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## **INNOVATIONS IN THE NOISE IMMUNE CHANNEL DIRECTION WITH THE SPACE CRAFT FORMATION**

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During space craft (SC) passage through the dense layers of the Earth's atmosphere, around its construction the powerful wave of percussive ionization is created [1].

As a consequence, the disproportionate as for density and thickness (to 10 sm) low temperature plasma membrane that worsen all characteristics of telemetry signals with SC, has negative influences to the electromagnetic waves expansion and creates barriers for radio communications. The communication loss of ground and satellite stations with SC may lead to the control loss and really bad consequences.

Existed methods of this problem solution are based on the signals force strengthening and their spectrums replacement into the other frequencies [1, 2]. However it demands the using of valuable craft components, which solve this problem only partly. In spite of such miserable positive characteristics of mentioned methods, the telecommunication electromagnetic compatibility worsens during the comparable not so high reliability and telemetry quality.

The new method of information transference through the plasma, created on the simultaneous influence on plasma by the electronic flow, acoustical wave and informational signal [2]. During this, the changing of the plasma's properties connected with her characteristics, wherever the dielectric permeability becomes more than a point, so the opportunity to pass the electromagnetic wave with lesser frequency, than plasma's appears. However, general approaches for the information transference purchasing through the plasma don't consider those circumstances, during which the minimal disfigurations and signal extinction could eventuate.

The purpose of this article is an innovational approach of noise immune communication channel with SC through the plasma membrane formation, in the way of artificially disfigured flow of elementary particles' affection on it.

The achievement of the purpose can be possible by the research of elementary processes in plasma and elaboration the method of creation noise immune communication channels with the reduced plasma's density. It can permit the unimpeded passage of electromagnetic informational wave through the blast wave plasma layer.

The arrangement of quasi neutral artificial plasma source near the SC's plasma membrane is accompanied by the excitation of compactness discharge oscillation in it. Mentioned oscillations have their own frequency. This process of interaction has undulatory character and leads to free channels creation in the plasma with reduced density.

The researches of plasma with negative radiation that are created in the inertial and molecular gases' discharge, established an amount of floating in the longitudinal and radial directions.

Between cathode and negative radiation the dark crook space is established, and between anodes and radiation- farad space.

With the increase of anode tension, plasma with negative radiation increases its dimensions and expands across the normal from the vacuum camera wall. From this radiation, discharge bearers cannot pass through the electrodes to the restrictive wall, so far as passing through the powerful electrical field between the cathodes, they get into the cathode or the anode. As a consequence, plasma remoted from limited wall and don't interact with her.

For getting high intensive and energy-conservative radiation, it is necessary to arrange the rod anodes and cathodes that take turns across the discharge camera. As a consequence, the overall negative radiation from many elementary discharges can be received.

The device for the artificial quasi neutral plasma creation represents the system of bar anodes and cathodes that are arranged in circle in the gas-discharge tube.

Every couple of neighbour electrodes (anode and cathode) represents detached discharge interval across the device. The pressure of gas-filling- molecular or inertial, the distance between neighbour electrodes and from the electrodes to the restrictive walls was picked up in such way as they respond the conditions of complicated discharge.

Following the conditions of anode tension, in terms of 380 – 500 V in gas-discharge device, the low-anomalistic discharge that glows, category zones of which are arranging only in the internal zones of classific interval. In the transverse cut, the form of every negative radiation has an appearance of semi-ellipsis, lengthen to the centre. Since all negative radiations was identical and whichever of them was arranged between alike neighbour, it humbly combinates into one overall radiation that has a shape of cylindrical column, the diameter of which makes more than a half of diameter of discharge interval. In spite of those facts that separately negative radiation of every discharge haven't ever reached to the device axis, during every category lighting, the general radiation filled all the central field across the device.

For the plasma length  $d = 10$  sm reduction of plasma's density into the created channels happened in 20 – 25 tines. Since the SC's velocity isn't stable, the highest plasma density expected on the altitude of 75 km.

The time of existence of noise immune channel in the plasma depends on the altitude and motion velocity of SC, it lies in terms of 80 – 20 mcs that permits to expand the diapason of radio communication with the minimal energy- consumption.

### References

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