shows a test in which the only difference is a change in receiving antenna length. Measurements were performed at a distance of 875 cm from 3-element Yagi antenna at an angle of ≈5° at a wavelength of 200 cm. Under A, a value of 11.1±5 μV was obtained by measurement using a ≈λ/6.7 monopole antenna in the time of expected advanced signal of -58.2±0.2 ns. Under B, after the antenna was shortened to λ/10 at the same location, a value of 81.3±15.7 μV was measured. Under C, by further shortening to λ/20, the signal increased to 145.4±4.7 μV.

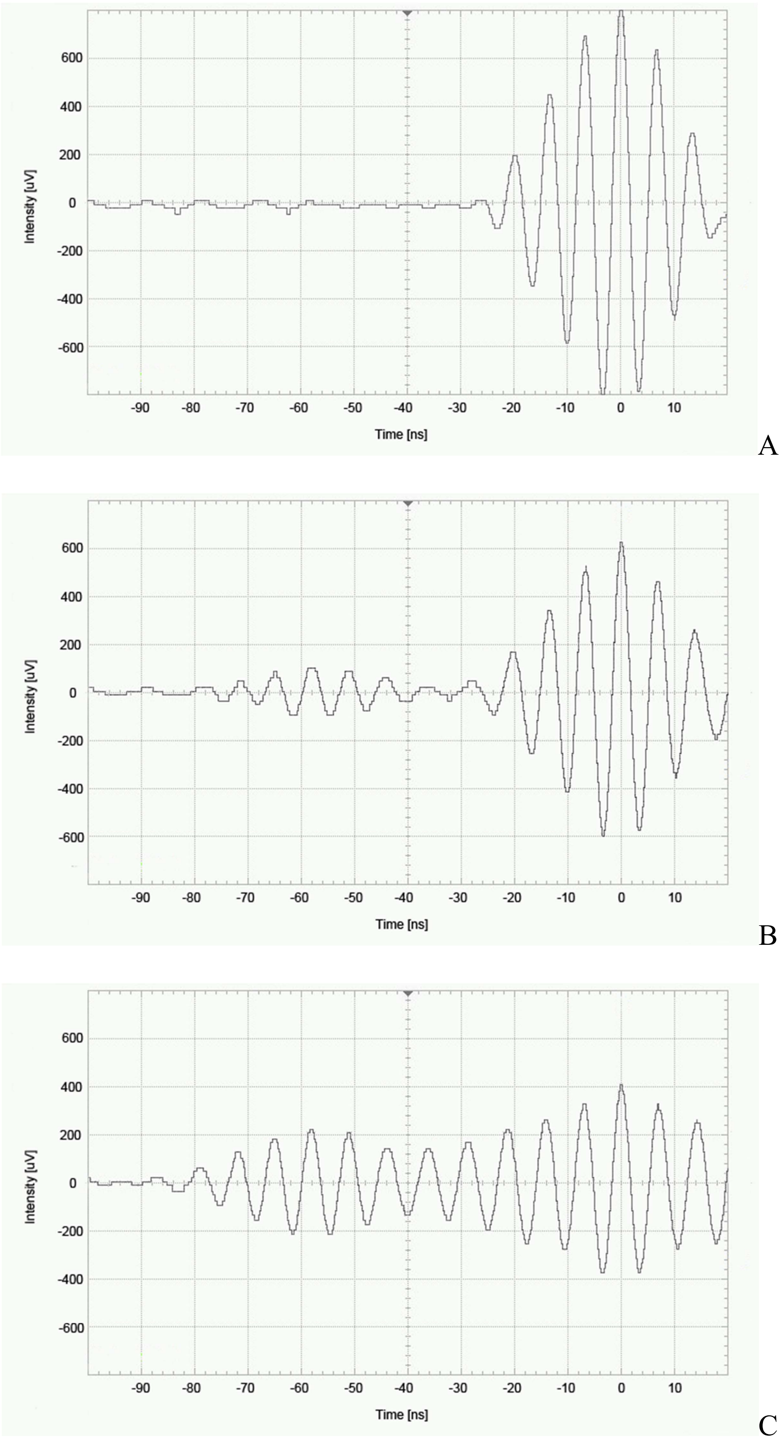

Fig. 3

Figure 4 shows the measurement performed with a λ/20 monopole antenna at a distance of 18 m from 3-element Yagi antenna at an angle of ≈3° at the wavelength of 200 cm. Additional amplification stage was added to the transmitting side – Zetagi LA1080V linear amplifier which, when excited with ≈100 mW of the first stage, provides ≈1W CW at the output. In the advanced time window at time 2r/c before the peak of the retarded pulse arrives, a signal of 29.3±1.9 μV was measured at -120±0.4 ns. For an additional verification of the time of retarded pulse arrival, a λ/2 dipole antenna was connected to CH2 of the oscilloscope.

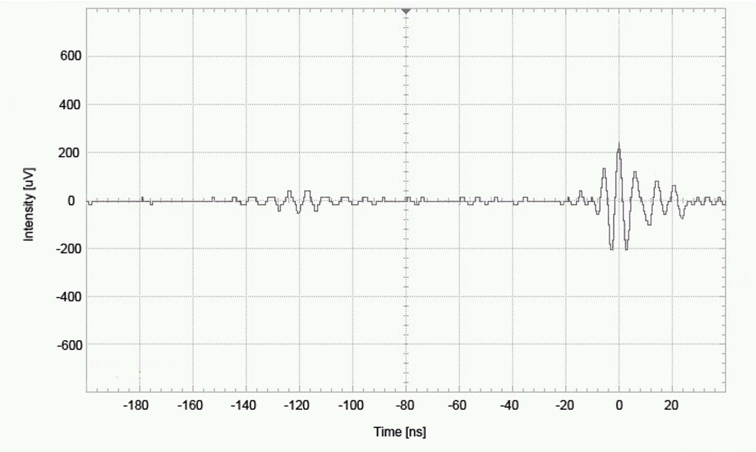

Fig. 4

In the period from 17 December 2016 to 05 January 2017, measurements of the strength of advanced signal were performed over a course of 7 cloudless days with regard to the target located behind the receiving antenna, on the extension of the line which connects the two antennas. The Milky Way and the Sun were used as targets. Runs were performed at the wavelength of 150 cm in the configuration shown on Figure 1 and at the wavelength of 91 cm without RF amplifier, with pyramidal horn antenna, with an opening of 107 cm as a transmitting antenna. Runs were performed by aiming "ahead" of the target and it was left for the "sight" to cross in front of the target due to Earth's rotation. Runs were made 30 minutes apart, and close to the Sun 10 minutes apart. Considering the greater variation of a signal close to the galactic plane, each individual run was performed at 500 pulses, which takes approximately 2 minutes with the aforementioned measurement equipment.

For the sake of clear display, Figure 5 shows only some of the runs performed on 20 December 2016 at the wavelength of 91 cm and some of the runs performed on 05 January 2017 at the wavelength of 150 cm. The average values (Vrms) after 500 pulses are shown. Error is the standard deviation. In total, over the course of 7 days of measurements, average reduction in advanced signal strength of ≈3 dB was recorded close to the galactic plane.

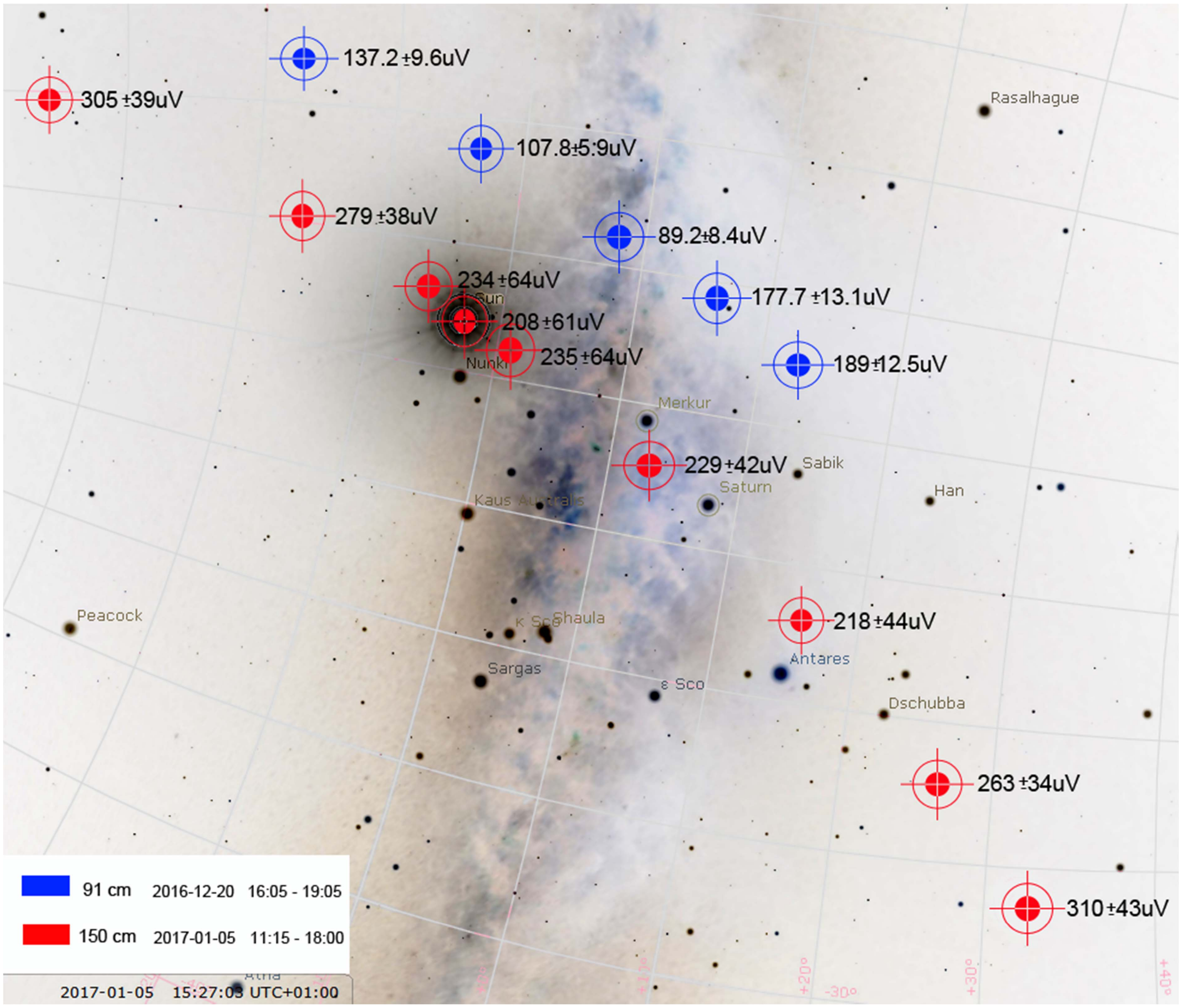

Fig. 5

For the purpose of finding and removing possible sources of systematic errors, all connectors and cables were replaced and shortened as much as possible. Testing was performed with several different filters, with amplifiers and without amplifiers at shorter distances. Several methods of oscilloscope triggering as well as determining the time of arrival of retarded and advanced signal were tested.

The influence of objects which lie far outside the light cone of the experiment on the strength of advanced signal, if it is real and not just a coincidence, removes the possibility of sources of systematic errors in the experiment itself. In that case, advanced radiation, in addition to permits receiving information from the future and instantaneous communication at a distance which is in conformity with relativity since all interactions take place at the speed of light, should also allow the possibility for the detection of matter which does not radiate but only absorbs electromagnetic radiation of wavelengths at which the detection of advanced radiation is possible. Even though the SNR of the signal measured in the advanced time window defined as μ/σ reaches 30.9, the possibility that the real cause of the signal is an unknown source of systematic error cannot be completely ruled out.

References

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